Current Research on Multiple Births

12-MONTH BIBLIOGRAPHY — 1993

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Subject Sections*

Title, authors, and journal source, alphabetized by journal:

- Behavior and Physiology
- Genetic Traits and Methods
- Obstetrics and Pediatrics
- General

Author Section

Authors, titles, journal source, and abstract (if available), alphabetized and cross-indexed by all authors.

* The first three subject sections include related topics; other articles on these subjects may be found in the General section. The General section comprises the many articles that could not be classified automatically on the basis of keywords or source.

https://doi.org/10.1017/S0001566000003329 Published online by Cambridge University Press

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† Effect of immunization against synthetic peptide sequences of bovine inhibin alpha-subunit on ovulation rate and twin-calving rate in heifers. Morris DG, et al. **J Reprod Fertil** 1993 Jan; 97(1):255–61

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Ophthalmic Paediatr Genet 1993 Mar;14(1):29–32

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Orthotopic liver transplantation for alpha-1-antitrypsin deficiency in identical twins. Kizilisik TA, et al. **Transplant Proc** 1993 Apr; 25(2):1912–3

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https://doi.org/10.1017/S0001566000003329 Published online by Cambridge University Press

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A

Aboulafia Y see **Divon MY**
Abramowicz JS see **Mahone PR**
Agarwal SS see **Sharma AK**
Ahmed S, Young JD: Late onset esotropia in monozygous twins. Br J Ophthalmol 1993 Mar; 77(3):189–91
Monozygous twins who developed typical acute late onset esotropia are described. Neither had evidence of other neurological disease and both responded well to bimedial rectus muscle recessions. This twin presentation suggests a hereditary basis for the development of late onset esotropia in at least some cases. It provides further support for a policy of avoiding invasive CNS investigations in those patients who have binocular potential and are otherwise normal.
Akerman BA, Thomassen PA: The fate of "small twins": a four-year follow-up study of low birthweight and prematurely born twins.
Acta Genet Med Gemellol (Roma) 1992; 41(2–3):97–104
This follow-up study of twins includes 35 families from the Stockholm area. One section concerns the physical and mental development of the twins. The other sections compare the development of the children with their parents' expectations of them and the parents' feelings about the delivery. Seven twin pairs (20%) in the total group were born before 37 complete gestational weeks. Thirty-seven of the twins weighed less than 2,500 g at birth; of these, 23 (9 boys and 14 girls) weighed less than 2,500g, although they were born after 37 gestational weeks. At four years of age, 22 of the 68 twins still showed some impairment of locomotor, language/speech and emotional development, as assessed by the Griffiths Mental Development Scales. All the prematurely born and small-for-date infants were in this group. There also seems to be a relationship between developmental problems and the mother's negative or ambivalent expectations concerning the twin pregnancy.
Akerman BA, Fischbein S: Within-pair similarity in MZ and DZ twins from birth to eighteen years of age. Acta Genet Med Gemellol (Roma) 1992; 41(2–3):155–64
This study is based on 145 pairs of twins included in a longitudinal study of a cohort of singletons born in 1953 and living in the Stockholm metropolitan area in 1963. Of these 145 pairs, 28 were classified as MZ, 103 as DZ and 14 pairs could not be classified. School achievement and ability test results have been collected for this group as well as data for the boys from physical and mental examinations on enrollment to military service. The purpose of this study was to compare within-pair similarity for MZ and DZ twins from birth onwards. There seems to be a divergent trend over time for MZ twin pairs to become more similar and DZ twin pairs to become less similar in height growth, school achievement and verbal ability. This is in accordance with previous research in this field. In relating similarity within pairs to birthweight, we found a drop in within-pair similarity for low birthweight MZ and DZ twin pairs (both twins < or = 2.500 g), but not for normal weight twin pairs. A discussion is initiated concerning methodological implications of these results.
Akiyama Y see **Kobayashi S**
Allahbadia GN see **Desai SK**
Amano K see **Hayakawa K**
Ambroise-Thomas P see **Pelloux H**
Amit A see **Botchan A**
Arias León E see **Rufo Campos M**
Armstrong H see **Sadovnick AD**
Aster RH see **McFarland JG**
Aussel D see **Pangui E**
Austin MA, Newman B, Selby JV, Edwards K, Mayer EJ, Krauss RM: Genetics of LDL subclass phenotypes in women twins. Concordance, heritability, and commingling analysis.
Arterioscler Thromb 1993 May;13(5):687–95
Low density lipoprotein (LDL) subclass phenotype B, characterized by a predominance of small LDL as determined by gradient gel electrophoresis, has been associated with increased risk of coronary heart disease and an atherogenic lipoprotein profile. Previous studies employing complex segregation analysis have demonstrated a major, single gene effect on the inheritance of this phenotype in families. Recently, linkage between this phenotype and variation at the LDL receptor locus on chromosome 19 has been reported. However, variation in LDL subclass phenotypes has also been associated with age, gender, diabetes status, beta-blocker medication, and diet. The present study further evaluates the relative importance of genetic and nongenetic influences on LDL subclass phenotypes and on LDL peak particle diameter (as a reflection of the size of the major LDL subclass) in monozygotic and dizygotic women twin pairs. The analysis is based on 203 monozygotic and 145 dizygotic pairs of adult female twins who participated in the second examination of the Kaiser Permanente Women Twins Study. The average age was 51 years at this exam and 90% were white. Concordance analysis revealed that monozygotic cotwins shared LDL subclass phenotypes more frequently than dizygotic cotwins, and this was confirmed using logistic regression analysis after controlling for potential confounding factors. Heritability analyses suggested that approximately one third to one half of the variation in LDL peak particle diameter, a continuous variable reflecting LDL size, could be attributed to genetic influences. Commingling analysis of the frequency distribution of LDL peak particle diameter identified three distinct subgroups of subjects, one of which corresponded to those subjects with LDL subclass phenotype B.(ABSTRACT TRUNCATED AT 250 WORDS)

B

Bagga D see **Chadha R**
Bailey A, Bolton P, Butler L, Le Couteur A, Murphy M, Scott S, Webb T, Rutter M: Prevalence of the fragile X anomaly amongst autistic twins and singletons. J Child Psychol Psychiatry 1993 Jul; 34(5):673–88
Early screening studies of autistic individuals suggested that up to one-quarter of cases were associated with the Fragile X anomaly. Recent studies find that the usual behavioural phenotype of the Fragile X anomaly is distinct from autism as usually defined, and that a variety of methodological factors contribute to the variability of the prevalence estimates. We report the prevalence of the Fragile X anomaly, using strict cytogenetic criteria, in a large sample of autistic individuals whose diagnosis was confirmed using a standardised diagnostic instrument. The anomaly was detected in 1.6% of tested autistic individuals from a combined sample

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of: autistic twins; clinic attenders; and, individuals from families multiplex for autism or related cognitive phenotypes. The anomaly was not detected in greater than 2.5% of any of the constituent samples and accounted for only a small proportion of the genetic influences amongst concordant twins and multiplex families. The anomaly was detected in 5% of the 40 tested autistic females, confirming reports that the prevalence of the anomaly is similar amongst autistic individuals of both sexes.

Ball BA, Schlafer DH, Card CE, Yeager AE: Partial re-establishment of villous placentation after reduction of an equine co-twin by foetal cardiac puncture. Equine Vet J 1993 Jul;25(4):336-8

Barak Y see **Botchan A**

Barce J see **Olson JM**

Barker DJ see **Phillips DI**

Barlow KM, Mok JY: Dizygotic twins discordant for HIV and hepatitis C virus. Arch Dis Child 1993 Apr; 68(4):507

Twin girls were born at 37 weeks' gestation to a mother infected by HIV and hepatitis C virus. Twin 1 had symptomatic HIV infection by 9 months but was negative for hepatitis C virus antibody and RNA. Twin 2 became HIV antibody negative by 15 months but was positive for antihepatitis C virus and RNA.

Barwick WJ, Oakes J, Goldberg JA: Closure of myelomeningocele using skin from stillborn twin. Ann Plast Surg 1993 Feb;30(2):171-4

We report a case of homologous skin transplantation from a stillborn twin to the surviving twin for coverage of a myelomeningocele defect. Genetic studies were not available preoperatively, however, similar morphogenetic anomalies of the twins suggested monozygosity. Long-term follow-up revealed a well-healed graft. Cutaneous genetics and literature review of twin homologous skin transplantation are presented.

Battaglia FC see **Marconi AM**

Baumgardner T see **Reiss AL**

Behrens O, Wedeking-Schöhl H, Mesrogli M, Degenhardt F, Schneider J: [Doppler ultrasound in monitoring twin pregnancies with early discordant growth] Z Geburtshilfe Perinatol 1992 Sep-Oct; 196(5):209-12 (Eng. Abstr.) **(Ger)**

Early growth retardation in one twin is complicated by a high fetal mortality and morbidity. It is often very difficult to determine the optimum time of delivery in regard to placental insufficiency and prematurity. We report of two cases in which doppler velocimetry was a helpful method in monitoring those pregnancies at high risk. A growth retardation of three weeks was found in one child of a twin pregnancy at 17 weeks of gestation. Doppler velocimetry at 23 weeks showed a reverse flow and centralisation and the child died at 27 weeks. The other twin then also developed pathologic flow patterns and had to be delivered by cesarean section. In the second patient, pregnancy could be continued in spite of a growth retardation of three weeks in one child at 15 weeks and an additional decrease in the growth rate of both children from 30 weeks onwards. Cesarean section had to be performed at 34 weeks because of premature rupture of membranes.

Beilin LJ see **Williams PD**

Ben-Nun I see **Shulman A**

Benshushan A see **Mordel N**

Bergeman CS, Chipuer HM, Plomin R, Pedersen NL, McClearn GE, Nesselroade JR, Costa PT Jr, McCrae RR: Genetic and environmental effects on openness to experience, agreeableness, and conscientiousness: an adoption/twin study. J Pers 1993 Jun; 61(2):159-79

Previous research has indicated that extraversion and neuroticism are substantially affected both by genotype and environment. This study assesses genetic and environmental influences on the other three components of the five-factor model of personality: Openness to Experience, Agreeableness, and Conscientiousness. An abbreviated version of the NEO Personality Inventory (NEO-PI) was administered to 82 pairs of identical twins and 171 pairs of fraternal twins reared apart and 132 pairs of identical twins and 167 pairs of fraternal twins reared together. Estimates of genetic and environmental effects for Openness and Conscientiousness were similar to those found in other studies of personality: Genetic influence was substantial and there was little evidence of shared rearing environment. Results for Agreeableness were different: Genetic influence accounted for only 12% of the variance and shared rearing environment accounted for 21% of the variance. Few significant gender or age differences for genetic and environmental parameters were found in model-fitting analyses.

Berger C see **Fignon A**

Bergh P see **Berkowitz RL**

Berkowitz RL, Lynch L, Lapinski R, Bergh P: First-trimester transabdominal multifetal pregnancy reduction: a report of two hundred completed cases. Am J Obstet Gynecol 1993 Jul;169(1):17-21

OBJECTIVE: Multifetal pregnancy reduction has been proposed as a way to reduce the risk of preterm delivery in women who conceive three or more fetuses. This communication presents the outcome of 200 consecutive multifetal pregnancies in which reduction to a smaller number of fetuses was accomplished. STUDY DESIGN: All of the procedures were performed in the first trimester by the transabdominal injection of potassium chloride into the thoraces of those fetuses that underwent feticide. All of the pregnancies have been completed and outcome data have been obtained in every case. RESULTS: At the time of the procedure 88 women had triplets, 89 had quadruplets, 16 had quintuplets, and 7 had from 6 to 9 fetuses. These pregnancies were reduced to 189 sets of twins, 5 sets of triplets, and 6 singletons. Reductions to triplets were done at the patient's request, and reductions to singletons were only done for medical indications. There were no cases of chorioamnionitis or other maternal complications attributable to the procedure. A total of 181 women were delivered of one or more live infants after 24 weeks' gestation, and 19 (9.5%) lost all of their fetuses before that time. The mean gestational age for all women delivered after 24 weeks was 35.7 weeks. The mean gestational age at delivery varied inversely with the initial number of fetuses, from 36.1 weeks for women who presented with triplets to 33.8 weeks for those who had 6 or more fetuses, and this trend was statistically significant. Sixteen of the 19 complete pregnancy losses occurred $>$ 4 weeks after the reduction procedure had been performed. The loss rates were 7.9% for those who presented with 3 or 4 fetuses, 12.5% for those with 5, and 42.9% for those with $>$ or $=$ 6. This trend was statistically significant. Two neonates died in the first week of life and one died at 10 months of age as a consequence of the sequelae of severe prematurity. Only two surviving infants have shown evidence of chronic morbidity related to early delivery, and all of the others are developing normally. CONCLUSION: The

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incidence of intrauterine growth retardation was not increased over that anticipated in a population of twins.

Bersinger DE see **Shwayder JM**

Berthier M see ***Oriot D***

Beyribey S see **Cetinkaya M**

Beyth Y see **Shulman A**

Bhardwaj N see **Samujh R**

Biddison WE see **Utz U**

Bigelow LB see **Goldberg TE**

Bivins HA Jr, Newman RB, Ellings JM, Hulsey TC, Keenan A: Risks of antepartum cervical examination in multifetal gestations. Am J Obstet Gynecol 1993 Jul;169(1):22–5

OBJECTIVE: This study was performed to determine the risks associated with antepartum cervical examination in women with multifetal gestations attending a specialized antepartum Twin Clinic. STUDY DESIGN: Patients followed up in a specialized Twin Clinic from 1988 through 1991 (N = 89) received extensive preterm birth prevention education and routine cervical examination at each clinic visit. Obstetric outcome was compared between these patients and 288 other twin gestations followed up in the high-risk obstetric clinics between 1981 and 1991. In these control twin gestations cervical examination was done for obstetric indications only. RESULTS: Comparisons between the 89 Twin Clinic attendees and the 288 controls followed up in the high-risk obstetric clinic revealed no significant differences in patient demographics, medical complications, or infectious morbidity. Importantly, premature rupture of membranes was significantly less frequent in the Twin Clinic group, who had 7.6 +/- 3.2 (mean +/- SD) cervical examinations per patient. CONCLUSION: Routine cervical examination in multifetal gestations is not associated with increased rates of premature rupture of membranes or other obstetric complications.

Bläker F see **Korsch E**

Blanchette V see **McFarland JG**

Blondel B see **Tuppin P**

Bocciolone L see **Parazzini F**

Body G see **Fignon A**

Boehm C see **Reiss AL**

Bollen N, Camus M, Tournaye H, Wisanto A, Van Steirteghem AC, Devroey P: Embryo reduction in triplet pregnancies after assisted procreation: a comparative study. Fertil Steril 1993 Sep;60(3):504–9

OBJECTIVES: To evaluate pregnancy outcome after selective embryo reduction by transcervical aspiration or transvaginal puncture and intrathoracal injection with potassium chloride (KCl) in triplet pregnancies occurring after assisted procreation and to compare this outcome with that for triplets not undergoing embryo reduction. DESIGN: Retrospective case series. SETTING: In vitro fertilization program of the Centre for Reproductive Medicine of the Dutch-speaking Brussels Free University, Belgium, which is a tertiary referral institution. PATIENTS: Seventy-two patients presenting a triplet pregnancy after assisted procreation. INTERVENTION: Transcervical aspiration embryo reduction at 8 to 9 weeks of pregnancy or transvaginal puncture and intrathoracal injection of KCl at 9 to 10 weeks of pregnancy. MAIN OUTCOME MEASURES: Rate of spontaneous embryo reduction, complications relating to the procedure, pregnancy, and neonatal outcome. RESULTS: The rate of spontaneous reduction was 18%. Among the 14 patients undergoing transcervical aspiration, 3 aborted and 4 lost an additional fetus. The transvaginal puncture technique had a lower complication rate (2/19). Neonatal outcome was improved in pregnancies after selective embryo reduction. After transvaginal puncture, the outcome was comparable with that for twin pregnancies after assisted procreation. CONCLUSIONS: Triplet pregnancies after assisted procreation had a poor neonatal outcome. The outcome was improved after spontaneous reduction. Transcervical aspiration should not be used because of its high rate of early and late complications. Transvaginal puncture had less early complications, but the technique might be associated with prematurity and third trimester fetal death. In triplet pregnancies, embryo reduction decreases the number of babies going home per patient, but the quality of life of the remaining babies is improved.

Bolte A see **Crombach G**

Bolton P see **Bailey A**

Bonneau D see **Oriot D**

Boog G see **Mensier A**

Boomsma DI, Kaptein A, Kempen HJ, Gevers Leuven JA, Princen HM: Lipoprotein(a): relation to other risk factors and genetic heritability. Results from a Dutch parent-twin study. Atherosclerosis 1993 Feb; 99(1):23–33

We measured plasma levels of lipoprotein(a) (Lp(a)) in a sample of 152 Dutch adolescent mono- and dizygotic twin pairs and their parents. The distribution of Lp(a) levels was skewed, with the highest frequencies at low levels and was similar for adult men and women and their children. The relationship of Lp(a) concentrations with other lipoprotein and apolipoprotein risk factors for coronary heart disease and with lathosterol, an indicator of whole-body cholesterol synthesis, was studied dependent on sex and generation. In mothers and children there was a small positive correlation between Lp(a) levels and plasma cholesterol and apolipoprotein (apo) B. In mothers and daughters there also was a correlation between Lp(a) and LDL cholesterol levels. No correlation was found between Lp(a) levels and plasma lathosterol, suggesting that there is no relationship between Lp(a) levels and cholesterol synthesis. Associations among family members, i.e. between monozygotic and dizygotic twins and between parents and offspring were used to study familial transmission of Lp(a) levels. Results showed that almost all of the variance in Lp(a) concentrations was accounted for by genetic heritability. A small, but significant, sex difference in heritability was observed, but heritabilities were the same in parents and offspring. Heritability estimates were 93% for females and 98% for males. No evidence was found for assortative mating or for the influence of a shared family environment. These results indicate that nearly all variance in Lp(a) concentrations that is not accounted for by the apo(a) size polymorphism, is also under genetic control.

Boomsma DI see **de Knijff P**

Borens K see **Opitz J**

Borrell A see **Soler A**

Botchan A, Yaron Y, Lessing JB, Barak Y, Yovel I, David MP, Peyser MR, Amit A: When multiple gestational sacs are seen on ultrasound, 'take-home baby' rate improves with in-vitro fertilization. Hum Reprod 1993 May;8(5):710–3

During a 5.5 year period, 309 clinical pregnancies were recorded in our in-vitro fertilization (IVF) unit. A single gestational sac was identified by early ultrasonography in 233 patients, while in 76 others, multiple gestational sacs were noted. Take-home

AUTHOR SECTION

baby' rate, in patients in whom multiple sacs were observed, was higher than that in patients with a single sac. Delivery of at least one live newborn occurred in only 73.8% of patients with a single sac, compared with 93.3% and 91.7% in patients with two and three gestational sacs, respectively. Conversely, the early and late abortion rates were decreased in patients with multiple sacs. Embryonic implantation rate, defined as the ratio of gestational sacs observed to the number of embryos transferred, was found to be a valuable prognostic factor for a live delivery, and can serve as a tool in assaying the prognosis of pregnancy detected by early sonography. The observation of a higher 'take-home baby' rate in cases with multiple sacs identified by ultrasound and with higher embryonic implantation rate, might be the result of a better embryo quality and/or improved uterine receptivity, promoted by a favourable hormonal milieu or by as yet unknown endometrial factors.

Boulot P, Hedon B, Pelliccia G, Peray P, Laffargue F, Viala JL: Effects of selective reduction in triplet gestation: a comparative study of 80 cases managed with or without this procedure. Fertil Steril 1993 Sep;60(3):497–503
OBJECTIVE: To evaluate the effect of selective termination in triplet pregnancies. DESIGN: Comparative, prospective, nonrandomized study. SETTING: All 80 pregnancies were managed in a single tertiary center by the same obstetrical team. PATIENTS: Eighty women with triplet pregnancies were divided into two groups: group I consisted of 48 women who wished to continue their pregnancies without reduction; in group II were 32 women who choose reduction generally to obtain twins. INTERVENTIONS: Selective terminations were performed after an average term of 9.6 weeks of gestation by transcervical or transabdominal approaches. MAIN OUTCOME MEASUREMENTS: The rate of miscarriage and prematurity, fetal growth, perinatal morbidity and mortality, and maternal complications in the two groups. RESULTS: Prematurity was lower in reduced pregnancies (95.5% in triplets versus 53.5%), especially between 24 to 32 weeks' gestation where prematurity was reduced by half. Birth weight was > 450 g higher in the reduced group. The perinatal mortality rate was lower for reduced pregnancies, but this difference was not statistically significant. Five life-threatening maternal complications occurred in triplets, with none in the reduced group. CONCLUSIONS: Selective terminations are effective in decreasing the rate of prematurity, improving fetal growth, and avoiding maternal complications. The procedure thus could be used in triplet gestations. The ultimate decision should be taken by the couple who must be well informed of the risks of the procedure before deciding.

Bourrouillou G see **Marguery MC**
Bousquet J see **Demoly P**
Boussemart T see **Oriot D**

Brandt J, Welsh KA, Breitner JC, Folstein MF, Helms M, Christian JC: Hereditary influences on cognitive functioning in older men. A study of 4000 twin pairs. Arch Neurol 1993 Jun;50(6):599–603
OBJECTIVE—To determine the contribution of genetic factors to cognitive functioning in older men. DESIGN—Cognitive testing by telephone interview in an epidemiologically defined population. PARTICIPANTS—2077 monozygotic and 2225 dizygotic male twin pairs, all between the ages of 62 and 73 years, recruited from the National Academy of Sciences twin registry. MAIN OUTCOME MEASURES—The Telephone Interview for Cognitive Status—Modified total score and factor scores were analyzed. The Falconer heritability statistic and maximum likelihood estimates of genetic and environmental components were computed. RESULTS—Heritability of the total Telephone Interview for Cognitive Status—Modified score was estimated to be 30%. Shared environmental effects accounted for an additional 18% of the variance; most of this was related to years of education. Of the four cognitive factors derived, the language/attention factor had the highest heritability estimate. CONCLUSIONS—Genetic factors and educational achievement together account for almost half of the variance in the cognitive functioning of older men. Studies of the genetics of dementing illnesses need to consider the degree to which cognitive capacities are themselves under genetic control.

Braun MM, Caporaso N: Twin studies in medical research [letter; comment] Lancet 1993 May 29; 341(8857):1418

Bray GA see **Kumar D**
Breckwoldt M see **Prömpeler HJ**
Breitner JC see **Brandt J**
Breslow NE see **Olson JM**
Brettes JP see **Collet M**

Brodsky MC, Schroeder GT, Ford R: Superior segmental optic hypoplasia in identical twins. J Clin Neuroophthalmol 1993 Jun;13(2):152–4

Brown KW see **Segal NL**
Bulman D see **Sadovnick AD**
Burke S see **Stewart G**
Butler AC see **Roy A**
Butler L see **Bailey A**
Buytaert P see **Gerris J**

Byrne BM, Rasmussen MJ, Stronge JM: A review of triplet pregnancy. Ir Med J 1993 Mar;86(2):55–7
Nineteen sets of triplets were delivered in the National Maternity Hospital between January 1st 1980 and December 31st 1990 inclusive. Thirteen triplet pregnancies resulted from spontaneous ovulation and six from ovulation induction therapy for infertility. Management was conservative. Bed rest and home monitoring were not advised routinely and cervical cerclage and tocolytic agents were not used. Ten of the patients were delivered by caesarean section. The prematurity rate was 79% and five sets of triplets were delivered before 32 weeks gestation. The perinatal mortality rate was 35/1000. This reflects a general improvement in the obstetric and neonatal care of triplet pregnancy over the past decade.

C

Cabrera ME see **Ford AM**
Callen PW see **Fries MH**
Calvas P see **Marguery MC**
Camus M see **Bollen N**
Cantala P see **Marguery MC**
Caporaso N see **Braun MM**
Card CE see **Ball BA**

Carmelli D, Heath AC, Robinette D: Genetic analysis of drinking behavior in World War II veteran twins. Genet Epidemiol 1993;10(3):201–13
The objective of the present study was to investigate longitudinal changes in drinking behaviors of adult male twins and model these changes as a function of genetic and environmental influences. Alcohol data available for World War II veteran twins, first

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surveyed in 1967–69 and followed up during 1983–85, were used to examine components of variability in measures of alcohol consumption. Multivariate biometric analysis of these data indicated 1) longitudinal stability of drinking behaviors in this cohort, 2) a significant contribution of genetic factors to the observed stability that accounted for more than 80% of the stable variation in frequency and in quantity of alcohol consumed per drinking occasion, and 3) evidence for a significant contribution of shared environmental influences to drinking of specific beverages (e.g., wine). The implications of these results for issues of health in the elderly are considered.

Carr B: New Zealand Multiple Birth Association [letter] N Z Med J 1993 Apr 14;106(953):142

Carrio A see **Soler A**

Carson DA see **Kohsaka H**

Carthy D see **Worthington J**

Casati I see **Robin M**

Cates DS, Houston BK, Vavak CR, Crawford MH, Uttley M: Heritability of hostility-related emotions, attitudes, and behaviors. J Behav Med 1993 Jun; 16(3):237–56

Hostility-related variables have been categorized as to kinds of emotions, attitudes, and behaviors. Relatively few studies have explored whether genetic factors contribute to individual differences in these variables. Moreover, the majority of this research has involved male subjects. The present study utilized the twin method to evaluate the influence of genetic factors on hostility-related emotions, namely, trait anger and irritability, hostility-related attitudes, namely cynical hostility and suspiciousness, and hostility-related behaviors, namely, physical, verbal, and indirect aggression in adult women. Responses on the measure of trait anger showed evidence of significant heritability. However, evidence for a genetic component to responses on the irritability scale was less clear. There was no support for the notion of a genetic component to the measure of suspiciousness, and the evidence of a genetic contribution for cynical hostility was not significant. It was expected that due to environmental influences for women, only certain forms of aggression would show genetic variance, namely, verbal and indirect as opposed to physical forms. The results were generally congruent with these expectations.

Cetin I see **Marconi AM**

Cetinkaya M, Sağlam HS, Beyribey S: Two serious complications of circumcision. Case report. Scand J Urol Nephrol 1993;27(1):121–2

Twins aged 19 years presented having been circumcised by an unqualified "itinerant circumciser" at the age of 2 1/2. In one the glans penis and corpus cavernosum were invisible, and the external urethral meatus was at the level of the mons pubis; the other had defects of the glans and corpus, iatrogenic hypospadias, and the end of the penis was protruding only 1.5 cm from the mons pubis. Both underwent successful reconstruction, and are normally sexually active.

Chadha R, Bagga D, Dhar A, Mohta A, Malhotra CJ, Taneja SB: Epigastric heteropagus. J Pediatr Surg 1993 May;28(5):723–7 (11 ref.)

Incomplete parasitic twinning with the parasite attached at the host's epigastrium is extremely rare. We report a case of epigastric parasitic twinning where the parasite with a well-developed pelvis and lower limbs had accessory pelvic organs and was attached to the host above an omphalocele. The parasite was excised and the omphalocele managed conservatively by mercurochrome application. A review of the four previously reported cases is presented along with a discussion of the possible etiopathogenesis and nomenclature of this condition.

Chan LC see **Ford AM**

Chang CS see **Jawan B**

Chasseray JE see **Chitrit Y**

Chauhan SP, Washburne JF, Martin JN Jr, Roberts WE, Roach H, Morrison JC: Intrapartum assessment by house staff of birth weight among twins. Obstet Gynecol 1993 Oct;82(4 Pt 1):523–6

OBJECTIVE: To determine among twins in labor: 1) the relative accuracy of an intrapartum sonographic estimate of the birth weight for both fetuses using biparietal diameter and abdominal circumference, 2) the accuracy of detecting discordant growth (difference in actual birth weights greater than or equal to 15%), and 3) the estimate of fetal weight for nonvertex twin B that would reliably avoid breech extraction of infants less than 1500 g. METHODS: Retrospectively, we identified and analyzed parturients with twins who had an intrapartum sonogram performed by a house officer assigned to the labor and delivery suite. RESULTS: The mean birth weight (+/- standard deviation) for the twin A group was 1910 +/- 628 g and for twin B was 1869 +/- 668 g. The mean standardized absolute errors for the twin A group (121 +/- 118 g/kg) and the twin B group (92 +/- 67 g/kg) were not significantly different (P = .06). Analysis of variance revealed that regardless of the presentation of the fetuses, the mean standardized absolute error was not significantly different (P = .10). Using a difference in the estimates of birth weight of 15% or greater, the positive and negative predictive values of detecting discordant growth within a twin pair were 53 and 83%, respectively. Among 30 vertex-nonvertex twin pairs, 12 of the second fetuses had actual birth weights of 1500 g or less, and all were estimated to weigh less than 1700 g. CONCLUSIONS: The intrapartum sonographic estimate of fetal weight in twin pregnancy by house staff appears reliable, and the accuracy of prediction is similar regardless of presentation, discordance, or actual birth weight greater or less than 1500 g. To avoid vaginal delivery of a persistent nonvertex twin B with a birth weight of 1500 g or less, a sonographic estimate of 1700 g for the second fetus may be adequate.

Chen CJ, Lee TK, Wang CJ, Yu MW: Secular trend and associated factors of twinning in Taiwan. Acta Genet Med Gemellol (Roma) 1992; 41(2-3):205–13

Delivery records of public hospitals and local health centers were analyzed to investigate the secular trend of multiple births from 1955 to 1990 in Taiwan. Twinning rates decreased gradually from the late 1950s to 1973, slightly increased and remained stable from 1974 to 1980, and then increased strikingly from 1981 to 1990. During the study period, MZ rates were consistently higher than DZ rates except in 1986 when a higher DZ rate was observed. The highest MZ rate of 7.7 per 1,000 deliveries was observed in 1985, while the highest DZ rate of 4.6 per 1,000 deliveries was observed in 1986. The triplet incidence rate also declined from the early 1960s to 1973 and then increased markedly from 1974 to 1990. A case-control study including 482 MZ and 252 DZ twin pairs and 1,496 singletons was carried out in four teaching hospitals in Taipei City between October 1985 and June 1989 to examine factors related to twinning. The zygosity of twin pairs was determined by sex, placentation and red blood cell

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antigens. Multiple logistic regression analysis showed that the higher the maternal age, the lower the MZ and DZ rates, while the higher the parity, the higher the rates. There was no association of paternal age or of maternal educational level with twinning rates.

Chen CJ, Wang CJ, Yu MW, Lee TK: Perinatal mortality and prevalence of major congenital malformations of twins in Taipei city.
Acta Genet Med Gemellol (Roma) 1992; 41(2-3):197-203
In order to examine perinatal mortality and prevalence of major congenital malformations in twins, deliveries in four teaching hospitals in Taipei City were studied. Among a total of 73,264 deliveries from October 1985 to June 1989, there were 844 pairs of twins. The zygosity of the twin pairs was determined by sex, placentation and 12 red blood cell antigens. There were 482 MZ and 252 DZ twin pairs identified, but the zygosity of a further 110 twin pairs was indeterminable due to lack of information on plancentation and/or blood types. A total of 4,573 singletons delivered in one study hospital from July 1986 to June 1987 were also studied as controls. The perinatal mortality rate was 7.5% for MZ twins, 1.4% for DZ twins, and 0.7% for singletons. The concordance rate of perinatal death was significantly higher in MZ (60%) than in DZ (0%) twins. The prevalence of major congenital malformations was 2.7% for MZ twins, 1.0% for DZ twins, and 0.6% for singletons. The concordance rate of major congenital malformations was 18% for MZ twins, but no DZ pair was concordant in any major congenital malformation. The concordance rate of facial clefts was 29% for MZ twins. There were 2 sets of conjoined twins giving a prevalence rate of 2.7 per 100,000 deliveries. These findings showing the prevalence of perinatal mortality and major congenital malformation to be highest in MZ twins, intermediate in DZ twins and lowest in singletons, suggest the importance of intrauterine environments in the determination of perinatal mortality and congenital malformations.

Chen MJ, Chiue FL, Ho ES: Triplet pregnancy in premature ovarian failure after oocyte donation and in vitro fertilization: a case report and review of literature. Chung Hua I Hsueh Tsa Chih (Taipei) 1993 Apr;51(4):304-8 (25 ref.)
Oocyte donation in premature ovarian failure patients has become an extended indication for In Vitro Fertilization (IVF) procedure. Here the first case report is presented in Taiwan, R.O.C. of a triplet pregnancy in a patient with premature ovarian failure. After an adequate hormonal replacement therapy with oral premarin and intramuscular progesterone for endometrium preparation, the transfer on D15 of four embryos (with donated oocytes and IVF) resulted in implantation of three. Pregnancy support was provided also by oral premarin and intramuscular progesterone until the tenth week of gestational age (GA). The patient received Caesarean section at 35 weeks GA with delivery of three healthy babies weighing 2530 gm, 2420 gm, and 1810 gm respectively on Aug. 17, 1990.

Chen PP see **Kohsaka H**

Chen SJ, Vohr BR, Oh W: Effects of birth order, gender, and intrauterine growth retardation on the outcome of very low birth weight in twins.
J Pediatr 1993 Jul;123(1):132-6
We hypothesized that gender and intrauterine growth retardation (IUGR) have greater effects than birth order on mortality and morbidity rates of very low birth weight (< 1501 gm) twins. Neonatal data were collected on 44 pairs of twins born alive between January 1984 and December 1987. Birth weight was 1018 +/- 289 gm and gestational age was 28.1 +/- 2.5 weeks. The male/female ratio was 46:42; 24 infants had IUGR, and 64 were appropriate in size for gestational age. Of the 88 infants, 61 (69%) survived. Birth order had no effect on outcome. Female twin pairs had a longer gestation than either male twin pairs or twins with discordant sex (29.2 +/- 2.5 weeks vs 27.4 +/- 2.0 weeks and 27 +/- 3 weeks, respectively; $p < 0.002$). They also had a lower mortality rate (14% vs 47% and 25%; $p < 0.001$) and a lower incidence of bronchopulmonary dysplasia (22% vs 57% and 50%; $p < 0.02$). Infants with IUGR had an increased mortality rate (50% vs 23%; $p < 0.02$) and an increased sepsis rate (61% vs 25%; $p < 0.02$) compared with infants with appropriate size for gestational age who were matched for gestational age. Multiple logistic regression analysis to assess the independent effects of gestational age, gender, and IUGR on mortality rate, bronchopulmonary dysplasia, and intraventricular hemorrhage revealed that gestational age was the most significant contributor to all three outcome variables; IUGR contributed to an increased mortality rate, and male gender contributed to the occurrence of bronchopulmonary dysplasia.

Chenevix-Trench G, Healey S, Martin NG: Reproductive hormone genes in mothers of spontaneous dizygotic twins: an association study.
Hum Genet 1993 Mar;91(2):118-20
There are important genetic influences on the tendency to dizygotic (DZ) twinning and it is a plausible hypothesis that these reside in one or more of the genes coding for the major reproductive hormones. We used Southern analysis of DNA from 50 young (< 32) mothers of DZ twins, who also had a family history of DZ twinning, and 50 controls, to examine allele frequencies of five restriction fragment length polymorphisms (RFLPs) in four hormone genes coding for follicle stimulating hormone beta (FSH beta), chorionic gonadotropin beta (CG beta), inhibin beta B and gonadotropin releasing hormone (GnRH). Comparison of allele frequencies revealed no significant differences between DZ twin mothers and controls. However this does not rule out the role of these genes in the hereditary tendency of multiple ovulation in humans, since absence of linkage disequilibrium does not imply absence of linkage.

Childers JM see **McCurdy CM Jr**

Chinchón Lara I see **Rufo Campos M**

Chipuer HM see **Bergeman CS**

Chitrit Y, Zorn B, Filidori M, Robert E, Chasseray JE: Cloacal exstrophy in monozygotic twins detected through antenatal ultrasound scanning.
J Clin Ultrasound 1993 Jun;21(5):339-42 (18 ref.)

Chiue FL see **Chen MJ**

Chong ZK see **Jawan B**

Chretien P see **Cohen SY**

Christian JC see **Brandt J**

Cittadini E see **Corsello G**

Coates TJ see **Götestam KO**

Cochard C see **Cohen SY**

Cohen JY see **Plattner V**

Cohen SR see **Trotman CA**

Cohen SY, Chretien P, Cochard C, Coscas GJ: Monozygotic twin sisters with adult vitelliform macular dystrophy [letter] Am J Ophthalmol 1993 Aug 15;116(2):246-7

Coisne D see **Oriot D**

Collet M, Giovangrandi Y, Moy L, Brettes JP: [The

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value of fetal cerebro-placental velocimetry in the monitoring of twin pregnancies. Apropos of 72 consecutive cases] Rev Fr Gynecol Obstet 1993 Feb; 88(2):95-6 **(Fre)**

Collett AR see **Trotman CA**

Collins J see **McFarland JG**

Condon JT: The premenstrual syndrome: a twin study. Br J Psychiatry 1993 Apr;162:481-6
Data are presented from 157 monozygotic and 143 dizygotic female twin pairs of reproductive age who completed a self-report questionnaire on the premenstrual syndrome (PMS). For global PMS scores, the correlation coefficient for the monozygotic twins (0.55) was double that of the dizygotic ones (0.28). The results are consistent with the hypothesis that aggregation for global PMS scores is determined by genetic factors acting additively over a number of loci. Two alternative explanations are suggested: that monozygotic twins share greater environmental similarities than dizygotic ones; or that PMS scores may be a reflection of some other underlying characteristic (such as neuroticism), which is itself genetically determined.

Condon JT: Investigation of the reliability and factor structure of a questionnaire for assessment of the premenstrual syndrome. J Psychosom Res 1993 Jul; 37(5):543-51
Data are presented from 696 women who completed a 35-item retrospective self-report PMS questionnaire. Item analysis resulted in the elimination of six items which predominantly reflected physical symptomatology. The resultant (29-item) questionnaire demonstrated a coefficient alpha value of 0.94 corresponding to a very high level of internal consistency and split-half reliability. It is argued that discrepancies in previous PMS research based on questionnaire data may, in part, be due to inadequate attention being devoted to achieving homogeneity of the PMS construct. A high level of internal consistency is a necessary condition for global PMS scores to be meaningful. Factor analysis of the revised questionnaire resulted in a two factor model corresponding to 'dysphoria' and 'dysfunction'. This leads to a simple four quadrant typology of PMS which may further understanding of this 'purer' PMS construct.

Connelly A see **Giles W**

Conradi SE see **Hudgens DR**

Cook C see **Giles W**

Cornel MC see **Haring DA**

Cornel MC see **ten Kate LP**

Corsello G, Maresi E, Rossi C, Giuffrè L, Cittadini E: Thanatophoric dysplasia in monozygotic twins discordant for cloverleaf skull: prenatal diagnosis, clinical and pathological findings.
Am J Med Genet 1992 Jan 1;42(1):122-6
We present male monozygotic twins with thanatophoric dysplasia (TD) type I concordant for long bone abnormalities and discordant for cloverleaf skull. The twins were the product of the second pregnancy of unrelated parents, with advanced paternal age. Prenatal diagnosis and postmortem examination showed severe rhizomelic shortness of limbs, bowing of the long bones with "telephone-receiver" femora in both twins, and cloverleaf skull and hydrocephalus in one of them. It is now accepted that most of cases of TD, such as in the present report, represent an autosomal dominant mutation with a high new mutations rate.

Coscas GJ see **Cohen SY**

Costa PT Jr see **Bergeman CS**

Cragan JD, Martin ML, Khoury MJ, Fernhoff PM: Dye use during amniocentesis and birth defects [letter] Lancet 1993 May 22;341(8856):1352

Crawford MH see **Cates DS**

Crocker LG see **Mercer BM**

Crombach G, Göhring UJ, Günther W, Hamm W, Schmelzer M, Kribs A, Bolte A: [Prolongation of a primary twin pregnancy to the 31st week of pregnancy by surgical extraction of the 1st twin in the 17th week of pregnancy for umbilical cord prolapse] Geburtshilfe Frauenheilkd 1993 Apr; 53(4):270-2 (Eng. Abstr.) **(Ger)**
A 24-year-old woman with a twin pregnancy had a premature rupture of membranes (PROM) of the first foetus in the 16th gestational week (gw). After 9 days the umbilical cord prolapsed. In the 17th gw the foetus was extracted by vaginal hysterotomy, because of an inferior anterior wall placenta. The patient remained hospitalised receiving tocolysis, lung maturation induction and prophylactic antibiosis. The pregnancy could be prolonged for 109 days after PROM and 99 days after the extraction of the first twin. The second child was born in the 31st gw by Caesarean section, following uncontrollable labour.

Cyr DR see **Harrison SD**

D

Dalal AK see **Desai SK**

Damewood MD see **Luke B**

Danley K see **Richardson JL**

David MP see **Botchan A**

Davidson SL see **Glomb WB**

Davis G see **Wapner RJ**

Davoli E see **Marconi AM**

Deapen D see **Kumar D**

Deapen D see **Richardson JL**

de Castro JM: Genetic influences on daily intake and meal patterns of humans. Physiol Behav 1993 Apr; 53(4):777-82
The heritability of nutrient intake was investigated with 109 identical and 86 fraternal adult twin pairs who were paid to maintain 7-day food intake diaries. Both classical analysis of heritability and linear structural modeling revealed significant additive genetic influences on body size, height and weight, and body fatness (body-mass index). Significant heritabilities were also found for the amount of food energy ingested daily, as well as its macronutrient, alcohol, and water content. Linear structural modeling analysis showed that 65% of the variance in energy intake was attributable to heredity. In addition, the pattern of intake, meal frequency, size, and meal macronutrient, alcohol, and water composition, were also found to have strong heritabilities. Linear structural modeling indicated that 44% of the variance in meal frequency and 65% of the variance in meal size was attributable to heredity. However, shared, familial environment had no significant impact on the levels or pattern of intake in adulthood. These results indicate that not only body size but also the pattern and amounts of nutrients ingested by humans in natural environments are strongly influenced by the immediate environment and heredity, but not at all by the familial environment.

Deckert F see **Engelmann L**

Deeny M, Haxton MJ: Indomethacin use to control gross polyhydramnios complicating triplet pregnancy. Br J Obstet Gynaecol 1993 Mar; 100(3):281-2

De Faber JT see **De Jong PT**

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Degenhardt F see **Behrens O**

De Jong PT, Oostra BA, De Faber JT: *High symmetric* anisometropia in monozygotic twins.
Ophthalmic Paediatr Genet 1993 Mar;14(1):29–32
The first case in the literature of anisometropia of more than 20 dioptres in both left eyes of a pair of monozygotic 64-year-old twins is presented. The refractive parameters are given together with a short overview of the literature on anisometropia.

de Knijff P, Boomsma DI, de Wit E, Kempen HJ, Gevers Leuven JA, Frants RR, Havekes LM: The effect of the apolipoprotein E phenotype on plasma lipids is not influenced by environmental variability: results of a Dutch twin study. Hum Genet 1993 Apr; 91(3):268–72
We tested the influence of the apolipoprotein E (apoE) polymorphism on the intrapair differences in the levels of plasma cholesterol, plasma triglycerides, low density lipoprotein-cholesterol, apoB and apoE in monozygotic (MZ) twins, and estimated whether or not there was a interaction between the apoE polymorphism and environmental factors. In 65 MZ twin pairs, the intrapair differences in the measured lipoprotein parameters were similar in the different apoE phenotype classes. This indicates that the effect of the apoE polymorphism is not influenced by environmental variability between the MZ pair members and accordingly identifies the APOE gene as a "level" gene.

Demoly P, Bousquet J, Godard P, Michel FB: [The gene or genes of allergic asthma?] Presse Med 1993 May 15;22(17):817–21 (26 ref.) (Eng. Abstr.) **(Fre)**
Asthma is a multifactorial disease in which the hereditary component has been demonstrated by familial and identical twin studies. Allergy is important in the aetiology of asthma and is characterized by a hyperreaction to allergens triggering predominantly the immunoglobulines E. The levels of these antibodies are found to be elevated even in non allergic asthmatics. The majority of genetic research in this area is focused on either the genes of the specific immune response or that of the non allergic response. These are the genes of the class II MHC, and the APY gene on chromosome 11q respectively. The modern techniques of molecular genetics and in particular those of inverse genetics have recently contributed to a more comprehensive understanding of this disease.

Denckla MB see **Reiss AL**

Derom C, Derom R, Vlietinck R, Maes H, Van den Berghe H: Iatrogenic multiple pregnancies in East Flanders, Belgium. Fertil Steril 1993 Sep;60(3):493–6
OBJECTIVE: To evaluate the specific contribution of artificial induction of ovulation to the increasing number of multiple gestations in East Flanders and the effects of this treatment on the frequencies of monozygotic and dizygotic twinning. DESIGN: Since 1976 the East Flanders Prospective Twin Study has collected data on artificial induction of ovulation for all the multiple births listed in its registry. SETTING: East Flanders Prospective Twin Survey. PATIENTS: Between 1976 and 1992, 458 twin and 78 triplet pregnancies resulting from artificial induction of ovulation were analyzed. MAIN OUTCOME MEASURES: Zygosity and frequency of iatrogenic multiple births. RESULTS: Since 1985 there is an explosive increase in twin and triplet births in East Flanders. This increase has been caused mainly by the sole use of fertility-enhancing drugs and in the last few years by resorting to other technologies of assisted reproduction, such as IVF-ET, GIFT, or zygote intrafallopian transfer. CONCLUSION: In view of the elevated risk inherent to multiple pregnancies in terms of perinatal mortality and morbidity, the over enthusiastic or improper use of fertility drugs should be curtailed.

Derom R see **Derom C**

Desai SK, Allahbadia GN, Dalal AK: Selective reduction of multifetal pregnancies in the first trimester using colour Doppler ultrasonography. Hum Reprod 1993 Apr;8(4):642–4
In pregnancies with multiple gestation, an adverse outcome is directly proportional to the number of fetuses within the uterus, primarily because of an increased predisposition to premature delivery. Although there is a good deal of information about multifetal reduction in triplets and quadruplets and even quintuplets, there is very little on sextuplets, and virtually nothing on septuplets. Among the different techniques proposed for selective termination, two approaches have been more widely adopted: transcervical aspiration and transabdominal needling of the embryo using grey scale ultrasonography, but as yet there is no report on multifetal reduction using colour Doppler ultrasound. A method for selective termination of multiple pregnancy using transabdominal colour Doppler ultrasonography has been described here for the first time in a case of septuplets.

Deter RL see **Hata T**

Devroey P see **Bollen N**

de Wit E see **de Knijff P**

Dhar A see **Chadha R**

Diamond M see **Whitam FL**

Diskin MG see **Morris DG**

Divon MY, Marin MJ, Pollack RN, Katz NT, Henderson C, Aboulafia Y, Merkatz IR: Twin gestation: fetal presentation as a function of gestational age. Am J Obstet Gynecol 1993 May; 168(5):1500–2
OBJECTIVE: Our objective in this study was to evaluate the rate of spontaneous version in twin gestation throughout the third trimester. STUDY DESIGN: Serial ultrasonographic examinations were performed on 119 consecutive patients with twin gestation. The incidence of spontaneous version as a function of gestational age was calculated. RESULTS: The mean birth weight and gestational age at delivery were 2640 gm and 37 weeks, respectively. Nineteen percent had birth weight discordancy, and 37% were delivered by cesarean section. The incidence of spontaneous version decreased from 60% at 28 to 30 weeks' gestation to 25% to 30% at term. The lowest incidence of spontaneous version was observed in pregnancies with a cephalic-cephalic presentation (7%). All other presentations were relatively unstable. Neither the patients' parity nor the presence of birth weight discordancy, the placental location, or the amniotic fluid volume had a significant association with the incidence of spontaneous version. CONCLUSION: These data should be incorporated into the routine antepartum counseling of patients with twin gestation. Their use in this capacity may result in a decreased cesarean delivery rate if clinicians realize that malpresentations may spontaneously resolve before the onset of labor.

Dommergues M see **Evans MI**

Doumerc S see **Fernandez H**

Drack G, Kind C, Lorenz U: [Management of mono-amnion twin pregnancy]
Geburtshilfe Frauenheilkd 1993 Feb;53(2):100–4 *(Eng. Abstr.)* **(Ger)**
There have been only a few reports on monoamniotic twin pregnancies from the period of

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modern perinatology. Consequently, available recommendations about the management of these high-risk pregnancies are uncertain. In this study, we present the management and the outcome of three monoamniotic twin pregnancies and two further pregnancies with acardiac acephalus twin in comparison to other case reports and case series from the literature. Practical ways of caring for these high-risk pregnancies are outlined, emphasising the continuous search for entanglement of umbilical cord by ultrasound and cardiotocography. The special importance of intensified cardiotocographic monitoring is demonstrated.

Drucker BJ see **Hanley FL**

Drugan A, O'Brien JE, Gambino R, Johnson MP, Evans MI: Similarity of twins to singleton maternal serum alpha-fetoprotein ratio by race: no need to establish specific multifetal tables.
Fetal Diagn Ther 1993 Mar-Apr;8(2):84-8
The purpose of this study was to assess the need for race-specific maternal serum alpha-fetoprotein (MSAFP) curves in twin gestations. MSAFP values were evaluated in 535 samples obtained from twin gestations. Results were grouped according to gestational age (from 15 to 20 weeks), as with our singletons. Separate median curves were determined for black and for white pregnancies. On average, the median serum alpha-fetoprotein (AFP) for twins was about twice (2.1 +/- 0.3) the median of singletons. MSAFP in blacks was commonly higher than in white pregnancies of comparable gestational age. Using a 4.5 multiple of the singleton median cutoff in twin white pregnancies, 3.9% of the results were defined as 'high', similar to the rate observed in singleton pregnancies. 'Low' results in twins were defined as AFP values lower than 1.0 multiples of the singleton median (in pregnancies of similar gestational age and race). About 7% of the serum samples for whites were defined as 'low' by this criteria. Data for blacks were comparable.
Race-dependent median values should be used for MSAFP interpretation in twin as well as singleton pregnancies. 'High' and 'low' percentages are comparable to our large data bank of singleton pregnancies and seem to be adequate for interpretation of serum AFP in twins. Therefore, the race-specific singleton multiples are sufficient, obviating the need to build specific median curves for multifetal gestations.

Drugan A see **Kol S**

du Bois A see **Prömpeler HJ**

Dubrey SW, Reaveley DA, Leslie DG, O'Donnell M, O'Connor BM, Seed M: Effect of insulin-dependent diabetes mellitus on lipids and lipoproteins: a study of identical twins. Clin Sci (Colch) 1993 May; 84(5):537-42
1. Forty-five identical twin pairs, discordant for insulin-dependent diabetes mellitus, were studied with respect to their serum lipid (high-density lipoprotein, low-density lipoprotein, total cholesterol and triacyl-glycerol) and apoprotein [apoprotein A-I, apoprotein B and lipoprotein (a)] concentrations and apoprotein (a) phenotypes. The twins were compared with an age- and sex-matched non-diabetic control group. 2. A significantly higher value was found only for high-density lipoprotein cholesterol in the diabetic twins of the female twin pairs. 3. Highly significant correlations existed between the twin pairs for all lipids and lipoproteins measured, particularly lipoprotein (a), for which identical apoprotein (a) isoforms were also found. 4. Correlations existed between the non-diabetic twins and the control subjects for high-density lipoprotein cholesterol and apoprotein A-I, probably due to the rigorous matching of control subjects. 5. The similarity between values for lipids and lipoproteins in the non-diabetic twins and control subjects suggested no effect of a genetic susceptibility to insulin-dependent diabetes mellitus. The differences in lipoproteins we describe for the identical twins discordant for insulin-dependent diabetes mellitus, in whom there was no evidence of a raised urinary albumin excretion rate, does not appear to explain the excess mortality from cardiovascular disease reported in patients with this disease.

Duffy DL: Twin studies in medical research [letter; comment] Lancet 1993 May 29;341(8857):1418-9

Duffy DL, Spelman LS, Martin NG: Psoriasis in Australian twins. J Am Acad Dermatol 1993 Sep; 29(3):428-34
BACKGROUND: Occurrence of psoriasis has been found to be strongly genetically controlled in Northern European and U.S. twin and family studies. OBJECTIVE: Our purpose was to assess cumulative incidence and heritability of psoriasis in the Australian population. METHODS: Australian twins reporting psoriasis on a screening questionnaire received from 3808 pairs were mailed a detailed instrument designed to validate the diagnosis, supplemented by telephone interview and examination of medical records. RESULTS: Only 94 of 160 subjects who screened positive were confirmed to have psoriasis. The cumulative incidence of confirmed psoriasis was 2% in 30- to 60-year-old subjects. The monozygotic twin casewise concordance for confirmed psoriasis was 35% (12 of 34 pairs), and the dizygotic twin concordance 12% (5 of 43 pairs), giving an estimated heritability of 80%, was similar to that found in a genetic reanalysis of three previous twin studies. A case-control analysis of psoriasis-discordant twin pairs found no evidence for influences of alcohol or coffee intake, overweight, birth weight, or personality in the origin of psoriasis.
CONCLUSION: Occurrence of psoriasis in the Australian population is highly heritable, but identical twins are often discordant; the factor responsible for the onset of disease in one twin and not the other is unclear.

Dumez Y see **Evans MI**

Durfee MJ see **Glomb WB**

Dwyer JH see **Kumar D**

E

Eaves LJ, Silberg JL, Hewitt JK, Rutter M, Meyer JM, Neale MC, Pickles A: Analyzing twin resemblance in multisymptom data: genetic applications of a latent class model for symptoms of conduct disorder in juvenile boys.
Behav Genet 1993 Jan;23(1):5-19
A model based on the latent class model is developed for the effects of genes and environment on multivariate categorical data in twins. The model captures many essential features of dimensional and categorical conceptions of complex behavioral phenotypes and can include, as special cases, a variety of major locus models including those that allow for etiological heterogeneity, differential sensitivity of latent classes to measured covariates, and genotype x environment interaction (G x E). Many features of the model are illustrated by an application to ratings on eight items relating to conduct disorder selected from the Rutter Parent

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Questionnaire (RPQ). Mothers rated their 8- to 16-year-old male twin offspring [174 monozygotic (MZ) and 164 dizygotic (DZ) pairs]. The impact of age on the frequency of reported symptoms was relatively slight. Preliminary latent class analysis suggests that four classes are required to explain the reported behavioral profiles of the individual twins. A more detailed analysis of the pairwise response profiles reveals a significant association between twins for membership of latent classes and that the association is greater in MZ than DZ twins, suggesting that genetic factors played a significant role in class membership. Further analysis shows that the frequencies of MZ pairs discordant for membership of some latent classes are close to zero, while others are definitely not zero. One possible explanation of this finding is that the items reflect underlying etiological heterogeneity, with some response profiles reflecting genetic categories and others revealing a latent environmental risk factor. We explore two "four-class" models for etiological heterogeneity which make different assumptions about the way in which genes and environment interact to produce complex disease phenotypes. The first model allows for genetic heterogeneity that is expressed only in individuals exposed to a high-risk ("predisposing") environment. The second model allows the environment to differentiate two forms of the disorder in individuals of high genetic risk. The first model fits better than the second, but neither fits as well as the general model for four latent classes associated in twins. The results suggest that a single-locus/two-allele model cannot fit the data on these eight items even when we allow for etiological heterogeneity. The pattern of endorsement probabilities associated with each of the four classes precludes a simple "unidimensional" model for the latent process underlying variation in symptom profile in this population. The extension of the approach to larger pedigrees and to linkage analysis is briefly considered.

Eaves LJ see **Kendler KS**
Eaves LJ see **Moskowitz WB**
Eaves LJ see **Neale MC**
Edwards K see **Austin MA**
Ehlen T see **Miller D**
Eisen SA see **True WR**
Eisman JA see **Kelly PJ**
Ekstrand M see **Götestam KO**
Ellings JM see **Bivins HA Jr**
Elliott JP see **Strong TH Jr**
Elsås T see **Sjaastad O**
Engelmann B see **Engelmann L**

Engelmann L, Ruckhäberle KE, Engelmann B, Scheel H, Vogtmann C, Deckert F: [Gestosis, thrombophilia and pulmonary embolism in a primipara with twin pregnancy] Z Gesamte Inn Med 1993 Apr; 48(4):190-6 (Eng. Abstr.) **(Ger)**
This is a case report on a course of gemini-pregnancy complicated by gestosis, recurrent submassive pulmonary embolism and discordant growth of the hypotrophic twins. It is concluded from this report that: 1. the AT-III-deficiency in gestosis can be caused by loss and consumption; 2. due to decrease below a critical AT-III-level the coagulation-fibrinolysis system tends to decompensate, reflected in a disseminated intravascular coagulation and/or a pulmonary embolism. The tendency consists particularly in immobilisation and stasis; 3. the daily determination of AT III, better of TAT-complex and D-dimer, the daily clinical examination regarding signs of thrombosis and in cases of heparinization the measurement of PTT several times daily, are necessary to avoid or recognise disorders, of the coagulation-fibrinolysis-system at an early stage. 4. The increased consumption in coagulation systems can be avoided by AT-III substitution and correct heparinisation. 5. In cases of risk of pulmonary embolisation in pregnancy a cava filter should be temporarily implanted. The filter must be changed every 3 days, if it is required for a longer period. 6. In high-risk pregnancy the check for factors of thrombophilia is a basic diagnostic procedure.

Enomoto T see **Yasuda S**
Eriksson AW see **Fellman JO**
Eulaers E see **Gerris J**

Evans MI, Dommergues M, Wapner RJ, Lynch L, Dumez Y, Goldberg JD, Zador IE, Nicolaides KH, Johnson MP, Golbus MS, et al: Efficacy of transabdominal multifetal pregnancy reduction: collaborative experience among the world's largest centers. Obstet Gynecol 1993 Jul;82(1):61-6
OBJECTIVE: To evaluate the safety and efficacy of transabdominal multifetal pregnancy reduction (MFPR) in the management of iatrogenic and spontaneous multifetal pregnancies. METHODS: Data were combined from 463 completed pregnancies that underwent MFPR at major worldwide centers. RESULTS: Multifetal pregnancy reduction was performed with a 100% technical success rate (there were no failed procedures); 83.8% had delivery of potentially viable fetuses (defined as 24 weeks' gestation or later), and 83.5% of these viable pregnancies delivered at 33 weeks or later. The risk of fetal loss was 3.9% at 2 weeks or less post-procedure, 4.6% at 4 weeks or less, and 16.2% at less than 24 weeks of gestation. Gestational age at delivery varied principally with the number of fetuses remaining, with 7.1% delivering prematurely at less than 28 weeks, and 9.4% at 29-32 weeks. The incidence of obstetric and medical complications appeared to be unaffected, and there was no increase in congenital malformations. CONCLUSIONS: Multifetal pregnancy reduction is an efficient and safe way of improving outcome in multifetal pregnancies, unambiguously for quadruplets or more, and arguably for triplets. However, particularly at higher starting numbers, there are still suboptimal outcomes. We cannot answer the question of whether MFPR should be offered to women with triplets or twins. The only major risk appears to be fetal loss per se, and because the procedure itself does not damage the survivors, parental autonomy should be given a higher priority in the decision process than previously. However, to obviate the need for this procedure, infertility specialists must continue to be vigilant in the use of fertility drugs.

Evans MI see **Drugan A**

F

Fanelli R see **Marconi AM**
Fedele L see **Parazzini F**

Fellman JO, Eriksson AW: Biometric analysis of the multiple maternities in Finland, 1881-1990, and in Sweden since 1751. Hum Biol 1993 Jun;65(3):463-79
Hellin's law states that if the twinning rate is w, then the triplet rate is w2, the quadruplet rate is w3, and so forth. The opinion of today is that Hellin's law holds only approximately. In this study the inaccuracy of Hellin's law is studied and the discrepancies are explained mathematically. In our earlier studies we built linear models for the twinning

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rate. Because most of the mothers are younger than 40 years of age and because in this age interval the twinning rate depends linearly on age, linear regression methods have been applied. Hellin's law suggests using the square-root transformation of the triplet rate r. Statistical arguments speak in favor of using the arcsin square root of r transformation. We discuss both transformations. Despite the fact that Hellin's law is only approximate, the arcsin transformation proves valuable. The transformed triplet rate can be modeled in a way similar to the twinning rate. We consider secular data from Finland for 1881–1990 and from Sweden since 1751. Using Hellin's law, we compare the triplet rates and the twinning rates and study the time trends of the observed twinning and triplet rates. The data are standardized. Our theoretical results are applied to multiple maternity data for Finland. Using maternal age as the regressor, we build a linear model for the twinning rate and for the arcsin-transformed triplet rate. This analysis shows a decreasing linear time trend in the triplet series for the period 1881–1950 but not in the twinning series. The triplet rate has an increasing trend after 1960, which seems to be mainly caused by artificial induction of ovulation.

Fennessey PV see **Marconi AM**

Ferchiou M see **Zhioua F**

Fernandez H, Lelaidier C, Doumerc S, Fournet P, Olivennes F, Frydman R: Nonsurgical treatment of heterotopic pregnancy: a report of six cases.
Fertil Steril 1993 Sep;60(3):428–32
OBJECTIVE: To evaluate nonsurgical management of heterotopic pregnancy. DESIGN: Retrospective case series. SETTING: Department of Obstetrics and Gynecology (Antoine Béclère Hospital, Clamart, France, Paris-Sud University). PATIENTS: Six women with heterotopic pregnancy who conceived in four cases after ovulation induction. INTERVENTION: Transvaginal ultrasound (US)-guided aspiration/injection of potassium chloride (KCl) was performed in three cornual pregnancies with alive embryo. Expectant management was realized in three other cases. The regression was followed by serial US examination. MAIN OUTCOME MEASURES: Early and late complications related to the procedure, outcome of intrauterine pregnancy (IUP). RESULTS: Five of six patients were treated successfully (3 with KCl and 2 after expectant management). Three of these five patients had a spontaneous vaginal delivery, and two abortions occurred in the remaining two patients. Salpingectomy had to be performed in one case 10 days after medical treatment. This twin pregnancy ended with an abortion at 23 weeks of amenorrhea. Four cornual heterotopic pregnancies were treated successfully. No complication occurred after the initial management. CONCLUSION: Ultrasound permits a reliable and early diagnosis of heterotopic pregnancy. In such cases nonsurgical management is an efficient alternative with a good IUP prognosis.

Fernhoff PM see **Cragan JD**

Fignon A, Hamamah S, Body G, Royere D, Gold F, Berger C, Lansac J: Delayed interval delivery in quadruplet pregnancy: a case report.
Hum Reprod 1993 Apr;8(4):649–51
A case report of delayed delivery of a quadruplet pregnancy is presented. This quadruplet pregnancy resulted from in-vitro fertilization. To our knowledge, this case represents the first report of quadruplets delivered on three separate days using the technique of delayed interval delivery. All infants survived and are healthy 2 years later.

Filidori M see **Chitrit Y**

Filly RA see **Fries MH**

Fischbein S see **Akerman BA**

Fischbein S see **Lange AL**

Fitzcharles EK see **Hyde TM**

Flerlage M see **Utz U**

Florjański J, Zalewski J, Woytoń J: [Ultrasonographic evaluation of growth in twin pregnancies in the population of Wrocław. I] Ginekol Pol 1993 Mar; 64(3):123–8 (Eng. Abstr.) **(Pol)**
Authors have ultrasonographically evaluated and analysed appropriate parameters determining fetal growth in bigeminal pregnancies in the population of Wrocław. The following parameters were taking in consideration: biparietal head dimension (BPD), transversal chest dimension (THD) and thigh bone length (FL). After the comparative analysis of the average BPD, THD, and FL values in fetuses from 28–40th single fetus and bigeminal pregnancies authors revealed, that BPD and TDH values were significantly smaller in twins that single fetuses. No correlation was found in FL values in both groups. In the aim to obtain more accurate evaluation of intrauterine growth in twins. Authors proposed an application of special ultrasonographic BPD and THD parameters net-works, different from those applicable for primiparous pregnancies.

Florjański J, Zalewski J, Woytoń J: [Ultrasonic evaluation of fetal growth of twins in the Wrocław population. II. Proposed percentile curves of ultrasonographic parameters] Ginekol Pol 1993 Mar; 64(3):129–32 (Eng. Abstr.) **(Pol)**
Authors analyzed and evaluated biparietal head dimension (BPD), transversal chest dimension (THD) and femur length (FL) measured in the fetuses from 28 to 40th week in bigeminal pregnancies on the material of Wrocław population. Obtained results were presented as percentile curves of each parameter in succeeding weeks of pregnancy. In the face of findings in the 1st part of work (statistically lower parameters BPD and THD in twins in confrontation with fetuses in single fetus pregnancies and lack of correlations between FL dimensions), authors are of opinion that, for accurate evaluation of twins growth in examined population, in the period from 28 to 40 weeks of pregnancy, the application of ultrasonographical parameters net-work of BPD and THD parameters in necessary. Moreover, the authors are considering that the presented percentile BPD and THD curves may make a graphic image of twins intrauterine growth in the evaluated population.

Flower J see **Murray HG**

Folstein MF see **Brandt J**

Ford AM, Ridge SA, Cabrera ME, Mahmoud H, Steel CM, Chan LC, Greaves M: In utero rearrangements in the trithorax-related oncogene in infant leukaemias. Nature 1993 May 27;363(6427):358–60
The majority (approximately 75%) of infant acute leukaemias have a reciprocal translocation between chromosome 11q23 and one of several partner chromosomes. The gene at 11q23 (named MLL, ALL-1, HRX or HTRX-1; refs 2–6) has been cloned and shares homology with the Drosophila developmental gene trithorax. Rearrangements of this gene (called HRX here) occur in introns and cluster in a region of approximately 10 kb; individual patients have different breakpoints. Here we describe three pairs of infant twins with concordant leukaemia who each share unique (clonal) but non-constitutive HRX rearrangements in their leukaemic cells, providing evidence that the leukaemogenic event

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originates in utero and unequivocal support for the intra-placental 'metastasis' hypothesis for leukaemia concordance in twins.

Ford R see **Brodsky MC**

Fortuny A see **Soler A**

Fournet P see **Fernandez H**

Franceschini D see **Franceschini P**

Franceschini P, Guala A, Vardeu MP, Franceschini D: Monozygotic twinning and Wiedemann-Beckwith syndrome [letter] Am J Med Genet 1993 May 15; 46(3):353-4 (8 ref.)

Frants RR see **de Knijff P**

Freund L see **Reiss AL**

Fries MH, Goldstein RB, Kilpatrick SJ, Golbus MS, *Callen PW, Filly RA:* *The role of velamentous cord* insertion in the etiology of twin-twin transfusion syndrome. Obstet Gynecol 1993 Apr;81(4):569-74

OBJECTIVE: To evaluate the prevalence of velamentous cord insertion in twin-twin transfusion using the hypothesis that such insertions may contribute to the etiology of the condition.

METHODS: All cases of placentas referred for pathologic evaluation at the University of California at San Francisco from 1984-1992 were reviewed for the citation of diamniotic-monochorionic placentation, including the presence of velamentous cord insertions. Maternal and infant records were studied for findings consistent with twin-twin transfusion syndrome. RESULTS: Thirty-eight cases of monochorionic-diamniotic twins were identified, 11 of which showed twin-twin transfusion syndrome. The prevalence of velamentous cord insertion in the transfusion syndrome subset was 63.6%, compared with 18.5% in those without (significant difference at $P < .01$). Twin-twin transfusion syndrome pregnancies with velamentous insertions were delivered at a significantly earlier *gestational age; they also had fewer surviving infants* and were more likely to have been treated prenatally than transfusion syndrome pregnancies without velamentous insertion, although these latter two findings were not significantly different.

CONCLUSIONS: Velamentous cord insertions are more common in twin-twin transfusion syndrome pregnancies and may contribute to the development of profound disparity in fluid volume because the membranously inserted cord can be easily compressed, reducing blood flow to one twin. Large-volume amniocentesis may reduce this compressive force on the cord insertion, thus explaining the success of this mode of intervention.

Frydman R see **Fernandez H**

Fuchi I, Noda K: Twin umbilical cord blood gas values. Acta Genet Med Gemellol (Roma) 1992; 41(2-3):137-42

In vaginally delivered births (including a few cases where the mothers were under epidural anesthesia), differences between first and second born twins were compared according to presentation at delivery. Of twins with vertex/vertex presentation in 15 primipara cases and in 14 multipara cases, pO2 levels for the second born were significantly lower (both being $p < 0.05$) than for the first born. Of twins vertex/non-vertex presentation, the second born in 9 primipara cases showed significantly lower pH, pO2 and HCO3 levels ($p < 0.05$). Also for multipara twins, the second born had significantly lower pH ($p < 0.05$) and significantly higher pCO2 ($p < 0.05$) values. Umbilical cord blood gas value findings indicate unfavourable conditions for second born twins.

Fuchi I, Okumra Y, Noda K: Perinatal management of twin pregnancy.

Acta Genet Med Gemellol (Roma) 1992; 41(2-3):149-53

Of 104 cases, 38 (ie, 36.53%) experienced premature delivery (controls: 4.32%). In instances of threatened premature delivery, 28 cases (26.92%) underwent ligation of the cervix. EPH gestosis occurred in 62 cases--a high incidence rate of 59.61% (controls: 12.9%). Forty-nine cases (47.11%) were complicated by anemia (controls: 8.36%). There were 57 cases of SFD infants, again a high 27.40% incidence rate (controls: 5.94%). Apgar scores of 7 or less at 1 minute after birth indicated that of the 208 neonates, the second-born twin only in 20 cases (9.61%); both infants in 14 cases (6.73%); and, the first-born only in 3 cases (1.44%), developed asphyxia neonatorum. Given the high incidence of premature and immature infants in cases of twins, caution should be employed against threatened premature delivery from around the 28th week of gestation onwards. Ligation of the cervix with ritodrine administration should be performed following admission to hospital, and EPH gestosis, anemia and IUGR should be carefully monitored.

Fukumitsu K see **Ohashi Y**

G

Gambino R see **Drugan A**

Gangestad SW, Simpson JA: Development of a scale measuring genetic variation related to expressive *control. J Pers 1993 Jun;61(2):133-58*

It has been theorized that a substantial genetic component underlies the Self-Monitoring Scale. The identity of this component, however, is not yet known. In order to identify and better understand it, a more precise measure of the component is required. The present research attempted to (a) identify an axis of the self-monitoring two-factor space with maximum genetic variance; and (b) bootstrap a scale more highly correlated with this *genetic maximum than is the Self-Monitoring Scale* using twins. Evaluation of the new scale against criteria of validity indicates that scale construction was reasonably successful. The new measure had a cross-validated monozygotic twin intraclass correlation of .76 and a dizygotic twin intraclass correlation of .16. This work yields a new research tool and suggests a new approach to personality assessment. Correlates of the new measure as well as theoretical and methodological issues relevant to the measurement of a latent genetic entity are discussed.

Gara F see **Zhioua F**

Geerts L see **Nijs M**

Gemayel NS see **Kumar D**

Gerris J, Eulaers E, Joostens M, Jacquemyn Y, Loquet P, Verdonk P, Buytaert P: Successful triplet pregnancy in a patient with a unicornuate uterus with a cavitary communicating rudimentary horn. Hum Reprod 1993 Feb;8(2):338-41

In a patient with primary infertility, ovulation was induced by monitored stimulation with human menopausal gonadotrophins (HMG) because of polycystic ovarian disease. Infertility work-up had shown a unicornuate uterus with a cavitary communicating rudimentary horn. The husband showed a varicocele-related moderate oligo-asthenoteratozoospermia. A triplet pregnancy occurred in a third HMG ovulation induction cycle combined with intra-uterine insemination of the husband's washed semen. The pregnancy was carefully monitored, and measures to prevent

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premature delivery were taken. Because of the patient's obvious discomfort in the presence of premature labour, Caesarean section was performed at 33 weeks gestation and three healthy infants were delivered. This is the first report of a successful triplet pregnancy in a women with a unicornuate uterus. The reproductive and obstetric outcome of this condition in general, and in the case of multiple pregnancy, is discussed.

Gevers Leuven JA see **Boomsma DI**
Gevers Leuven JA see **de Knijff P**
Ghetler Y see **Shulman A**
Giles W, Trudinger B, Cook C, Connelly A: Placental microvascular changes in twin pregnancies with abnormal umbilical artery waveforms.
Obstet Gynecol 1993 Apr;81(4):556-9
OBJECTIVE: To determine whether there is a relationship between umbilical artery Doppler waveforms and placental histology in twin pregnancies. METHODS: The placental vasculature was examined histologically in 41 cases of twin pregnancy in women who had undergone antenatal Doppler umbilical artery waveform analysis. RESULTS: Those fetuses with abnormal systolic-diastolic ratios (S/Ds) showed a reduction in the placental tertiary stem villi arterial vessels compared with fetuses with normal S/Ds. The mean count of small arterial vessels (diameter less than 90 mu) in the placentas from cases with normal S/Ds (below the 95th percentile) was 5.6, whereas the mean arterial count for those with high S/Ds (above the 99th percentile) was 3.9 ($P = .039$). CONCLUSIONS: In twin pregnancies complicated by placental insufficiency, there is microvascular disease restricted to the placenta of the affected fetus. This suggests that the placental vascular lesion originates in the fetal circulation rather than in the uteroplacental vasculature.

Gillor A see **Korsch E**
Giordano F see **Marguery MC**
Giovangrandi Y see **Collet M**
Giuffrè L see **Corsello G**
Glasser SA, Zaeri NN, Nisenbaum H: Body stalk deformity in a twin pregnancy: case report and review. Md Med J 1993 Feb;42(2):175-8
Body stalk deformity is a variety of the limb-body wall complex (LBMC)--the rare, complicated, congenital process believed to result from early rupture of the amnion and vascular disruption. Here we report a case of this anomaly in a twin pregnancy and describe the prenatal ultrasound findings.

Glezerman M see **Meizner I**
Glomb WB, Davidson SL, Lee SS, Durfee MJ: Twins and HIV [letter; comment] Pediatrics 1993 May; 91(5):1019-20
Godard P see **Demoly P**
Göhring UJ see **Crombach G**
Golbus MS see **Evans MI**
Golbus MS see **Fries MH**
Gold F see **Fignon A**
Gold JM see **Goldberg TE**
Gold JM see **Randolph C**
Goldberg J see **True WR**
Goldberg JA see **Barwick WJ**
Goldberg JD see **Evans MI**
Goldberg TE, Torrey EF, Gold JM, Ragland JD, Bigelow LB, Weinberger DR: Learning and memory in monozygotic twins discordant for schizophrenia. Psychol Med 1993 Feb;23(1):71-85 (82 ref.)
Learning and memory were assessed in 24 monozygotic (MZ) pairs of individuals discordant for schizophrenia or delusional disorder and seven normal pairs of MZ twins. On declarative memory tasks, the affected group displayed a pattern that might best be characterized as dysmnesic in that they performed significantly worse than the discordant unaffected group on story recall, paired associated learning, and visual recall of designs, but they learned over time, had relatively preserved recognition memory, and did not show profoundly accelerated rates of forgetting. Effortful, volitional retrieval from the lexicon, measured by verbal fluency, was also compromised in the affected group. On the other hand, procedural learning of the motor skill in a pursuit rotor task was relatively intact in the affected group. Comparisons of the normal group and unaffected group indicated that the latter group had very mild impairments in some aspects of episodic memory, namely, immediate and delayed recall of stories and delayed recall of designs. It is highly unlikely that the impairments observed in the affected group can be attributed to differences in genome, family environment, socioeconomic circumstance, or educational opportunity, as all of these were controlled by the twin paradigm. Rather, the impairments appear to be related to the intercession of disease. The neuropsychological profile is consistent with frontal lobe and medial temporal lobe dysfunction, as noted in this sample as well as other samples of schizophrenic singletons. Significant correlations between many measures of memory and global level of social and vocational functioning within the discordant group were also found. Thus difficulties in rapidly acquiring new information and propitiously retrieving old information may burden patients with schizophrenia in many of the transactions of everyday life.

Goldberg TE see **Randolph C**
Goldstein RB see **Fries MH**
Gómez de Terreros I see **Rufo Campos M**
Goodman R: 'Cerebral palsy in twins' [letter; comment] Dev Med Child Neurol 1993 Apr;35(4):370
Götestam KO, Coates TJ, Ekstrand M: Handedness, dyslexia and twinning in homosexual men.
Int J Neurosci 1992 Apr;63(3-4):179-86
A study of handedness, dyslexia, stuttering and twinning, was included in a study of sexual habits of homosexual men. A questionnaire was mailed to homosexuals, and 394 forms suitable for data analysis were received. The results showed an increased rate of lefthand writing (17.5% compared to 8-8.4%), and a clear left shift. There were increased occurrence of both stuttering (7.1% compared to 1.6%) and reading difficulties (7.9% compared to 1-3%). The incidence of twins was lower than the population (1.3%). The results confirm earlier attempts to show a left shift in homosexuals, and support Geschwind's hypotheses about etiological factors for both lefthandedness and homosexuality.

Goullier-Fleuret A see **Pelloux H**
Grall JY see **Pangui E**
Greaves M see **Ford AM**
Green K see **Reiss AL**
Groneck P see **Korsch E**
Guala A see **Franceschini P**
Gulati N see **Sharma JB**
Günther W see **Crombach G**

H

Hader W see **Sadovnick AD**
Hales CN see **Phillips DI**
Hamada F see **Yoshimura K**
Hamamah S see **Fignon A**
Hamm W see **Crombach G**

AUTHOR SECTION

Hammitt DG see **Wenstrom KD**

Hanley FL, Drucker BJ, Turley K, Silverman NH: Reconstruction of hypoplastic aortic arch and coarctation in a 720-gram premature infant.
J Pediatr Surg 1993 May;28(5):731-4
The case of a 720-g infant born at 29 weeks of gestation who underwent successful surgical correction of a hypoplastic aortic arch and aortic coarctation is presented. The infant was initially brought to surgery with an echocardiographic diagnosis of patent ductus arteriosus with left to right shunt unresponsive to indomethacin therapy. The correct diagnosis of hypoplastic aortic arch and severe coarctation with ductal dependent blood flow to the lower body was made intraoperatively. This case illustrates the danger of limited diagnostic testing in premature infants assumed to have isolated patent ductus arteriosus, and also that these small infants can undergo successful surgical repair of complex aortic arch lesions.

Hansen HE, Søndervang A: DNA profiles of chimeric twins, TS and MR using the single-locus-probe technique. Hum Hered 1993 Mar-Apr;43(2):98-102
A pair of blood-group-chimeric twins, TS and MR and their family have been investigated with the single-locus-probe DNA technique for restriction fragment length polymorphism in five variable-numbers-of-tandem-repeat systems. An admixture of DNA from the other twin could be demonstrated in both twins, leading to a possible false-genotype determination in at least one system. Chimerism is a potential pitfall in DNA investigations with single-locus probes in forensic genetics.

Harii K see **Yokomori K**

Haring DA, Cornel MC, van der Linden JC, van Vugt JM, Kwee ML: Acardius acephalus after induced ovulation: a case report. Teratology 1993 Apr; 47(4):257-62
An excess of structural defects occurs in monozygotic twins compared to dizygotic twins or singletons. Among these defects the acardius acephalus or chorangiopagus parasiticus is one of the most rare and severe and a possible cause of pathology to the other twin. Ovulation induction by clomiphene causes an increased frequency of multiple gestation and possibly of monozygotic multiple pregnancy. In the present report, we describe a prenatally diagnosed and autopsied case of acardius acephalus from a pregnancy established after ovulation induction by clomiphene. Approximately 1.4% of pregnancies are accomplished after use of ovulation inducing medication in the Netherlands. A possible etiological role of clomiphene justifies close monitoring of future cases.

Harrison SD, Cyr DR, Patten RM, Mack LA: Twin growth problems: causes and sonographic analysis. Semin Ultrasound CT MR 1993 Feb;14(1):56-67
Understanding the significant increased risks associated with twin pregnancies requires knowledge of the embryogenesis of twins and the unique placental characteristics seen only in twin gestations. Dizygotic "fraternal" twins, 70% of all twins, are at relatively low risk when compared with monozygotic twins, largely due to abnormalities seen in association with monochorionic placentation. The sonographic determination of chorionicity and amnionicity allows better estimation of pregnancy risk--up to 50% mortality in monochorionic-monoamniotic twins. Careful evaluation of intrauterine twin growth assists in the early identification of fetal abnormalities because normal twin growth should parallel that of singleton pregnancies until late in the third trimester. A number of the unique complications affecting growth in twin pregnancies are discussed, including twin transfusion syndrome, the "stuck twin" phenomenon, twin embolization syndrome, and development of acardiac twins.

Hashimoto L see **Sadovnick AD**

Hashimoto SA see **Sadovnick AD**

Hashino K see **Iwasaka H**

Hata T, Deter RL, Hill RM: Evaluation of triplet growth status at birth using individualized growth assessment: comparison with conventional methods and development of a new classification system.
J Clin Ultrasound 1993 Sep;21(7):415-21
A new growth classification system for triplets based on individual growth curve standards provides new information on the growth status of triplets at birth. OBJECTIVES. The objectives of this study were to characterize growth outcome at birth in triplet pregnancies using Individualized Growth Assessment methods, and to compare these results to conventional methods of growth outcome evaluation. STUDY DESIGN. Rossavik growth models derived from second-trimester ultrasound measurements were used to predict the birth characteristics of 21 triplet neonates. Actual measurements of weight, head, abdominal, and thigh circumferences at birth were compared to population standards and to predicted values, the latter by calculation of Growth Potential Realization Index (GPRI) values. GPRI values were calculated using singleton (measurement procedure correction) and triplet (measurement procedure correction+decreased soft tissue deposition) correction factors (SCF, TCF). Neonatal Growth Assessment Scores (NGAS) were calculated using both sets of GPRI values. RESULTS. Three types of triplet neonates were identified. Group I (33.3%) were normal with both types of NGAS values, had very few abnormal GPRI values or anatomic measurements, and were all appropriate for gestational age. Group III (14.3%) were abnormal with both types of NGAS values, most GPRI values were abnormal, and all were small for gestational age. Group II (52.4%) had abnormal NGAS values when calculated from GPRI values determined with SCF and normal NGAS values when calculated from GPRI values determined with TCF. All but one was AGA. Almost all GPRIWT and GPRIThC values were abnormal using SCF and normal using TCF. CONCLUSION. Although growth outcome in triplet neonates can be normal (Group I) or intrauterine growth retarded (Group III), the majority are in an intermediate group (Group II) characterized by a decrease in soft tissue mass, which may or may not be pathological.

Havekes LM see **de Knijff P**

Haxton MJ see ***Deeny M***

Hayakata Y see **Hayakawa K**

Hayakawa K, Shimizu T, Ohba Y, Tomioka S: Risk factors for cognitive aging in adult twins.
Acta Genet Med Gemellol (Roma) 1992; 41(2-3):187-95
Monozygotic (MZ) and dizygotic (DZ) twins in later adulthood were studied in order to examine genetic and environmental contributions to the decline of cognitive performance. In this study, 118 twin pairs took a comprehensive medical examination at a university hospital. Cognitive function was measured by the Wechsler Adult Intelligence Scale (WAIS). The intraclass correlation coefficients on Digit Span (D) and Digit Symbol (DS) subtests of the WAIS

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did not show any significant difference between MZ and DZ twins although Block Design (BD) showed a significant difference. The values of the intraclass correlation coefficients were mostly around 0.5 and showed significant within-pair similarity of test scores. The mean score of D, DS and BD declined with advancing age. The intraclass correlation coefficients for D, DS and BD were around 0.2 in the MZ twins reared apart, and around 0.6 in the MZ twins reared together. These results indicated a significant environmental influence on cognitive aging in later adulthood.

Hayakawa K, Shimizu T, Ohba Y, Tomioka S, Takahasi S, Amano K, Yura A, Yokoyama Y, Hayakata Y: Intrapair differences of physical aging and longevity in identical twins.
Acta Genet Med Gemellol (Roma) 1992; 41(2-3):177-85
The genetic and environmental contributions to physical aging (hair graying, balding, presbyopia) and longevity (age at death) were examined by within-pair comparison in monozygotic (MZ) and dizygotic (DZ) twins in later adulthood. Physical aging was investigated on 135 pairs of adult twins aged over 50. Hair graying and hair loss (baldness) showed significantly higher rates of concordance in the MZ twins than in the DZ twins. The intrapair difference of the degree of hair graying was negligible in 79%, slight in 15% and striking in 5% among the MZ pairs; while negligible in 40%, slight in 50% and striking in 10% among the DZ pairs. The intrapair difference of the degree of hair loss was negligible in 92%, slight in 8% (and striking in none) among the MZ pairs; while negligible in 69%, slight in 25% and striking in 6% among the DZ pairs. The age at onset of presbyopia showed a slightly higher rate of concordance in the MZ than in the DZ pairs. Longevity (age at death) was surveyed on 184 pairs of twins who died at over 40 years of age. The intrapair difference of longevity was 6.65 +/- 5.6 years (maximum 18.0; minimum 0.04) in the MZ pairs, and 8.66 +/- 7.2 years (maximum 18.6; minimum 2.9) in the DZ pairs. The MZ pairs showed a slightly smaller within-pair difference of longevity than the DZ pairs.

Healey S see **Chenevix-Trench G**
Heath AC see **Carmelli D**
Heath AC see **Kendler KS**
Heath AC see **True WR**
Hedon B see **Boulot P**
Helms M see **Brandt J**
Heloury Y see **Plattner V**
Henderson C see **Divon MY**
Henrichsen J see **Konradsen HB**
Hewitt JK see **Eaves LJ**
Hewitt JK see **Moskowitz WB**

Heydanus R, Santema JG, Stewart PA, Mulder PG, Wladimiroff JW: Preterm delivery rate and fetal outcome in structurally affected twin pregnancies: a retrospective matched control study.
Prenat Diagn 1993 Mar;13(3):155-62
Data from 23 twin pregnancies with one structurally affected fetus were compared with data from 23 twin pregnancies with proven absence of structural fetal anomalies and matched for maternal age, parity, and year of delivery. The preterm delivery rate (< 37 weeks) was high in both groups but not significantly different (57 vs. 48 per cent). Perinatal mortality was significantly higher in the structurally affected twin pregnancies (65 vs. 9 per cent). In the affected twins, birth weight of the anomalous fetus was significantly lower than that of the normal co-twin. Since there was no difference in the incidence of maternal disease (hypertensive disorders, diabetes), it was concluded that the higher perinatal mortality was determined mainly by the nature of the anomaly and not by the preterm delivery rate.

Hill RM see **Hata T**
Hirao F see **Iwasaka H**
Hirsch B see **McGue M**
Ho ES see **Chen MJ**
Holm N see **Konradsen HB**

Hopper JL: The Australian NHMRC Twin Registry: a resource for paediatric research [letter]
J Paediatr Child Health 1993 Aug;29(4):319

Horgan J: Eugenics revisited. Sci Am 1993 Jun; 268(6):122-31 (0 ref.)

Hori M see **Tsukamoto H**
Houston BK see **Cates DS**
Howard MW see **Strong TH Jr**
Hsieh FJ see **Jou HJ**

Hudgens DR, Conradi SE: Sudden death associated with terbutaline sulfate administration.
Am J Obstet Gynecol 1993 Jul;169(1):120-1
We present a case of sudden maternal death occurring during the ambulatory treatment of preterm labor in a twin pregnancy. The ultimate cause of death was cardiac arrhythmia, the origin of which was probably multifactorial. The patient was being treated with the use of a subcutaneous terbutaline sulfate infusion pump.

Hulsey TC see **Bivins HA Jr**

Hyde TM, Fitzcharles EK, Weinberger DR: Age-related prognostic factors in the severity of illness of Tourette's syndrome in monozygotic twins.
J Neuropsychiatry Clin Neurosci 1993 Spring; 5(2):178-82
Tourette's syndrome (TS) was studied in 18 pairs of monozygotic twins where at least one member of the twin set had TS. Sixteen twin sets were concordant for motor tics and had different ages of onset of motor tics (as reported by the mothers and/or medical records). Among these pairs, the earlier motor ticquer was more likely to have a more severe course of illness as assayed by two different indices. In the 10 sets concordant for vocal tics, the earlier vocal ticquer had a more severe course as assayed by only one index. The authors conclude that an early age of onset of motor tics may be the strongest predictor of a more severe life-time course of a tic disorder.

Hyde TM see **Randolph C**

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Ignacio Rodríguez J, Palacios J, Lapunzina P: Severe axial anomalies in the oculo-auriculo-vertebral (Goldenhar) complex. Am J Med Genet 1993 Aug 1;47(1):69-74
We have studied 4 infants with oculo-auriculo-vertebral (OAV) complex or Goldenhar "syndrome" who also had severe axial anomalies, including multiple vertebral segmentation errors affecting the thoracic and the lumbar spine. One of them presented a previously unreported pattern of vertebral and rib anomalies similar to spondylocostal dysostosis. Three patients had twins, and all 4 patients had other associated non-skeletal malformations which affected the midline, i.e., cleft lip and palate, esophageal atresia with tracheoesophageal fistula, and ventricular septal defect. The broad extent of the axial anomalies, the association with midline defects and twinning, and the combination in the same patient of two distinct conditions support the concept that OAV complex

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is a polytopic developmental field defect arising during blastogenesis.

Iida J see **Iwasaka H**

Ikawa G see **Iwasaka H**

Imaizumi Y: Twinning rates in Japan, 1951–1990. Acta Genet Med Gemellol (Roma) 1992; 41(2–3):165–75
Twinning rates in all of Japan for 1951–1968 and 1974–1990 were analyzed using data from vital statistics of Japan. The twinning rate per 1,000 births was 6.43 in 1951 and remained nearly constant until 1968, then decreased to 5.79 in 1974 and gradually increased to 7.00 in 1990. The MZ twinning rate increased slightly up to 1966, but decreased thereafter, whereas the DZ rate declined over the entire period. As for maternal age, the DZ rate increased up to the age group 35–39 and decreased thereafter. The same tendency is seen in the MZ rate, but the maternal age effect is less marked than in DZ twins. The same tendency is also seen in the overall rate for 1975–1985. As for geographical variations, the MZ and DZ rates were computed in each prefecture for 1955–1959 and in 1974. The DZ rate increased from a low level in the southwest Japan to a high level in the northeast for both periods, whereas the MZ rate was rather constant in 1974 throughout Japan. As for seasonal variation, the highest rates per 1,000 births for MZ(4.56) and DZ(2.20) twins were seen in April, with the lowest rate in September (3.69) for MZ twins and in July (1.71) for DZ twins.

Imoedemhe DA, Sigue AB, Luciano EC: Successful twin pregnancy and delivery after microinseminated oocyte fallopian transfer for male factor infertility. Fertil Steril 1993 Mar;59(3):662–3
The case described indicate that microinseminated oocyte fallopian transfer may be a potentially useful option of management of male factor infertility. The question of the effect of a breach in the oocyte/embryo zona during micromanipulation procedure on the outcome of their in vitro culture remains to be addressed.

Inamori N see **Ohashi Y**

Inouye E: Twins and genetic studies of man. Acta Genet Med Gemellol (Roma) 1992; 41(2–3):91–6 (7 ref.)

Inui K see **Tsukamoto H**

Isichei HU, Obafunwa: Epileptic fit: the most dramatic sign of tuberous sclerosis. Trop Geogr Med 1993; 45(3):137–9
This rare disease of dominant inheritance is described with the symptom triad of epilepsy, mental deficiency (oligophrenia) and adenoma sebaceum. The skin manifestation may be manifest in the first year, but the parents seek the help of the physician only when the dramatic symptom of convulsion occurs.

Itskovitz-Eldor J see **Kol S**

Iwasaka H, Iida J, Kawabata Y, Kitamura H, Kitera K, Hirao F, Ikawa G, Hashino K: Bulimia nervosa in a pair of male monozygotic twins. Jpn J Psychiatry Neurol 1992 Dec;46(4):853–8
This is a report of a pair of male monozygotic twins meeting the DSM-III-R criteria for bulimia nervosa. At the age of 15, both brothers began to diet and suffered from bulimia. They were admitted to psychiatric hospitals and separated. After admission, their clinical course dramatically changed. The differences in their clinical courses and endocrinological data are suggestive as to the roles of environmental and hereditary factors in the etiology of bulimia nervosa.

Iwasaki N see **Yasuda S**

J

Jackson L see **Wapner RJ**

Jackson R see **Miller D**

Jacquemyn Y see **Gerris J**

Jaczewski B, Krasomski G, Wilczyński J: [Twin pregnancy with intrauterine death of one fetus] Ginekol Pol 1993 Feb;64(2):106–8 (Eng. Abstr.) **(Pol)**
A case of twin pregnancy with congenital malformations and intrauterine death of one fetus in the 27th week of pregnancy has been discussed. The pregnancy was continued with special care of the mother and the alive fetus. During all stay of the pregnant in the clinic no coagulation disturbances were observed. In the 33rd week of pregnancy spontaneous labour occurred, which was conducted by vaginal delivery. Simultaneously a macerated dead fetus and an alive premature newborn were born. The alive one was charged home in good condition in the 38th day of staying in the Neonatal Ward.

Jansen J see **Span J**

Jasmin JR, Jonesco-Benaiche N, Muller-Giamarchi M: Supernumerary teeth in twins. Oral Surg Oral Med Oral Pathol 1993 Aug; 76(2):258–9

Jawan B, Lee JH, Chong ZK, Chang CS: Spread of spinal anaesthesia for caesarean section in singleton and twin pregnancies. Br J Anaesth 1993 Jun; 70(6):639–41
We have compared the spread of spinal anaesthesia in parturients with singleton and those with twin pregnancies. Fifty-five unpremedicated patients with uncomplicated pregnancy scheduled for Caesarean section were allocated to two groups: group I = 35 singleton mothers; group II = 20 with twin pregnancy. Both groups received spinal anaesthesia with hyperbaric bupivacaine 10 mg (2 ml of 0.5%). Mean birthweight was 3290 (SD 452) g and 5008 (495) g in groups I and II (combined birthweights), respectively. We found a statistically significant difference in onset and maximal cephalad spread of spinal anaesthesia (group I median T5, range T8–T4; group II T3, range T6–T2). The mechanisms of higher cephalad spread of spinal anaesthesia in parturients may be a decrease in cerebrospinal fluid volume secondary to shunting of blood from the obstructed inferior vena cava to the extradural venous plexus and increased nerve sensitivity to local anaesthetics because of increased concentrations of progesterone. The twin pregnancy group had heavier, larger uteri and greater daily production of progesterone.

Johnson A see **Wapner RJ**

Johnson L see **Kendler KS**

Johnson MP see **Drugan A**

Johnson MP see **Evans MI**

Johnson TR see **Luke B**

Jonas HA, Lumley J: Triplets and quadruplets born in Victoria between 1982 and 1990. The impact of IVF and GIFT on rising birthrates. Med J Aust 1993 May 17;158(10):659–63
OBJECTIVES: To examine the perinatal characteristics of all higher order multiple births (133 sets of triplets and six sets of quadruplets) in the State of Victoria between 1982 and 1990. To compare the rising higher order multiple birth rates in Victoria with those in the other States of Australia, and to assess the impact of in-vitro fertilisation (IVF) and gamete intrafallopian transfer (GIFT) on these rising birth rates. DESIGN:

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Retrospective review of all higher order multiple births registered in Victoria and other States of Australia between 1982 and 1990, and in particular those resulting from IVF and GIFT. DATA SOURCES: Victorian Perinatal Data Collection Unit, Australian Bureau of Statistics, National Perinatal Statistics Unit, data from Victorian IVF and GIFT units. MAIN OUTCOME MEASURES: Higher order multiple birth rates and perinatal mortality rates. RESULTS: The higher order multiple birth rates in Victoria rose from 3.5 per 10,000 in 1982 to 10.9 per 10,000 in 1990. The average perinatal mortality rates for the Victorian triplets and quadruplets born during this period were 10.8% and 25.0%, respectively. The rates of caesarean section were 70% and 83%; the proportions of deliveries in level III hospitals, 75% and 100%; and the mean maternal lengths of stay in hospital, 32 and 57 days, respectively. Endotracheal intubation was performed at birth in 18.5% of all infants. The proportions of triplet and quadruplet pregnancies in Victoria owing to IVF and GIFT rose during this period, reaching a peak of 42% in 1990. In the other States, the birth rates for higher order multiples increased at 1.8 times the rate observed for Victoria, with IVF and GIFT contributing to an estimated 43% of these conceptions between 1985 and 1989. CONCLUSION: Restrictions on the numbers of embryos/oocytes transferred during IVF and GIFT should reduce the frequency of higher order multiple births.

Jones AB see **Kizilisik TA**

Jonesco-Benaiche N see **Jasmin JR**

Joostens M see **Gerris J**

Jou HJ, Ng KY, Teng RJ, Hsieh FJ: Doppler sonographic detection of reverse twin-twin transfusion after intrauterine death of the donor. J Ultrasound Med 1993 May;12(5):307-9

We report a "stuck" twin, in which a reverse blood shunt from the recipient to the donor was detected by Doppler sonography after death of the donor. This acute reverse transfusion caused intrauterine fetal distress and severe neonatal anemia of the surviving recipient. We believe that acute hemodynamic change after death of one fetus, in addition to causing a derangement in coagulation, causes immediate danger or subsequent organ damage for the surviving co-twin.

K

Kaminski M see **Tuppin P**

Kamiyama K see **Tsukamoto H**

Kammoun N see **Zhioua F**

Kaneti H see **Shulman A**

Kapadia D see **Kumar D**

Kapila L see **Williams N**

Kaprio J, Rose RJ, Romanov K, Koskenvuo M: Genetic and environmental determinants of use and abuse of alcohol: the Finnish Twin Cohort studies. Alcohol Alcohol Suppl 1991;1:131-6

Kaprio J see **Romanov K**

Kaptein A see **Boomsma DI**

Katariya S see **Samujh R**

Katz M see **Meizner I**

Katz NT see **Divon MY**

Katz RJ see **Rutherford J**

Kawabata Y see **Iwasaka H**

Kawakami Y see **Kobayashi S**

Keenan A see **Bivins HA Jr**

Keith D see **Schulman P**

Keith LG see **Luke B**

Keith SC, London SN, Weitzman GA, O'Brien TJ, Miller MM: Serial transvaginal ultrasound scans and beta-human chorionic gonadotropin levels in early singleton and multiple pregnancies. Fertil Steril 1993 May;59(5):1007-10

OBJECTIVE: To determine if serum beta-hCG levels are higher in multiple gestation than in singleton pregnancy at the time of intrauterine sac visualization and the first appearance of fetal heart activity as documented by serial transvaginal ultrasound (US). DESIGN: Prospective analysis of serial transvaginal US findings in 19 pregnancies correlated with serum hCG levels during early gestation. SETTING: Reproductive endocrinology division of the University of Arkansas for Medical Sciences, Little Rock, Arkansas. PATIENTS: Nineteen infertility patients were studied after conceiving. Thirteen underwent IVF or GIFT, 4 received hMG therapy, 1 was treated with clomiphene citrate, and 1 pregnancy followed spontaneous ovulation. INTERVENTIONS: Transvaginal US and hCG levels were obtained every Monday, Wednesday, and Friday from 20 to 22 days after ovulation until the appearance of fetal heart activity. RESULTS: Initial sac visualization occurred at lower serum hCG levels in singleton versus multiple pregnancies (2,180 +/- 1,170 versus 7,028 +/- 4,280 mIU/mL, mean +/- SD). Sacs were always seen when the serum hCG level (mIU/mL) was > or = 1,161 in singleton, 1,556 in twin, 3,372 in triplet, and 9,399 in quadruplet pregnancies. CONCLUSION: Failure to observe an intrauterine sac by transvaginal US in the presence of serum hCG levels in the 1,000 to 2,000 mIU/mL range is not pathognomonic for an ectopic gestation. Clinical symptomatology, risk of multiple pregnancies, and gestational age must also be considered.

Kelly PJ, Eisman JA: Osteoporosis: genetic effects on bone turnover and bone density [editorial] Ann Med 1993 Apr;25(2):99-101

Kempen HJ see **Boomsma DI**

Kempen HJ see **de Knijff P**

Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ: A test of the equal-environment assumption in twin studies of psychiatric illness. Behav Genet 1993 Jan;23(1):21-7

The traditional twin method is predicated on the equal-environment assumption (EEA)--that monozygotic (MZ) and dizygotic (DZ) twins are equally correlated in their exposure to environmental events of etiologic importance for the trait under study. In 1968, Scarr proposed a test of the EEA which examines the impact of phenotypic similarity in twins of perceived versus true zygosity. We apply this test for the EEA to five common psychiatric disorders (major depression, generalized anxiety disorder, phobia, bulimia, and alcoholism), as assessed by personal interview, in 1030 female-female twin pairs from the Virginia Twin Registry with known zygosity. We use a newly developed model-fitting approach which treats perceived zygosity as a form of specified familial environment. In 158 of the 1030 pairs (15.3%), one or both twins disagreed with the project-assigned zygosity. Model fitting provided no evidence for a significant influence of perceived zygosity on twin resemblance for any of the five disorders. Although limited in power, these results support the validity of the EEA in twin studies of psychiatric disorders.

Kendler KS, Heath AC, Neale MC, Kessler RC, Eaves LJ: Alcoholism and major depression in women. A

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twin study of the causes of comorbidity. Arch Gen Psychiatry 1993 Sep;50(9):690–8
BACKGROUND: Although major depression (MD) and alcoholism co-occur in clinical and epidemiologic samples of women more often than expected by chance, the magnitude and causes of this comorbidity are uncertain. METHODS: Personal interviews were conducted with 2163 female twins from a population-based twin registry. Bivariate twin analysis was performed using two definitions of MD and three definitions of alcoholism of varying diagnostic breadth. RESULTS: Odds ratios ranged from 2.7 to 6.0 and were consistently higher using narrower diagnostic criteria for either disorder. Twin analyses found (1) no evidence for familial environmental factors for either MD or alcoholism; (2) significant genetic correlations, ranging from +.4 to +.6, between MD and alcoholism, which were higher using narrower criteria for alcoholism; (3) significant individual-specific environmental correlations, ranging from +.2 to +.4, for all but one of the diagnostic combinations, which were higher using narrower criteria for MD. CONCLUSIONS: Comorbidity between MD and alcoholism in women is substantial and appears to result largely from genetic factors that influence the risk to both disorders, but common environmental risk factors also contribute. However, genetic factors exist that influence the liability to MD without influencing the risk for alcoholism and vice versa. Narrowing the diagnostic criteria for MD or alcoholism increases comorbidity, but for different reasons narrow diagnostic criteria for MD increase the environmental sources of comorbidity while narrow diagnostic criteria for alcoholism increase the genetic sources of comorbidity.

Kendler KS, Pedersen N, Johnson L, Neale MC, Mathé AA: A pilot Swedish twin study of affective illness, including hospital- and population-ascertained subsamples. Arch Gen Psychiatry 1993 Sep; 50(9):699–700
OBJECTIVE: We sought to compare the probandwise concordance rate (PRC) for affective illness (AI) in monozygotic (MZ) and dizygotic (DZ) twins in samples ascertained through psychiatric hospitalization vs samples from the general population. METHODS: Twins were ascertained through psychiatric hospitalization for AI from the Swedish Psychiatric Twin Registry or as a matched sample from the population-based Swedish Twin Registry. Lifetime diagnoses were based on a mailed questionnaire containing, in self-report format, DSM-III-R criteria for mania and major depression. Returned questionnaires were obtained from 1484 individuals and both members of 486 pairs, of whom 154 were classified as MZ, 326 as DZ, and six of unknown zygosity. RESULTS: No evidence was found for violations of the equal environment assumption. Using either a narrow or broad diagnostic approach, the risk for AI in cotwins of proband twins was independent of the gender, polarity (ie, unipolar vs bipolar) and mode of ascertainment of the affected proband (ie, via hospitalization vs from the general population). Combining both subsamples, PRC for total AI using narrow diagnostic criteria was 48.2% in MZ and 23.4% in DZ twins. Using broad diagnostic criteria, the parallel figures were 69.7% and 34.9%. The risk for bipolar illness was substantially increased in the cotwins of probands with bipolar AI. CONCLUSIONS: Genetic factors play a major role in the etiology of AI in Sweden, as assessed by self-report questionnaire. Heritable factors appear to be equally important in AI as ascertained in clinical and epidemiological samples.

Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ: Panic disorder in women: a population-based twin study. Psychol Med 1993 May;23(2):397–406
Previous studies based on probands from clinical samples suggest that panic disorder aggregates strongly in families and may be due to a highly penetrant single major locus. In this study we examine panic disorder as assessed at blind, structured psychiatric interview in 2163 women from a population-based twin registry. DSM-III-R diagnoses were assigned at a narrow and at a broad level both by clinician review and by computer algorithm. The familial aggregation of panic disorder in this sample was only modest. The relatively small number of affected individuals prevented a definitive resolution of competing genetic and non-genetic models of familial transmission. Although there was some inconsistency across diagnostic approaches, most results suggested that the familial aggregation of panic disorder was due largely to genetic factors. Using a multifactorial-threshold model, the best estimates of the heritability of liability ranged from 30 to 40%. From a familial perspective, panic disorder with phobic avoidance appears to represent a more severe form of the syndrome than panic disorder without avoidance. Our results, which suggest that in the general population panic disorder is only a moderately heritable condition, are at variance with results from several previous investigations based on clinically ascertained samples.

Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ: Major depression and phobias: the genetic and environmental sources of comorbidity. Psychol Med 1993 May;23(2):361–71
In a population based sample of 2163 personally interviewed female twins, substantial comorbidity was observed between DSM-III-R defined major depression (MD) and 4 subtypes of phobia: agoraphobia, social phobia, animal phobia and situational phobia. However, the level of comorbidity of MD with agoraphobia was much greater than that found with the other phobic subtypes. We concluded bivariate twin analyses to decompose the genetic and environmental sources of comorbidity between MD and the phobias. Our results suggest that a modest proportion of the genetic vulnerability to MD also influences the risk for all phobic subtypes, with the possible exception of situational phobias. Furthermore, the magnitude of comorbidity resulting from this shared genetic vulnerability is similar across the phobic subtypes. By contrast, the non-familial environmental experiences which predispose to depression substantially increase the vulnerability to agoraphobia, have a modest impact on the risk for social and situational phobias and no effect on the risk for animal phobias. The increased comorbidity between MD and agoraphobia results, nearly entirely, from individual-specific environmental risk factors for MD which also increase the risk for agoraphobia but not for other phobias.

Kessler RC see **Kendler KS**
Kheroua H see **Robin M**
Khouja H see **Zhioua F**
Khoury MJ see **Cragan JD**
Kilpatrick SJ see **Fries MH**
Kind C see **Drack G**
Kinouchi K see **Ohashi Y**
Kishi F see **Kobayashi S**

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Kitamura H see **Iwasaka H**
Kitano Y see **Yokomori K**
Kitera K see **Iwasaka H**
Kizilisik TA, Jones AB, Kneteman NM: Orthotopic liver transplantation for alpha-1-antitrypsin deficiency in identical twins. Transplant Proc 1993 Apr;25(2):1912-3
Klosa W see **Prömpeler HJ**
Kneteman NM see **Kizilisik TA**
Kobayashi S, Nishimura M, Yamamoto M, Akiyama Y, Kishi F, Kawakami Y: Dyspnea sensation and chemical control of breathing in adult twins. Am Rev Respir Dis 1993 May;147(5):1192-8
To examine possible genetic influence on the sensation of dyspnea and on load compensation, we conducted a twin study using healthy adult pairs (10 monozygotes, MZ, and 9 dizygotes, DZ). The ventilatory response to progressive hypercapnia (HCVR) was examined under three different conditions: hyperoxia (PETO2 > 150 mm Hg), hypoxia (PETO2 maintained at 50 to 55 mm Hg), and hyperoxia with an inspiratory flow-resistive load (17 mm H2O/L/s), with simultaneous assessment of the dyspnea sensation by visual analog scale (VAS). Although the VDZ/VMZ ratio (VMZ and VDZ are within-pair variances in MZ and DZ, respectively) for the slope value of the minute ventilation-PETCO2 regression line was not different from 1 in hyperoxia either with or without an inspiratory load, it was significantly larger than 1 in hypoxia ($F = 5.17$, $p < 0.05$), suggesting that a genetic influence on HCVR existed only in the presence of hypoxia. During 3% CO2 inhalation, the VDZ/VMZ ratio for the tidal volume (VT) was larger than 1 in hyperoxic HCVR with loading ($F = 7.89$, $p < 0.01$), and that for respiratory frequency (f) was larger than 1 only in hypoxic HCVR ($F = 3.59$, $p < 0.05$). At a PETCO2 of 55 mm Hg, the VT ratio was larger than 1 under all conditions ($F = 5.91$, $p < 0.05$; $F = 6.99$, $p < 0.05$; $F = 3.75$, $p < 0.05$; respectively), and the f ratio was significantly larger than 1 again only in hypoxic HCVR ($F = 3.48$, $p < 0.05$).(ABSTRACT TRUNCATED AT 250 WORDS)
Kohsaka H, Taniguchi A, Chen PP, Ollier WE, Carson DA: The expressed T cell receptor V gene repertoire of rheumatoid arthritis monozygotic twins: rapid analysis by anchored polymerase chain reaction and enzyme-linked immunosorbent assay. Eur J Immunol 1993 Aug;23(8):1895-901
Because of heterogeneity in the outbred human population, it has been difficult to determine the genetic factors that influence the expressed T cell receptor (TcR) repertoire in autoimmune diseases. To overcome this problem, we have developed a combination of anchored polymerase chain reaction (APCR) and enzyme-linked immunosorbent assay (ELISA) that can accurately assess TcR V gene frequencies in numerous clinical samples. The results are independent of amplification efficiency, and V gene usage can be readily analyzed with an ELISA plate reader and associated software. Using this method, the TcR V beta gene repertoires in peripheral lymphocytes from nine sets of identical twins, normal, concordant or discordant for rheumatoid arthritis (RA), were studied. The TcR V beta results were compared with TcR V gamma frequencies in the same specimens as determined by APCR-ELISA and cDNA sequence analysis. The results showed a marked similarity in the TcR V beta gene repertoires between identical twins, compared to unrelated subjects ($p < 0.05$) whether or not they were concordant or discordant for RA. In contrast, the TcR V gamma gene repertoires in the monozygotic twins differed as much as in controls. The data imply that (a) the human TcR V beta gene repertoire in peripheral blood is genetically controlled, whereas (b) the TcR V gamma gene repertoire is primarily influenced by environmental stimuli, and (c) RA causes no consistent change in TcR V beta repertoire of peripheral blood. The APCR-ELISA method, in the context of large-scale family and population studies, should facilitate a more precise delineation of the genetic factors that regulate human TcR V beta expression.
Kol S, Levron J, Lewit N, Drugan A, Itskovitz-Eldor J: The natural history of multiple pregnancies after assisted reproduction: is spontaneous fetal demise a clinically significant phenomenon? Fertil Steril 1993 Jul;60(1):127-30
OBJECTIVE: To determine the rate of spontaneous fetal demise after heartbeats are demonstrated in multiple pregnancies conceived after IVF-ET. DESIGN: Retrospective case series. SETTING: University-based IVF-ET program. PATIENTS: Eighty-one patients in whom initial transvaginal ultrasound (US) study, performed at 5 to 6 weeks of gestation, identified more than one gestational sac. Total number of sacs was 191. INTERVENTION: Patients were followed by serial US examinations. MAIN OUTCOME MEASURE: Outcome of pregnancies. RESULTS: Twenty-four empty gestational sacs were identified in 21 patients, of whom 15 delivered, 2 miscarried, and 4 are currently ongoing beyond first trimester. Of the 167 initially viable embryos, 9 (5%) underwent spontaneous fetal demise. In 5 of these 9 pregnancies, initial US identified significant interfetal size variation. CONCLUSIONS: The rate of spontaneous fetal demise for a specific embryo in multiple gestation, after fetal heartbeats have been identified in early pregnancy, is 5%. This rate is similar to that seen in spontaneous conceptions. The chance of future fetal demise increases if first trimester interfetal size variation is significant.
Konradsen HB, Henrichsen J, Wachmann H, Holm N: The influence of genetic factors on the immune response as judged by pneumococcal vaccination of mono- and dizygotic Caucasian twins. Clin Exp Immunol 1993 Jun;92(3):532-6
Eighty-four mono- and dizygotic Caucasian twins randomly chosen, except for age and sex distribution, were vaccinated with a 23-valent pneumococcal vaccine. Blood samples were drawn before and after vaccination and the concentration of IgG, IgG1 and IgG2 pneumococcal antibodies was measured using an ELISA technique which only detects type-specific capsular antibodies, since C-polysaccharide antibodies in serum were removed. A significantly closer correlation was found regarding mean IgG and IgG2 antibody concentrations after vaccination in mono- compared with dizygotic twins, and this correlation was seemingly type-specific. Since environmental factors in our study population should not contribute more to the immune response in one type of twins compared with the other, we conclude that genetic factors influence the IgG and IgG2 antibody response to pneumococcal vaccination, and that this influence seems to be type-dependent.
Koopmans P see **Span J**
Korner A see **Sackett G**
Korsch E, Gillor A, Groneck P, Bläker F: [Secondary myocardial hypertrophy in a very small premature infant treated with dexamethasone]

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Monatsschr Kinderheilkd 1993 Feb;141(2):112-5 (Eng. Abstr.) (Ger)
BACKGROUND: There is an increasing number of reports about the use of dexamethasone in the treatment of preterm infants at high risk for bronchopulmonary dysplasia. The possibility of myocardial hypertrophy developing during this treatment has not been examined. METHODS: As an example the course of one patient is described. We examined seven preterm infants (mean birth weight 791 g, mean gestational age 26 weeks) with eight treatments of dexamethasone retrospectively. The therapy was associated with a significant increase of the mean thickness of the interventricular septum and of the left ventricular posterior wall. After the termination of dexamethasone therapy the abnormal echocardiographic findings disappeared. CONCLUSION: We suggest careful monitoring of preterm infants treated with dexamethasone by performing serial echocardiographic investigations.

Koskenvuo M see **Kaprio J**

Koskenvuo M see **Romanov K**

Kotzin BL: Autoimmune disease. Twins and T-cell responses [news; comment] Nature 1993 Jul 15; 364(6434):187-8

Krasomski G see **Jaczewski B**

Krauss RM see **Austin MA**

Kribs A see **Crombach G**

Kringlen E see **Onstad S**

Kumar D, Gemayel NS, Deapen D, Kapadia D, Yamashita PH, Lee M, Dwyer JH, Roy-Burman P, Bray GA, Mack TM: North-American twins with IDDM. Genetic, etiological, and clinical significance of disease concordance according to age, zygosity, and the interval after diagnosis in first twin.
Diabetes 1993 Sep;42(9):1351-63
In 224 twin pairs (132 monozygotic, 86 dizygotic, and 6 of uncertain zygosity) in whom the index twin had developed IDDM before 30 yr of age, 51 of the co-twins (38 monozygotic, 10 dizygotic, and 3 of uncertain zygosity) subsequently became diabetic. On the basis of concordance ratios, which were significantly discrepant ($P < 0.01$) between monozygotic and dizygotic twins, the substantial genetic role in IDDM etiology is confirmed. For the monozygotic co-twin of an IDDM case, the relative risk is significantly related to an early age at proband diagnosis ($P < 0.01$ for 0-4 vs. 5-9 yr of age). However, among monozygotic co-twins at any age, IDDM risk decreases as time passes after the proband diagnosis ($P < 0.01$ for 0-23 vs. $>$ or $=$ 24 mo after a proband diagnosis at 5-9 yr of age). Moreover, a structural-equation analysis suggests a profound contribution to liability (as much as 79%) from the twins' shared environment. Risk to like-sex male dizygotic co-twins is as high as that to monozygotic co-twins, significantly higher than that to like-sex female dizygotic co-twins ($P < 0.005$), and even higher than that to male co-twins in unlike-sex dizygotic pairs ($P < 0.05$). Overall, the risk to the dizygotic co-twin of a case is significantly higher ($P < 0.001$) than that to a non-twin sibling, as reported in the literature. The observed male excess is consistent with reported patterns of IDDM in experimental animals, and in certain circumstances in humans. Taken together, these observations suggest an important early acquired determinant of IDDM, independent of genetic determinants. On the basis of Kaplan-Meier IDDM-free survival curves, if the proband is diagnosed before 15 yr of age, the long-term risk to the co-twin is estimated at 44% (monozygotic) and 19% (dizygotic); it reaches 65% for the co-twin of a monozygotic proband diagnosed before 5 yr of age. An IDDM discordant period of no more than 3 yr was observed in 60% of the pairs destined to become concordant, offering a very brief window for intervention following the recognition of high risk.

Kurashige T see **Yoshimura K**

Kwee ML see **Haring DA**

L

Laffargue F see **Boulot P**

Lanfranchi A see **Marconi AM**

Láng E, Szilágyi N, Métneki J, Weisz J: Effects of mental load on the spectral components of heart period variability in twins.
Acta Biochim Biophys Hung 1991-92; 26(1-4):111-20
The contribution of genetic and environmental control to stress-related cardiovascular reactions was investigated in 10 monozygotic and 10 dizygotic twin pairs during mental arithmetics. Non-invasive indices reflecting vagal and sympathetic activity were used, namely: indices of myocardial contractility based on impedance cardiogram, and spectral components of heart period variance. Autoregressive algorithms were developed for heart period power spectral density estimation providing automatic decomposition of heart period spectra into individual spectral components. During the mental task spectral energy of the mid-frequency (central frequency approximately 0.1 Hz) and high frequency (around respiratory frequency) components of heart period variance significantly decreased indicating vagal withdrawal. A task-related increase of the mid-frequency component relative to the high-frequency component was obtained. This change in the ratio of the two components as well as the considerable shortening of the contractility indices are pointing to sympathetic activation. When comparing intraclass correlations computed separately for monozygotic and dizygotic twins highly significant correlations were found for the mid-frequency component in monozygotic but not in dizygotic twin pairs in resting condition indicating a substantial genetic contribution to the control mechanisms involved in the baroreflex. Contribution of genetic factors to the control of stress-related interplay of autonomic outflows has been shown.

Lange AL, Fischbein S: From puberty to mid-life: a follow-up study of twins and controls.
Acta Genet Med Gemellol (Roma) 1992; 41(2-3):105-12
During the years 1964 to 1971 a group of twins and a control group of singletons in the same classes, were followed from grade 3 at 10 years of age to grade 9 at 16 years of age in the Swedish compulsory school. The study was called the SLU-project (Skolöverstyrelsens och Lärarhögskolans Utvecklingsprojekt) and the main purpose was to study physical and mental growth during puberty as well as heredity and environment influences on these growth processes. Originally 323 twin pairs, MZ and DZ, and 1193 controls were included in the sample. Among the DZ twin pairs there were both same-sex and opposite-sex pairs. They were a nationally representative sample. Several kinds of information were collected, such as, a) Physical measurements (height and weight measurements, menarche, ratings of secondary sex characteristics); b) Ability and achievement measures (intelligence tests, standardized achievement tests); c) Self ratings;

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d) Ratings by teachers and classmates; e) Socioeconomic background data (fathers occupation and income). For the boys, supplementary data on physical growth and mental ability was collected on enrollment to military service at the age of 18. In this pilot-study, we have made a follow-up of the original SLU-sample after 20 years. They are now in their mid-thirties. The main purpose has been to investigate if they are willing to participate in a new study on health and well-being at mid-life.

Lansac J see **Fignon A**

Lapinski R see **Berkowitz RL**

Lapunzina P see **Ignacio Rodríguez J**

Laufer N see **Mordel N**

Le Couteur A see **Bailey A**

Leborgne J see **Plattner V**

Lee JH see **Jawan B**

Lee M see **Kumar D**

Lee SS see **Glomb WB**

Lee TK see **Chen CJ**

Lelaidier C see **Fernandez H**

Leslie DG see **Dubrey SW**

Leslie RD, Pyke DA: Twin studies in medical research [letter; comment] Lancet 1993 May 29; 341(8857):1418

Leslie RD see **Lo SS**

Lessing JB see **Botchan A**

Levade T see **Marguery MC**

Levron J see **Kol S**

Levy A see **Meizner I**

Lewin A see **Mordel N**

Lewis M: A case study follow-up [letter] J Am Acad Child Adolesc Psychiatry 1993 Jul; 32(4):876

Lewit N see **Kol S**

Lo SS, Sutton MS, Leslie RD: Information on type 1 diabetes mellitus and QT interval from identical twins. Am J Cardiol 1993 Aug 1;72(3):305-9

To determine whether QT interval is influenced by genetic factors and whether QT-interval prolongation occurs in type 1 diabetes or is related to diabetic autonomic neuropathy, QT intervals were measured, and autonomic function was assessed in 44 pairs of identical twins who were discordant for type 1 diabetes. Twins were compared with 44 normal control subjects of similar age and sex. QT intervals were corrected for heart rate (QTc). QTc in diabetic twins correlated with that in their nondiabetic co-twins ($r = 0.41$; $p = 0.006$). Diabetic twins had significantly longer QTc than did their nondiabetic co-twins and control subjects (416 +/- 18 vs 407 +/- 16 and 403 +/- 19 ms, respectively; $p < 0.005$). A greater number of abnormal autonomic function tests were detected in diabetic twins than in their nondiabetic co-twins and control subjects (8 vs 2 and 0%, respectively; $p < 0.01$). Diabetic twins with disease duration > 14 years ($n = 22$) had longer QTc than did their nondiabetic co-twins (420 +/- 17 vs 402 +/- 14 ms; $p < 0.0005$). Twins with diabetes for > 14 years had a greater frequency of abnormal autonomic function tests than did those with diabetes < 14 years (15 vs 2%; $p < 0.001$). QTc did not correlate with autonomic function in diabetic twins. It is concluded that QT interval is influenced by genetic factors, and in type 1 diabetes, QTc can be prolonged independently of autonomic neuropathy.

Loehlin JC: Nature, nurture, and conservatism in the Australian Twin Study. Behav Genet 1993 May; 23(3):287-90

Church attendance, educational level, and six conservatism scales were the subject of a multivariate behavior-genetic analysis by Truett et al. (Behav. Genet. 22, 43-62, 1992), based on responses from a large sample of adult Australian twins. These data are here analyzed in a different way to elicit general conservatism factors in the genetic, shared environmental, and unshared environmental covariation. The general genetic factor appears mainly to reflect intellectual sophistication; the general environmental factors, religious affiliation. These factors are similar, although not identical, for men and women.

London SN see **Keith SC**

Lopes P see **Mensier A**

Loquet P see **Gerris J**

Lorenz U see **Drack G**

Luciano EC see **Imoedemhe DA**

Luke B, Minogue J, Witter FR, Keith LG, Johnson TR: The ideal twin pregnancy: patterns of weight gain, discordancy, and length of gestation. Am J Obstet Gynecol 1993 Sep;169(3):588-97

OBJECTIVE: Our purpose was to evaluate factors associated with the best intrauterine growth and lowest morbidity among twins ("ideal twin pregnancy"). STUDY DESIGN: A historic prospective study of 163 twin births was performed. Ten models were formulated with multiple regression and multivariate logistic regression. RESULTS: In the models of birth weight, gestations of 28 to 36 and 39 to 41 weeks, black race, > or = 15% discordancy, and smoking were all significant negative factors. The pattern of early low weight gain (< 0.85 pounds per week before 24 weeks) and late low weight gain (< 1.0 pound per week after 24 weeks) was negatively associated with all eight models of intrauterine growth. CONCLUSIONS: The best intrauterine growth and lowest morbidity is achieved earlier for twins than for singletons. Using length of stay and growth retardation criteria, nearly 70% of "ideal" twin pregnancies were between 35 and 38 weeks. In addition, poor weight gain and poor patterns of weight gain were associated with all measures of intrauterine growth and adverse pregnancy outcomes.

Luke B, Keith LG, Damewood MD: Maternal characteristics of women delivered of twins: natural vs. induced. Int J Fertil Menopausal Stud 1993 Jan-Feb;38(1):12-5

This study retrospectively compared sociodemographic and anthropometric data, as well as selected obstetric outcomes, of 13 mothers of twins who conceived after ovulation induction with clomiphene citrate or Pergonal with similar data from 255 mothers who conceived naturally. Infertile women were significantly ($P < .011$) older and likely to be married, of the white race, and more educated than women who conceived naturally. Treated women were also taller and heavier prior to conception (NS). Treated women gained significantly more weight (45.9 lb vs. 30.1 lb). They also had a higher proportion of gestations > 32 weeks (91.7% vs. 74.1%) and longer mean gestations (36.5 weeks vs. 35.4 weeks) compared to naturally conceiving mothers of twins, but neither of these differences was significant. The infants of treated mothers had birthweights 9.5% heavier than the infants of mothers who conceived naturally. These retrospective findings suggest that previously infertile women who conceive twins do not suffer worse reproductive outcome than women who conceive naturally.

Luke B, Minogue J, Witter FR: The role of fetal growth restriction and gestational age on length of hospital stay in twin infants. Obstet Gynecol 1993

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Jun;81(6):949-53
OBJECTIVE: To evaluate the association between length of gestation and fetal growth restriction (FGR) and the role of FGR in neonatal morbidity as determined by length of hospital stay among newborn twins. METHODS: Using a race-, gender-, and gestational age-specific birth weight and length of hospital stay singleton standard, 490 twin infants were classified as FGR (at or below the tenth percentile) or non-FGR (above the tenth percentile). Length of stay and length-of-stay ratio (twin stay divided by the 50th percentile singleton stay) were calculated for each twin. Analysis included stepwise multiple regression for length of stay and length-of-stay ratio, and analysis of variance with main effects and second-order interactions for the length-of-stay measures using factors significant in the multiple regression models. RESULTS: For length of stay, significant factors in the multiple regression model included respiratory distress syndrome (RDS), gestation category, FGR, sepsis, time of birth (1979-1984 versus 1985-1989), and cesarean delivery. For length-of-stay ratio, significant factors included FGR, gestation category, sepsis, period of birth, cesarean delivery, and hyperbilirubinemia. The analysis of variance showed that RDS had the greatest effect on length of stay, whereas FGR had the greatest effect on length-of-stay ratio. For both dependent variables, the effect of FGR was magnified when compounded by significant neonatal complications (RDS, sepsis, hyperbilirubinemia) or gestation category. CONCLUSIONS: Fetal growth restriction is a major factor in the neonatal morbidity of twins. Early recognition of and interventions for FGR in twin gestations should be a primary goal for reducing both immediate and long-term adverse outcomes.

Lumley J see **Jonas HA**

Lyall HA: Dupuytren's disease in identical twins. J Hand Surg [Br] 1993 Jun;18(3):368-70
The aetiology of Dupuytren's disease remains unknown, although hereditary and environmental influences have been implicated. Previous reports have suggested that identical twins will develop identical contractures. This paper reports two pairs of identical twins, in each of which only one twin has evidence of Dupuytren's disease. This demonstrates that an appropriate genetic background is inadequate of itself for the development of Dupuytren's disease without a suitable, and as yet unknown, environmental trigger.

Lykken DT, Tellegen A: Is human mating adventitious or the result of lawful choice? A twin study of mate selection. J Pers Soc Psychol 1993 Jul;65(1):56-68
Pairs of middle-aged twins and their spouses provided data on 74 mainly psychological variables. Neither spousal similarity nor idiosyncratic criteria could account for specific mate selection in these 738 couples. Of the twins (and their spouses), 547 independently rated their initial attraction to their twin's mate (or to their spouse's twin): Findings suggest that characteristics both of the chooser and the chosen constrain mate selection only weakly. This article proposes that it is romantic infatuation that commonly determines the final choice from a broad field of potential eligibles and that this phenomenon is inherently random, in the same sense as is imprinting in precocial birds.

Lykken DT see **McGue M**

Lynch L see **Berkowitz RL**

Lynch L see **Evans MI**

Lyons MJ see **True WR**

M

McClearn GE see **Bergeman CS**

McClearn GE see **Pedersen NL**

McCrae RR see **Bergeman CS**

McCurdy CM Jr, Childers JM, Seeds JW: Ligation of the umbilical cord of an acardiac-acephalus twin with an endoscopic intrauterine technique. Obstet Gynecol 1993 Oct;82(4 Pt 2 Suppl):708-11
BACKGROUND: Fetal acardia is a rare entity that complicates twin gestation. Reported survival of the normal or "pump" twin is below 50%. Perinatal mortality and morbidity typically result from heart failure in the pump twin caused by the circulatory demands of perfusion of the abnormal twin. Conservative management has not improved perinatal survival. CASE: A 30-year-old woman with a twin gestation at 18 weeks was diagnosed with acardia acephalus. Congestive heart failure of the pump twin led to an intrauterine endoscopic attempt to ligate the umbilical cord of the acardiac twin. Both twins ultimately died. CONCLUSION: A variety of invasive techniques have been reported to accomplish occlusion of the acardiac twin's umbilical cord, with inconsistent results. Maternal morbidity was minimal and technical success was achieved with an endoscopic intrauterine technique of umbilical cord ligation. Despite the poor fetal outcome in this case, endoscopic ligation of the acardiac twin's umbilical cord should be considered for treating this unusual complication of twinning.

McDermott MG see **Morris DG**

Macdonald AM: Twin studies in medical research [letter; comment] Lancet 1993 May 29; 341(8857):1419

McFarland HF see **Utz U**

McFarland JG, Blanchette V, Collins J, Newman PJ, Wang R, Aster RH: Neonatal alloimmune thrombocytopenia due to a new platelet-specific alloantibody. Blood 1993 Jun 15;81(12):3318-23
An infant with severe neonatal alloimmune thrombocytopenia is described in whom an antibody directed at a new platelet-specific alloantigen, Ca (HPA-6b), is implicated. The new alloantigen is of low frequency in the population and was localized to platelet glycoprotein (GP) IIIa. Immunoprecipitation studies using murine monoclonal antibodies specific for the GP complex IIb-IIIa and GPIIIa alone (AP2 and AP3) suggest that the location of the Ca epitope on GPIIIa may be near the binding site for AP3. Neonatal alloimmune thrombocytopenia associated with Ca is likely to be as severe as that seen in cases due to incompatibilities for the HPA-1 (PIA) and HPA-4 (Pen) platelet alloantigen systems, because each is located on GPIIIa, a densely represented molecule on the platelet surface.

McFarlin DE see **Utz U**

MacGregor AJ see **Worthington J**

McGue M, Hirsch B, Lykken DT: Age and the self-perception of ability: a twin study analysis. Psychol Aging 1993 Mar;8(1):72-80
Two thousand nine hundred seventy-four adults, including 678 monozygotic and 547 dizygotic twin pairs, aged 27-86 years, self-rated ability on 6 factors: Interpersonal Competence, Workplace Skills, Trade Skills, Intellectual and Cultural, Domestic Skills, and Athletic Competition. Age accounted for no more than 2% of the variance on any factor, and, although there were significant gender effects, no significant Age X Gender interactions were observed. Twin similarity did not

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vary significantly with age, and biometrical variance component estimates were statistically homogeneous across age with talent factor variance being apportioned approximately equally to genetic and nonshared environmental factors. Consistent failure to find age effects as well as consistent observation of significant heritability support the conclusion that self-concept crystallizes early in adulthood and reflects genetically influenced psychological characteristics.

McGuffin P see **Rutherford J**

Machat JJ: Double-blind corticosteroid trial in identical twins following photorefractive keratectomy. Refract Corneal Surg 1993 Mar-Apr; 9(2 Suppl):S105-7

The use of topical corticosteroids following excimer laser photorefractive keratectomy (PRK) is widespread, but the role of corticosteroids remains poorly defined. The purpose of this study was to evaluate the use of different corticosteroid postoperative regimens following 193-nanometer excimer PRK in identical twins. Preoperatively, cycloplegic refraction of the left eye of each twin measured -3.00 D sphere. The full correction was treated utilizing the identical technique within the same 30 minute period. The study was conducted in a double-blind fashion and the refraction, corneal clarity, uncorrected and best spectacle corrected visual acuity, and keratometry were assessed over the 6-month study period. Both twins were placed on an identical regimen, tapering their drops over a 3-month period. Corneal clarity was remarkably well preserved with essentially clear corneas observed in both twins. Similarly, both twins achieved 20/15 vision with a cycloplegic refraction of +0.75 D at 6 months. The only difference in the healing pattern was the slightly more rapid visual recovery in twin A. The code was revealed upon the cessation of corticosteroid regimen. Twin A had received fluoromethalone 0.1% and Twin B received dexamethasone 0.1%. Keratometry demonstrated identical flattening. There were no corticosteroid induced intraocular pressure rise or other complications noted. Identical twins presented a unique opportunity to better understand wound healing following laser keratectomy. The results of this limited study indicated that for at least lower degrees of myopia the need for full strength topical corticosteroids remains questionable.

Mack LA see **Harrison SD**

Mack T see **Richardson JL**

Mack TM see **Kumar D**

McMurtrie E see **Miller D**

McNamara JA Jr see **Trotman CA**

Madjar H see **Prömpeler HJ**

Maes H see **Derom C**

Mahmoud H see **Ford AM**

Mahone PR, Sherer DM, Abramowicz JS, Woods JR Jr: Twin-twin transfusion syndrome: rapid development of severe hydrops of the donor following selective feticide of the hydropic recipient. Am J Obstet Gynecol 1993 Jul;169(1):166-8

Twin-twin transfusion syndrome is a serious complication of monozygotic twin pregnancies and is associated with high rates of perinatal morbidity and mortality. Unfortunately, therapies to disrupt the arteriovenous anastomoses are limited, and the success rate of these therapeutic modalities are poor. We present a case of severe twin-twin transfusion syndrome at 23 weeks' gestation in which selective feticide of the recipient hydropic twin by intracardiac injection of potassium chloride was followed by rapid development of hydrops in the donor twin.

Mahoney V see **Shwayder JM**

Malhotra CJ see **Chadha R**

Malik S see **Sharma JB**

Marconi AM, Davoli E, Cetin I, Lanfranchi A, Zerbe G, Fanelli R, Fennessey PV, Pardi G, Battaglia FC: Impact of conceptus mass on glucose disposal rate in pregnant women. Am J Physiol 1993 Apr;264(4 Pt 1):E514-8

The impact of an increasing fetal and placental mass on maternal glucose disposal rate (GDR) was studied in 17 pregnant women. Eleven pregnancies were singleton pregnancies, five were twin and one was a triplet pregnancy. Both the maternal fasting glucose concentration [Glc] and the total fetal and placental weight (W) were significantly correlated with an increased maternal GDR. Glucose concentration and conceptus weight were interdependent. The multiple linear regression of glucose disposal rate on glucose concentration and total weight is given by $GDR = -1.573 + 0.176W + 0.932[Glc] +/- 0.24$, $r2 = 0.52$, $P < 0.01$. These data are utilized to estimate the glucose utilization rate of the human conceptus at a fasting glucose concentration of 3.9 mM with a range of 10-15 mg.kg-1.min-1. Maternal GDR increases with increasing glucose concentration at a rate similar to that reported for newborn infants, consistent with a high glucose utilization by the uterus.

Mardesič T, Müller P, Zetová L, Miková M, Stroufová A: [Selective reduction of multiple pregnancy in the 1st trimester: results and experience in 10 cases] Cesk Gynekol 1993 Jun;58(3):115-8 (Eng. Abstr.) **(Cze)**

Ten patients with multiple gestations, all resulting from in vitro fertilization, underwent multifoetal pregnancy reduction. In four cases transvaginal puncture was performed, six patients underwent transabdominal pregnancy reduction. Seven women delivered, all three pregnancy losses occurred in the transvaginal punction group--there was one early loss after the procedure and two abortions in the late second trimester. There were 5 sets of twins and two singletons were delivered. Multifoetal pregnancy reduction represents an important addition to the management of unplanned multifoetal pregnancy resulting from infertility treatment. The procedure is not without risks and these must be weighted against expected benefits.

Maresi E see **Corsello G**

Maret A see **Marguery MC**

Marguery MC, Giordano F, Parant M, Samalens G, Levade T, Salvayre R, Maret A, Calvas P, Bourrouillou G, Cantala P, et al: Fabry's disease: heterozygous form of different expression in two monozygous twin sisters. Dermatology 1993; 187(1):9-15

A 26-year-old woman presented widespread angiokeratomas predominantly in a swimsuit distribution pattern associated with acroparesthesia in all four limbs. The tentative diagnosis of Fabry's disease (FD) was confirmed by optical and electron-microscopic findings and by appropriate biochemical testing. The work-up showed ocular and renal manifestations of the disease. The monozygous twin sister of the patient was asymptomatic although she was shown to be heterozygous for the enzymatic defect. These 2 cases illustrate the concept of extreme lyonization which can explain observed phenotypic differences in heterozygous females with X-linked hereditary diseases. The father and mother of the patient were shown to be noncarriers of the trait, suggesting de

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novo mutation in the twin pregnancy. However, biochemical testing for the detection of FD heterozygous females cannot rule out the possibility of the mother being heterozygous with normal enzyme activity.

Marin MJ see **Divon MY**
Martin J see **Whitam FL**
Martin JN Jr see **Chauhan SP**
Martin ML see **Cragan JD**
Martin NG see **Chenevix-Trench G**
Martin NG see **Duffy DL**
Martin NG see **Williams PD**
Martin R see **Utz U**
Martínez López A see **Rufo Campos M**
Mathé AA see **Kendler KS**
Matsche J see **Opitz J**
Mayer EJ see **Austin MA**

Meizner I, Levy A, Katz M, Glezerman M: [Early ultrasonic diagnosis of conjoined twins] Harefuah 1993 Jun 15;124(12):741-4, 796 (Eng. Abstr.) **(Heb)**

Conjoined twins is a rare congenital malformation occurring in 1:30,000-1:100,000 live births. Its early prenatal detection was extremely rare prior to the introduction of obstetric ultrasonography. We report 3 cases of early ultrasound diagnosis of conjoined twins at 9, 15 and 19 weeks of pregnancy, respectively. The diagnosis at 9 weeks of gestation was made via the transvaginal approach, and to the best of our knowledge is the earliest diagnosis reported in the English literature. In all 3 cases the fetuses were of the thoraco-omphalopagus type and had a shared heart. Pregnancy was discontinued in all 3 cases using methods appropriate for the first and second trimesters of pregnancy.

Mensier A, Lopes P, Boog G: [Ultrasound and twin pregnancy. The effect of placentation on fetal biometric growth and quantitative abnormalities of the amniotic fluid] Rev Fr Gynecol Obstet 1993 Feb; 88(2):69-71 (Eng. Abstr.) **(Fre)**

Neonatal retarded growth and hypotrophy are more frequent in monochorial, biamniotic twin pregnancies than in bichorial ones. The authors consider the various pathogeneses which have been suggested to account for this phenomenon.

Mercer BM, Crocker LG, Pierce WF, Sibai BM: Clinical characteristics and outcome of twin gestation complicated by preterm premature rupture of the membranes. Am J Obstet Gynecol 1993 May; 168(5):1467-73

OBJECTIVE: Our purpose was to report the clinical characteristics and outcome of twin pregnancy complicated by preterm premature rupture of membranes. STUDY DESIGN: Pregnancy outcome is compared between 99 twin pregnancies and 99 well matched singleton pregnancies complicated by preterm rupture of the membranes. RESULTS: Preterm premature rupture of membranes occurs more frequently in twin than singleton gestations (7.4% vs 3.7%, $p < 0.001$, odds ratio 2.1). Midtrimester premature rupture of membranes (< 26 weeks' gestation) complicated 1.37% of twin gestations (18.2% of those with preterm premature rupture of membranes) versus 0.52% of singleton gestations ($p < 0.001$, odds ratio 2.71). The mean gestational age at preterm premature rupture of membranes was 30.1 +/- 4.3 weeks. The median latency to delivery for twins was 1.1 days with 91% of patients delivered within 7 days (vs 1.7 days, 90% delivered at 7 days for singleton gestations). Latency was prolonged with preterm premature rupture of membranes < 30 weeks' versus > or = 30 weeks' gestation ($p = 0.03$). The nonpresenting infant more frequently had hyaline membrane disease and required more oxygen therapy than the presenting infant. No significant differences in infectious morbidity, cord prolapse, or abruptio placentae were seen between twin and singleton gestations. CONCLUSION: This investigation provides the basis for patient counseling and management subsequent to preterm premature rupture of membranes in twin gestation.

Meriah S see **Zhioua F**
Merkatz IR see **Divon MY**
Mesrogli M see **Behrens O**
Métneki J see **Láng E**
Meyer JM see **Eaves LJ**
Michel FB see **Demoly P**
Miková M see **Mardesič T**

Miller D, Jackson R, Ehlen T, McMurtrie E: Complete hydatidiform mole coexistent with a twin live fetus: clinical course of four cases with complete cytogenetic analysis. Gynecol Oncol 1993 Jul; 50(1):119-23

Twin gestations can occur in which one twin is a normal gestation (46 chromosomes: 23 maternal and 23 paternal origin) and in which the other twin is a complete hydatidiform mole (46 chromosomes all of paternal origin). Case reports of four such combined pregnancies that presented to a single institution are provided. All cases had documentation of clinical information, cytogenetic analysis, and fetal and placental pathology. Three of the four pregnancies were terminated for medical indications despite information documenting the presence of a normal fetus. All three of these patients required subsequent chemotherapy. The fourth case was followed conservatively and resulted in the birth of a normal infant at 38 weeks gestation. We speculate that the factors that led to the need for termination of the pregnancy (aggressive growth of trophoblast) may predict the need for further therapy. A true assessment of the antenatal and malignant sequelae risks associated with these rare gestations awaits the collection of a larger series of patients.

Miller MM see **Keith SC**
Minogue J see **Luke B**

Mittendorf R: "The effect of presentation and mode of delivery on neonatal outcome in the second twin"--is this study biased? [letter]
Am J Obstet Gynecol 1993 Aug;169(2 Pt 1):438-9

Miura CS see **Strong TH Jr**
Mohta A see **Chadha R**
Mok JY see **Barlow KM**
Molteni E see **Parazzini F**
Mondrus GT see **Richardson JL**

Monteagudo A, Timor-Tritsch IE: Transvaginal multifetal pregnancy reduction: Which? When? How many? Ann Med 1993 Jun;25(3):275-8

This report contains the experience of our centre, using the transvaginally guided puncture procedure, to reduce the number of fetuses in a multifetal pregnancy to a lower number. The aim of the procedure was to improve perinatal outcome and/or to meet the personal desires of patients and their families. We surveyed 148 multifetal pregnancy reductions. The fetus or fetuses overlying the internal os was most commonly reduced. The total uncorrected loss of the entire pregnancy was 13.4%. The corrected pregnancy loss was 11%. Of the 63 twins left after the reduction, 33 delivered preterm. Of the 36 singletons, two delivered preterm. Our conclusion was that multifetal pregnancy reduction is a safe procedure for the mother and has an acceptable loss rate of the entire pregnancy. The

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reduction of a fetus overlying the internal os by the transvaginal puncture procedure seems to yield results at least as good as the transabdominally performed puncture procedures for multifetal pregnancy reduction.

Mordel N, Laufer N, Zajicek G, Shalev Z, Lewin A, Schenker JG, Sadovsky E: Sonographic growth curves of triplet conceptions. Am J Perinatol 1993 May;10(3):239–42
The diagnosis of inappropriate intrauterine fetal growth in triplet pregnancies requires normal standard sonographically determined growth curves. The aim of the present study was to establish such nomograms. The biparietal diameter (BPD), femur length, head and abdominal circumferences (HC, AC) were once in 3 weeks sonographically evaluated in 108 normal triplet fetuses. The resulting growth curves were compared with those of normal singleton fetuses. The data showed that, compared with singletons, the mean triplet fetal BPD progressively lags to a maximum of 2 1/2 weeks as pregnancy continuous from the 25th to the 36th gestational week. Similarly, mean femur length of triplet fetuses gradually shortfalls to the greatest of 2 weeks as gestation advances from the 25th to the 36th week. HC to AC ratio of the triplet fetuses does not differ from the singletons curve. It may be concluded that a normal fetal growth curve in triplet pregnancies demonstrates a 1- to 3-week delay compared with singleton gestations.

Mordel N, Benshushan A, Zajicek G, Laufer N, Schenker JG, Sadovsky E: Discordancy in triplets. Am J Perinatol 1993 May;10(3):224–5
Discordancy in twins is generally described as a weight difference between the fetuses of 15 to 25% and its prevalence in normal twin gestations is estimated at 15 to 29%. The present study was performed in order to determine the frequency of discordant newborns in uncomplicated triplet gestations. One hundred and fourteen normal triplet newborns were delivered during a period of 11 years. Their birthweight ranged from 493 to 2533 gm, with a mean of 1894.2 +/- 468.5 gm (+/- sd). In 58% of these 38 sets of triplets the difference in weight between the largest and smallest newborn was more than 15%. About a quarter of the newborns had a greater than 25% dissimilarity in their birthweights. There was no substantial fetal-fetal transfusion or difference in the Apgar scores between the discordant fetuses. It may be concluded that triplet newborns have a rate of discordancy double that of twins. Discordance per se does not necessarily mark an underlying complication of pregnancy or a bad perinatal outcome.

Moreschi C see **Parazzini F**

Morgan P see **Wapner RJ**

Morita H see **Yoshimura K**

Morris DG, McDermott MG, Diskin MG, Morrison CA, Swift PJ, Sreenan JM: Effect of immunization against synthetic peptide sequences of bovine inhibin alpha-subunit on ovulation rate and twin-calving rate in heifers. J Reprod Fertil 1993 Jan;97(1):255–61
Three peptide sequences from the bovine inhibin alpha-subunit (P1: 18–30; P2: 63–72 and P3: 107–122) were synthesized and conjugated to human serum albumin (HSA). Hereford cross-heifers (n = 5 per group) were injected with 3 mg of one of the peptide conjugates, followed by three booster injections at intervals of 11 weeks. Control heifers (n = 5) were injected with HSA only. Antibodies recognizing both the individual peptides and 32 kDa bovine inhibin were generated and ovulation rate was increased in peptide immunized heifers. In group P1, 1 of 5 heifers responded with an increased ovulation rate whereas in groups P2 and P3, 5 of 5 and 4 of 5 heifers, respectively, had an increased ovulation rate. In group P2, in the first oestrous cycle following booster injections 2 and 3, 4 of 5 and 3 of 5 heifers, respectively, responded with twin ovulations, whereas a fourth heifer had three ovulations following booster injection 3. After breeding following booster injection 3, 3 of 5 heifers in group P2 and 1 of 5 in group P3 gave birth to twin calves. This study demonstrates the potential of immunizing against synthetic peptide sequences of the alpha-subunit of bovine inhibin to increase ovulation and twinning rates in cattle.

Morrison CA see **Morris DG**

Morrison JC see **Chauhan SP**

Moskowitz WB, Mosteller M, Hewitt JK, Eaves LJ, Nance WE, Schieken RM: Univariate genetic analysis of oxygen transport regulation in children: the Medical College of Virginia Twin Study.
Pediatr Res 1993 Jun;33(6):645–8
We investigated the relative contributions of genetic, individual environmental, and shared environmental effects on 2,3-diphosphoglycerate (DPG) regulation in preadolescent children. In a population of 165 early pubescent boy and girl twin pairs (11.4 y old), of whom 63 were passive smokers, we asked: 1) Are there differences in the control of DPG levels between early pubertal boys and girls? 2) If present, are these differences influenced by exposure to passive cigarette smoke? Non-passive-smoking boys and girls had similar DPG levels. With exposure to passive smoke, DPG levels increased in boys ($p = 0.02$) but not in girls. Analysis of variance on DPG demonstrated a parental smoking effect ($p = 0.008$) and suggested an interactive effect between parental smoking and sex of the child ($p = 0.08$). Univariate genetic analyses suggested that genes operated at different magnitudes in boys (9%) and girls (39%) in explaining a significant portion of the variance in DPG. The magnitude of shared environmental influences was greater in boys (62%) than in girls (34%), whereas individual environmental effects were similar in boys (29%) and girls (26%). Early pubertal boys differ from girls in their regulation of DPG. Environmental stressors such as passive cigarette smoke may elicit different responses in males and females, even at an early age. The use of path analysis may provide important insights into the mechanisms and interactions of genetic and environmental effects that underly the childhood antecedents of atherosclerotic heart disease.

Mosteller M see **Moskowitz WB**

Moum T see **Tambs K**

Moy L see **Collet M**

Muhs A, Schepank H: [Discordance analytic studies of monozygotic twins]
Z Psychosom Med Psychoanal 1993;39(2):174–90 (Eng. Abstr.) **(Ger)**
Discordance analyses of monozygotic twins make it possible to study the influence of neurotic pathogenic situations of early childhood upon later neurotic developments. The analysis offers the advantage of having a genetic double who was shaped by the same psychosocial macro influences and went through a sound development as a comparison for an examination of the course of psychogenic illnesses. However, two prerequisites are necessary: 1. the human genetic/anthropological or serological diagnosis in order to be able to definitely say whether the twins are monozygotic or not and 2. both twins must be alive. A strong discordance regarding markedness of characteristics

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or a varying degree of symptom manifestation as well as a longer period of observation are further conditions. With the example of four short casuistries of monozygotic twins the environmental variables which are decisive in the individual cases for the discordant development are described: A highly ambivalent early childhood relationship in contrast to a mostly balanced relationship is the foundation for a neurotic course in connection with pathological conspicuous behavior of the parents, sibling rivalry and differing attitudes of the parents regarding each of the twin siblings. As a result each twin identifies with a different parent, leads in development and dominance positions are also consequences. Later the course set in school and career, orientation regarding an intimate partner and the neurotically preformed personality structure, which is the basis for differing degrees of being able to cope successfully with threshold situations, become framing situations of discordant neurotic versus stable and sound development.

Mulder PG see **Heydanus R**
Müller P see **Mardesič T**
Muller-Giamarchi M see **Jasmin JR**
Murphy M see **Bailey A**
Murray HG, Stone PR, Strand L, Flower J: Fetal pleural effusion following maternal indomethacin therapy. Br J Obstet Gynaecol 1993 Mar; 100(3):277–9
Murray RM see **Rutherford J**
Murray TJ see **Sadovnick AD**
Musgrove K see **Wheeler D**

N

Nagoshi CT see **Rhea SA**
Nakajo T see **Yokomori K**
Nance WE see **Moskowitz WB**
Neale MC, Eaves LJ: Estimating and controlling for the effects of volunteer bias with pairs of relatives. Behav Genet 1993 May;23(3):271–7
If pairs of relatives correlate in their liability to participate in a research project, it is possible to test for the effects of volunteering on the criterion variable of interest. Much of the information for this test comes from a difference in criterion variable mean between individuals with and those without a cooperative relative. Also, if data are available from more than one class of relative, it may be possible to discriminate between (i) volunteering that occurs as a consequence of the criterion variable and (ii) volunteering as a cause of the criterion. Likelihood formulae are presented that permit quantification and significance testing of volunteer bias. If data are collected from a genetically informative design such as a twin study, it is possible to estimate genetic and environmental parameters independent of the contaminating effects of such bias. We describe some methods of reducing the computational burden of multidimensional integration to allow extension to multivariate data. Implications for research design and management are discussed.
Neale MC see **Eaves LJ**
Neale MC see **Kendler KS**
Nesselroade JR see **Bergeman CS**
Newman B see **Austin MA**
Newman PJ see **McFarland JG**
Newman RB see **Bivins HA Jr**
Ng KY see **Jou HJ**
Nicolaides KH see **Evans MI**
Nijs M, Geerts L, van Roosendaal E, Segal-Bertin G, Vanderzwalmen P, Schoysman R: Prevention of multiple pregnancies in an in vitro fertilization program. Fertil Steril 1993 Jun;59(6):1245–50
OBJECTIVE: To limit the high number of multiple pregnancies in an IVF program. SETTING: In Vitro Fertilization Laboratory, Fertility Department, Public Hospital. INTERVENTIONS: The number of embryos transferred was limited to two instead of three. RESULTS: Limiting the number of embryos transferred to only two did not influence the take home baby rate but eliminated triplet and quadruplet gestations. Moreover, the number of patients with good quality supernumerary embryos available for cryopreservation increased. CONCLUSIONS: To reduce the high frequency of multiple gestations in an IVF program, the number of embryos replaced should be limited to a maximum of two.
Nijs M, Vanderzwalmen P, Segal-Bertin G, Geerts L, Van Roosendaal E, Segal L, Schoysman-Deboeck A, Schoysman R: A monozygotic twin pregnancy after application of zona rubbing on a frozen-thawed blastocyst. Hum Reprod 1993 Jan;8(1):127–9
Assisted hatching techniques enhance the success rate of implantation of in-vitro fertilized human embryos. We report here the successful transfer of a frozen-thawed human blastocyst on which we applied a non-invasive zona rubbing technique (reduction of the thickness of the zona pellucida by gentle rubbing with a microneedle). The implantation in the uterus led to the delivery of healthy monozygotic twins.
Nisenbaum H see **Glasser SA**
Nishimura M see **Kobayashi S**
Nishimura M see **Ohashi Y**
Noda K see **Fuchi I**
Nomballais MF see **Plattner V**
Nose T see **Yasuda S**
Nowak J see **True WR**

O

Oakes J see **Barwick WJ**
Obafunwa see **Isichei HU**
O'Brien JE see **Drugan A**
O'Brien TJ see **Keith SC**
O'Connor BM see **Dubrey SW**
O'Donnell M see **Dubrey SW**
Oelberg DG see **Wheeler D**
Oh W see **Chen SJ**
Ohashi Y, Tashiro C, Tanigami H, Fukumitsu K, Kinouchi K, Inamori N, Takauchi Y, Nishimura M: [The anesthetic management of cesarean section for multiple pregnant patients] Masui 1993 Jul; 42(7):1081–5 (Eng. Abstr.) **(Jpn)**
Anesthetic management of cesarean section for twenty multiple pregnant patients, who were pregnant with triplet or quadruplet, was compared with that for 325 single pregnant patients and 21 twin pregnant patients. For anesthetic methods, spinal anesthesia was chosen most frequently in the multiple pregnant patients, as in single and twin (more than 75 percent). In multiple pregnant patients, the incidence of emergency operation was less. In multiple pregnant patients who received spinal anesthesia, gestational age was lower; birth weight was lighter; length of fundus uteri was longer; and blood loss including amniotic fluid was larger. In triplets, the third infants' UID-time was prolonged and their Apgar score was lower.
Ohba Y see **Hayakawa K**
Ohkura M see **Yokomori K**

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Okada S see **Tsukamoto H**
Okumra Y see **Fuchi I**
Olivennes F see **Fernandez H**
Ollier WE see **Kohsaka H**
Ollier WE see **Worthington J**
Olson JM, Breslow NE, Barce J: Cancer in twins of Wilms tumor patients. Am J Med Genet 1993 Aug 1;47(1):91–4
We interviewed families of 71 patients registered in the National Wilms Tumor Study and identified as having a twin sibling. Questions concerning zygosity and the occurrence of congenital anomalies and other forms of cancer in the twins were asked. Of the 71 twin pairs, 35 were dizygotic, 31 were monozygotic, and 5 were of unknown zygosity. The only pair concordant for Wilms tumor was dizygotic, leading to a heritability estimate of zero. In a monozygotic pair, one twin was diagnosed with Wilms tumor and the other with medulloblastoma. The estimated relative risk of Wilms tumor and childhood cancer in the co-twin was 250 times and 10 times the population rate, respectively. Four discordant pairs had a family history of Wilms tumor, suggesting that the penetrance of the condition is not complete. Because of the small sample size, caution should be exercised in the interpretation of these results.
Onstad S, Skre I, Torgersen S, Kringlen E: Parental representation in twins discordant for schizophrenia. Psychol Med 1993 May;23(2):335–40
Parental representation was assessed with the Parental Bonding Instrument (PBI) in 12 monozygotic (MZ) and 19 dizygotic (DZ) same-sexed twin pairs discordant for DSM-III-R schizophrenia. The schizophrenic twins reported less care and more overprotection from both parents than the non-schizophrenic co-twins. Multiple regression analysis disclosed that the results were independent of sex and age. Furthermore, the analysis demonstrated that whether the twins were monozygotic or dizygotic had no impact on the results. A stepwise discriminant analysis showed that difference in perceived paternal protection was the most important variable distinguishing between schizophrenic probands and their non-schizophrenic co-twins.
Oostra BA see **De Jong PT**
Opitz J, Matsche J, Borens K: A 354-gram infant: 48 month follow-up. Wis Med J 1993 Apr;92(4):187–8
Extreme prematurity (birth weight less than 500 g) with intact survival is very uncommon. This paper describes a preterm infant with birth weight of 354 g who is now 4 years old and developmentally normal. Intervention and management decisions in such a low birth weight group produce an ethical enigma. Survival of newborns with a birth weight less than 400 g is unusual. Decisions regarding intervention and care for extremely low birth weight infants impact on financial, emotional, and medical responsibilities of family members and health care professionals. It has been increasingly difficult to set guidelines or policies regarding resuscitation of "micropremies" based on weight and gestational age.
Oreland L see **Pedersen NL**
Oriot D, Boussemart T, Berthier M, Bonneau D, Coisne D: Paradoxical effect of inhaled nitric oxide in a newborn with pulmonary hypertension [letter] Lancet 1993 Aug 7;342(8867):364–5

P

Palacios J see **Ignacio Rodríguez J**
Pangui E, Priou G, Aussel D, Grall JY: [Term birth of a twin after the rupture of the uterine horn at 15 weeks gestational age]
J Gynecol Obstet Biol Reprod (Paris) 1993; 22(4):411–6 (Eng. Abstr.) **(Fre)**
Having treated a case which resulted in the delivery at term of an intrauterine twin when the other twin had been lost after the rupture of a uterine cornu which itself followed a salpingectomy without removal of the interstitial portion of the tube brings the authors to discuss the physiopathology and the symptomatology of such cases. They also discuss the value of resecting the interstitial portion of the tube and what management should be when there is a live intrauterine pregnancy.
Parant M see **Marguery MC**
Parazzini F, Tozzi L, Bocciolone L, Molteni E, Moreschi C, Fedele L: Risk factors for multiple births. Acta Obstet Gynecol Scand 1993 Apr; 72(3):177–80
STUDY OBJECTIVE: To analyze risk factors for multiple births. DESIGN: A case-control study. Cases were 103 women (median age 31 years, range 20–44) who delivered multiple births not related with treatment for infertility at the 'Clinica Luigi Mangiagalli' of Milan. A total of 27 women delivered monozygotic twins and 76 dizygotic ones. Controls were 308 women (median age 30, range 17–45) admitted for normal delivery on selected days to the same clinic where cases had been identified. RESULTS: Cases tended to be less educated than controls and the relative risk of multiple pregnancy, compared with women reporting seven years of schooling or less, was 0.4 in those reporting 7–11 and 12 or more years of education. When the analysis was done separately for dizygotic and monozygotic multiple pregnancies, this relationship was restricted to dizygotic multiple pregnancies (chi 2 (1) trend for dizygotic pregnancies = 3.82, p = 0.05). A family history of multiple pregnancies was reported in 36 women (48%) with dizygotic multiple pregnancy and 13 (52%) monozygotic ones and 88 (30%) controls. The corresponding relative risks (RR) were 2.2 and 2.5 respectively for dizygotic and monozygotic pregnancies. Compared with nulliparae, the estimated RR of dizygotic multiple pregnancies was 0.5 in women reporting two or more births, but the trend in risk with number of births was not statistically significant. No relationship emerged with spontaneous or induced abortions, body mass index, oral contraceptive or IUD use, age at menarche and risk of multiple pregnancies. CONCLUSIONS: This study confirms the role of familiarity in the risk of multiple pregnancies and suggests some different epidemiological characteristics in dizygotic and monozygotic multiple pregnancies.
Pardi G see **Marconi AM**
Patten RM see **Harrison SD**
Paty DW see **Sadovnick AD**
Pedersen N see **Kendler KS**
Pedersen NL, Oreland L, Reynolds C, McClearn GE: Importance of genetic effects for monoamine oxidase activity in thrombocytes in twins reared apart and twins reared together. Psychiatry Res 1993 Mar; 46(3):239–51
The relative importance of shared genes, shared environments, and individual specific environmental effects for monoamine oxidase (MAO) activity in thrombocytes was assessed in the Swedish Adoption/Twin Study of Aging. The sample consists of identical twins separated at an early age and reared apart (30 pairs), identical twins reared

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together (60 pairs), fraternal twins reared apart (66 pairs), and fraternal twins reared together (68 pairs), whose average age was 63.5 years; 49% were female. Consistent with the literature, the heritability of MAO activity was 0.77 and did not differ across cohort (under or over 63 years of age) or gender. Sharing rearing environments or similar experiences later in life does not result in familial similarity for MAO activity.

Pedersen NL see **Bergeman CS**

Pelliccia G see **Boulot P**

Pelloux H, Goullier-Fleuret A, Tous J, Ambroise-Thomas P: [Congenital toxoplasmosis at immediate or delayed serological disclosure in twins (letter)] Arch Fr Pediatr 1992 Nov;49(9):839-40 **(Fre)**

Peray P see **Boulot P**

Perez-Vidal MT see **Soler A**

Peukert R see **Prömpeler HJ**

Peyser MR see **Botchan A**

Phadke SR see **Sharma AK**

Phillips DI: Twin studies in medical research [letter] Lancet 1993 Jul 3;342(8862):52

Phillips DI, Hales CN, Barker DJ: Can twin studies assess the genetic component in type 2 (non-insulin-dependent) diabetes mellitus? [letter; comment] Diabetologia 1993 May;36(5):471-2

Phillips DI: Twin studies in medical research: can they tell us whether diseases are genetically determined? [see comments] Lancet 1993 Apr 17; 341(8851):1008-9

Pickles A see **Eaves LJ**

Pierce WF see **Mercer BM**

Plattner V, Heloury Y, Cohen JY, Nomballais MF, Rogez JM, Leborgne J, Robert R: Anatomical study of five prenataly diagnosed sternopagus twins. Surg Radiol Anat 1993;15(1):35-9

Among conjoined twins (1 out 50000 births), thoracopagus occurs most frequently and is generally lethal. Our anatomical study of five sets of sternopagus twins (3 female, 2 male) was performed to determine the ability of prenatal sonography to detect these anomalies. Autopsy in four cases revealed identical malformations: common sternum, single malformed heart, joined hepatic parenchyma, and a common small bowel leading to a cystic dilatation situated on the ileal segment at the end of the superior mesenteric artery. The diagnosis of conjoined twins was made in all cases by prenatal sonography at the mean time of 24.6 gestation weeks (range 19-34). The malformations detected by prenatal sonography were a single cardiac mass (all cases), joined hepatic parenchymas (3 cases), and an ileal cystic dilatation (1 case). Pregnancy was terminated in four cases. In one case cesarean delivery was performed, and the infants died 48 hours later. Prenatal sonography currently seems to be the best examination for diagnosis of sternopagus twins and the detection of lethal malformations thus allowing interruption of pregnancy.

Plomin R see **Bergeman CS**

Plotnick L see **Reiss AL**

Pollack RN see **Divon MY**

Pollin W see **Stabenau JR**

Princen HM see **Boomsma DI**

Priou G see **Pangui E**

Prömpeler HJ, Madjar H, Klosa W, du Bois A, Peukert R, Wilhelm C, Breckwoldt M: [Doppler ultrasound in high grade multiple pregnancies] Geburtshilfe Frauenheilkd 1993 Jun;53(6):406-10 (Eng. Abstr.) **(Ger)**

From 1987 until 1992, 16 triplets and 2 quadruplets were studied by pulsed Doppler ultrasound between 17 and 36 weeks of gestation. A resistance index (RI) of the foetal aorta and umbilical artery above the 95th percentile was considered pathological. Elevated RI-values of the umbilical artery as compared to the A. cerebri media were indicative of circulatory centralisation. Intrauterine growth retardation (IUGR) was found in 9 (16%) foetuses, discordant growth occurred in 7 (39%) pregnancies. 41 (73%) of 56 foetuses survived in good health. Four of 7 foetuses with pathological Doppler findings died. The three survivors were markedly retarded. Four of 6 cases of intrauterine endangered foetuses were detected by Doppler sonography. The diagnosis of IUGR or discordant growth was based more frequently on pathological Doppler findings than on biometry and improved upon by combinations of both methods. Doppler sonography proved to be an important complementary method in the monitoring of high-grade multiple pregnancies.

Puddey IB see **Williams PD**

Pyke DA see **Leslie RD**

R

Ragland JD see **Goldberg TE**

Randolph C, Hyde TM, Gold JM, Goldberg TE, Weinberger DR: Tourette's syndrome in monozygotic twins. Relationship of tic severity to neuropsychological function. Arch Neurol 1993 Jul; 50(7):725-8

OBJECTIVE--To determine whether there is a relationship between tic severity and neuropsychological function in Tourette's syndrome (TS). DESIGN--The study employed a case-control series involving monozygotic twin pairs, divided into more severe and less severe groups based on tic severity and tested with a neuropsychological battery of tests. SETTING--Twin pairs were recruited nationwide and evaluated in the National Institute of Mental Health Neuropsychiatric Research Hospital. PATIENTS--Twelve twin pairs (mean age, 10.5 years; range, 8 to 16 years) in which at least one member met criteria for a diagnosis of TS. RESULTS--Global neuropsychological performance was significantly worse in the twins with more severe tic symptoms, with significant differences emerging on individual tests of attention, visuospatial perception, and motor function. In each twin pair, the twin with more severe tics had poorer global neuropsychological function. CONCLUSIONS--The results suggest that the nongenetic factors that influence tic severity in TS exert a similar effect on neuropsychological function, and that these two clinical manifestations of TS may share a common pathophysiologic state.

Rao KL see **Samujh R**

Rasmussen MJ see **Byrne BM**

Reader M see **Reiss AL**

Reaveley DA see **Dubrey SW**

Rees AE, Vujanic GM, Williams WM: Epidemic of conjoined twins in Cardiff. Br J Obstet Gynaecol 1993 Apr;100(4):388-91 (5 ref.)

Rees AE, Vujanic GM: Epidemic of conjoined twins in Cardiff [letter] Br J Obstet Gynaecol 1993 Jul; 100(7):701

Reiss AL, Freund L, Plotnick L, Baumgardner T, Green K, Sozer AC, Reader M, Boehm C, Denckla MB: The effects of X monosomy on brain development: monozygotic twins discordant for Turner's

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syndrome. Ann Neurol 1993 Jul;34(1):95–107
Monosomy for the X chromosome is the most frequent cause of Turner's syndrome, a common clinical syndrome associated with particular physical and neurobehavioral features. The results from comprehensive assessment of prepubertal monozygotic female twins discordant for X monosomy are presented. Zygosity was established with DNA Fingerprinting and no evidence of chromosomal mosaicism was seen in either child. Physical features in the affected twin were relatively mild with respect to the full spectrum of physical malformations and disabilities associated with Turner's syndrome. The neurobehavioral phenotypes of the twins were compared. Although both sisters scored in the superior range of intelligence, the affected twin's Performance IQ was 18 points less than her sister, whereas Verbal IQ showed only a 3-point difference between the sisters. Other relative differences were noted within the executive, visuospatial, and visuomotor domains of function. Behavioral evaluation indicated greater problems with attention, hyperactivity, and anxiety in the affected twin. Quantitative analysis of brain anatomy revealed evidence of both general and regional effects of X monosomy on neurodevelopment. Cerebrospinal fluid volume was increased by 25% in the affected twin compared with her sister with a corresponding decrease in gray matter volume. The right frontal, right parietal–occipital, and left parietal–perisylvian regions showed the greatest discrepancy between the sisters with respect to increased cerebrospinal fluid and decreased gray matter volumes in twin with X monosomy. Differences in the posterior fossa were also noted with a 50% relative increase in the volumes of the fourth ventricle and cisterna magna and a 10 to 15% relative reduction in size of the cerebellar vermis, pons, and medulla in the affected twin. The association between the neurobehavioral and neuroanatomical findings in the affected twin is discussed. The unique nature of the naturally occurring genetic phenomenon seen in this twin pair provides an opportunity to more fully elucidate the neurobehavioral phenotype associated with X monosomy and Turner's syndrome.

Reynolds C see **Pedersen NL**

Rezigua H see **Zhioua F**

Rhea SA, Nagoshi CT, Wilson JR: Reliability of sibling reports on parental drinking behaviors.
J Stud Alcohol 1993 Jan;54(1):80–4
Questionnaire data from the Colorado Alcohol Research on Twins and Adoptees (CARTA) were analyzed to explore the reliability of sibling responses to items from the CARTA Family Alcoholism History Questionnaire (FHQ) concerning parental drinking behaviors. Subjects included 142 pairs of male and female, twin and nontwin siblings who reported on paternal and maternal problem drinking. FHQ items were summed to produce drinking-problem scales for fathers and mothers. There was generally good concordance across sibling reports of parental problem-drinking symptoms. There was a significant gender difference in that male offspring were more in agreement about their mothers' drinking behavior, while female offspring were more in agreement about their fathers' drinking behavior. For the most part, objective items, such as having two or more drunk-driving arrests, were more reliable (paternal kappa total = .56, maternal = .66) than subjective items, such as being happy only when drinking (paternal = .24, maternal = –.03). This evidence for reliability of sibling reports about parental drinking does seem to validate the use of such questionnaire data in alcohol studies.

Rice GP see **Sadovnick AD**

Rice J see **True WR**

Richards DS see **Yancey MK**

Richardson JL, Danley K, Mondrus GT, Deapen D, Mack T: Mammography and physician breast exams after the diagnosis of breast cancer in a twin or non-twin sister. Cancer Causes Control 1993 May; 4(3):251–60
Reports of breast-cancer-screening behavior were collected from 591 twin sisters of women with breast cancer and 182 non-twin sisters of the same women, and compared with the patterns found by national surveys. Timeline plots indicate that prior to the diagnosis of breast cancer in a sister, these women were being screened at prevailing rates. In the year after diagnosis, the annual frequency of use by them of both mammograms and physician breast exams increased by approximately 25 percent, but in subsequent years these rates dropped to a plateau no more than 10 to 15 percent higher than the baseline. The sisters over age 60 were screened with unusually low frequency, as were those with no partner in the home, those with no regular source of medical care, and especially the siblings of cases that died soon after the diagnosis. The relatively infrequent adoption of a long-term, annual, screening pattern in the face of certain knowledge of personal high risk gives cause for concern about the effectiveness of any intervention program requiring recognition of personal high risk for effectiveness. One cause for optimism is that higher screening rates prevail among those with co-twins diagnosed since 1980, suggesting that the increase in publicity and public education in recent decades has had a beneficial impact.

Ridge SA see **Ford AM**

Riese ML: Temperament prediction for neonate twins: relation to size for gestational age in same-sex pairs. Acta Genet Med Gemellol (Roma) 1992; 41(2–3):123–35
Infants from 22 pairs of appropriate-for-gestational-age/small-for-gestational-age (AGA/SGA) same-sex twins were assessed for temperament stability between the neonatal period and 30 months of age. The evaluation of neonatal temperament included observers' ratings of irritability, resistance to soothing, activity level while awake, activity level during sleep, reactivity, and reinforcement value. At 6, 9, 12, 18, 24, and 30 months mothers rated their infants' temperament on standardized questionnaires which yielded nine temperament categories: activity level, rhythmicity, approach or withdrawal, adaptability, intensity of reaction, quality of mood, attention span, distractibility, and threshold of responsiveness. The Bayley Scales of Infant Development were administered at 6, 9, 12, 18, 24, and 30 months to assess mental development. The results of longitudinal correlational analyses indicated that, for the AGA infants, there was a pattern of significant predictive relations between the neonatal ratings of temperament and maternal ratings of temperament at 6, 9, 12, 18, 24, and 30 months. The SGA infants did not demonstrate similar behavioral stability from the lying-in period up to 30 months of age. Furthermore, for AGA infants there was a consistent trend for both reactivity and neonatal activity during sleep to predict mental development scores between 6 and 30 months. A similar pattern was not observed for

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the SGA cotwins. The results indicated that temperament stability is an additional area of risk for SGA twins, and that the developmental function of the underlying processes in the neonatal measures is different for AGA and SGA infants.

Rigby AS see **Worthington J**

Roach H see **Chauhan SP**

Robert E see **Chitrit Y**

Robert R see **Plattner V**

Roberts WE see **Chauhan SP**

Robin M, Kheroua H, Casati I: Effects of early mother-twin relationships from birth to age 3, on twin bonding. Acta Genet Med Gemellol (Roma) 1992;41(2-3):143-8

Findings from an earlier phase of this research project clearly pointed to the mother's psychological adaptation inherent to the specificities of triadic interaction. Mothers' attitudes were classified in a typology ranging from "early twinness" where the two babies are treated as though they were a single unit, to attempt to create two dyadic relationships. The current program deals with the effects of the type of parent-child relationship at one year on the emergence of twin bonding. Sixty-eight families of twins (26MZ, 24DZ same sex, 18DZ different sex) are followed up from birth to the age of 3 using a method based on clinical interviews, videotaped observations, and questionnaires. The data cover mothers' rearing attitudes towards organization of babycare and outward signs of twinness, maternal representations of the relationship between the twins and observation of the children's interaction in a standardized game situation. The findings are discussed in terms of zygosity, and parental SCS.

Robinette D see **Carmelli D**

Rogez JM see **Plattner V**

Romanov K, Kaprio J, Rose RJ, Koskenvuo M: Genetics of alcoholism: effects of migration on concordance rates among male twins.
Alcohol Alcohol Suppl 1991;1:137-40

We have extended linkage of the population-based Finnish Twin Cohort to alcohol-related hospital discharge data through 1985. The sample included 10,680 individual male twins > or = age 30 at time of linkage; 269 of these twins (2.5%) had received an alcohol-related hospital diagnosis. Twin analyses confirm significant genetic variance in alcohol-related disorders, but suggest that concordance for these disorders is greater for twins living within limited geographic areas, perhaps due to restricted social mobility among those who abuse alcohol.

Romanov K see **Kaprio J**

Rose RJ see **Kaprio J**

Rose RJ see **Romanov K**

Rosenberg N see **Stewart G**

Rossavik IK: Reduction in very low birth weight deliveries and perinatal mortality in a specialized, multidisciplinary twin clinic [letter]
Obstet Gynecol 1993 Jun;81(6):1057-8

Rossi C see **Corsello G**

Roy A, Roy M, Butler AC: Atlantoaxial instability in monozygotic twins with Down's syndrome.
J R Soc Med 1993 May;86(5):296

Roy M see **Roy A**

Roy-Burman P see **Kumar D**

Royere D see **Fignon A**

Ruckhäberle KE see **Engelmann L**

Rufo Campos M, Arias León E, Martínez López A, Chinchón Lara I, Gómez de Terreros I: [Type I spinal muscular atrophy in twins] An Esp Pediatr 1993 Jun; 38(6):557-8 **(Spa)**

Ruiz M: ["Ultrasonic diagnosis of thoracopagus fetuses" (letter)] Rev Chil Obstet Ginecol 1991; 56(2):142 **(Spa)**

Rutherford J, McGuffin P, Katz RJ, Murray RM: Genetic influences on eating attitudes in a normal female twin population. Psychol Med 1993 May; 23(2):425-36

The Eating Attitudes Test (EAT) and the Eating Disorder Inventory (EDI) were administered to a *female volunteer twin population aged 18 to 45* years. Both members of 147 monozygotic (MZ) and 99 dizygotic (DZ) twin pairs completed the questionnaires. Thirty-five subjects scored over the cut-off point of the EAT-26. Interviews of these high-scoring twins and their co-twins identified three subjects with a past history of anorexia nervosa, and three others with a history of a partial syndrome. A heritability value of 41% was obtained for the overall EAT scores, while factor analysis *produced a 'dieting' factor with a heritability of* 42%. The 'body dissatisfaction' and 'drive for thinness' subscales of the EDI had heritability values of 52 and 44% respectively. The genetic contribution to the variance in body mass index in the twin sample was estimated at 64%. For all the above phenotypes, an environmental model of transmission with heritability constrained to be zero, could be rejected. Conversely, we were unable to reject a purely additive genetic model with shared environmental variance constrained at zero, suggesting that family environment has little or no effect on the transmission of many of these traits.

Rutter M see **Bailey A**

Rutter M see **Eaves LJ**

S

Sackett G, Korner A: Organization of sleep-waking states in conjoined twin neonates. Sleep 1993 Aug; 16(5):414-27

Developmentally normal twins, joined from the mid-sternum to the umbilicus in a face-to-face position, were observed in 90-minute sessions twice daily from postnatal days 12 to 16. Sleep-waking states were coded in 10-second epochs. Within-twin data were analyzed for bout lengths, interbout intervals, transition probabilities and 60-minute autocorrelation patterns. Between-twin data were studied for simultaneous occurrences of sleep-waking states and 60-minute cross-correlation patterns. Epochs per bout and interbout intervals for quiet and active sleep, active sleep epochs with rapid eye movements (REMs) and quiet and active waking states showed little difference between the twins over the study days. Probabilities of transition between quiet and active sleep and active wakefulness also showed the same patterns for each twin. However, the organization of temporal states *differed markedly. Simultaneous occurrences of the* same states were at or barely above chance levels, autocorrelation patterns of all states except epochs with REMs were not the same and cross-correlations indicated little influence of one twin's current state on the subsequent probability of that state's occurrence in the other twin. Thus, neither shared environment, identical genotype nor shared stimulation from co-twin motor activity appeared to synchronize the temporal organization of behavioral states in these twins. We concluded that the overall distributions of neonatal sleep-waking states seem to be determined primarily by age, whereas the temporal organization of states expresses the neonate's individuality.

AUTHOR SECTION

Sadovnick AD, Armstrong H, Rice GP, Bulman D, Hashimoto L, Paty DW, Hashimoto SA, Warren S, Hader W, Murray TJ, et al: A population-based study of multiple sclerosis in twins: update.
Ann Neurol 1993 Mar;33(3):281-5
This study is a 7.5-year follow-up of a population-based series of twins with multiple sclerosis (MS) whose mean age now exceeds 50 years. The twin pairs were identified through the Canadian nationwide system of MS clinics and were drawn from a population of 5,463 patients. After 7.5 years, the monozygotic concordance rate increased from 25.9 to 30.8% and the dizygotic-like sex concordance rate from 2.4 to 4.7%. These results are very similar to those of other population-based studies and to our own modified replication twin data reported here. We interpret the data to mean that MS susceptibility is genetically influenced, and a single dominant or even a single recessive gene is unlikely to account for this effect. The difference in concordance rates suggests that at least two or more genes are operative. These data also have important implications for the nature of the environmental effect(s) in MS susceptibility. Most monozygotic twins are discordant even after a correction for age and magnetic resonance imaging findings. This unambiguously demonstrates the powerful effect of nonheritable factors.

Sadovsky E see **Mordel N**

Sağlam HS see **Cetinkaya M**

Salvayre R see **Marguery MC**

Samalens G see **Marguery MC**

Samujh R, Rao KL, Bhardwaj N, Katariya S: Fetus in fetu. Indian Pediatr 1993 Mar;30(3):397-9

Santema JG see **Heydanus R**

Scheel H see **Engelmann L**

Schenker JG see **Mordel N**

Schepank H see **Muhs A**

Schieken RM see **Moskowitz WB**

Schlafer DH see **Ball BA**

Schmelzer M see **Crombach G**

Schneider J see **Behrens O**

Schoysman R see **Nijs M**

Schoysman-Deboeck A see **Nijs M**

Schroeder GT see **Brodsky MC**

Schulman P, Keith D, Seligman ME: Is optimism heritable? A study of twins. Behav Res Ther 1993 Jul;31(6):569-74 (41 ref.)
Is optimism heritable? We gave the Attributional Style Questionnaire (ASQ), a measure of optimism, to 115 monozygotic twin pairs (MZ) and 27 dizygotic twin pairs (DZ). The intraclass correlations of the ASQ scores were 0.48 for MZ twins ($P < 0.0001$) and 0 for DZ twins. Though the sample size of DZ twins is small, these results suggest that there may be a substantial genetic effect on optimism. We speculate, however, that the mechanism for the transmission of this, and other complex personality traits, may be highly indirect.

Schultz Larsen F: Atopic dermatitis: a genetic-epidemiologic study in a population-based twin sample. J Am Acad Dermatol 1993 May;28(5 Pt 1):719-23
BACKGROUND: Atopic dermatitis is a common multifactorial disease that seems to be increasing in frequency. OBJECTIVE: Our purpose was to evaluate and expand previous findings on the incidence of atopic dermatitis and its concordance rates in twins. METHODS: A mailed questionnaire study was conducted. It involved 812 twin pairs living in Fyn County, Denmark, as of Jan. 1, 1987 and born between 1965 and 1979. Zygosity was determined by the similarity method. RESULTS: The response rate was 92%. The cumulative incidence rate (up to 7 years) of atopic dermatitis increased significantly from 0.06 for the birth cohort 1965-1969 to 0.12 for the birth cohort 1975-1979. The pairwise concordance rate was 0.72 in monozygotic and 0.23 in dizygotic twin pairs. CONCLUSION: The frequency of atopic dermatitis is still increasing but not as rapidly as in the 1960s. The magnitude of the concordance rates indicates that genetic factors are decisive in the development of atopic dermatitis. It is suggested that widespread environmental factors are operating in genetically susceptible persons.

Scott S see **Bailey A**

Seed M see **Dubrey SW**

Seeds JW see **McCurdy CM Jr**

Segal L see **Nijs M**

Segal NL, Brown KW, Topolski TD: A twin study of odor identification and olfactory sensitivity.
Acta Genet Med Gemellol (Roma) 1992; 41(2-3):113-21
Interindividual variation in odor identification and olfactory sensitivity has been explained primarily with reference to age, sex and/or experiential factors. A twin study of olfaction can, therefore, substantially contribute to current research in this area. Thirty-nine monozygotic and twenty dizygotic twin pairs have completed the University of Pennsylvania Smell Identification Test (UPSIT), an olfactory preference questionnaire, and two odor detection threshold tests (phenyl ethyl alcohol and butanol). A genetic influence on odor identification, as assessed by the UPSIT, has been demonstrated. Future plans and directions for this research program are discussed.

Segal-Bertin G see **Nijs M**

Selby JV see **Austin MA**

Seligman ME see **Schulman P**

Sepúlveda WH: ["Ultrasonography" (letter)]
Rev Chil Obstet Ginecol 1991;56(2):141-2 **(Spa)**

Shalev Z see **Mordel N**

Sharma AK, Phadke SR, Agarwal SS: Short rib (polydactyly) syndrome type IV: Beemer-Langer syndrome [letter; comment] Am J Med Genet 1993 May 15;46(3):345-6

Sharma JB, Gulati N, Malik S: Acephalus acardia syndrome. Indian Pediatr 1993 Feb;30(2):261-4

Shen JM see **Sjaastad O**

Sherer DM see **Mahone PR**

Shilon M see **Shulman A**

Shimizu T see **Hayakawa K**

Shulman A, Ben-Nun I, Ghetler Y, Kaneti H, Shilon M, Beyth Y: Relationship between embryo morphology and implantation rate after in vitro fertilization treatment in conception cycles.
Fertil Steril 1993 Jul;60(1):123-6
OBJECTIVE: To investigate the relationship between the embryo number and morphology in conception cycles and the incidence of multiple pregnancies. DESIGN: The study is based on information received from a computerized data base. SETTING: In Vitro Fertilization Unit, Sapir Medical Center, Kfar Saba, Israel. PATIENTS: A total of 117 consecutive pregnancies resulted from replacement of fresh embryos in our IVF-ET program. MAIN OUTCOME MEASURES: The impact of embryo quality, as assessed by morphological parameters, on the multiple pregnancy rate (PR). RESULTS: Implantation rates positively correlated with the number and the quality of transferred embryos. However, no multiple pregnancies occurred when only two embryos were replaced. There were no multiple pregnancies when

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only embryos of low quality (grades 1 and 2) were transferred. Furthermore, there was no correlation between the number of replaced embryos of poor quality and the rate of implantation. The multiple PR increased from 10% when a mixture of high and low quality embryos were transferred to 30.76% when only embryos of highest quality were transferred. CONCLUSION: The implantation rate of transferred embryos is directly correlated with the morphological scoring. The results of the study suggest that the number of embryos transferred should be balanced against their morphological quality to reduce the rate of multiple pregnancies.

Shwayder JM, Mahoney V, Bersinger DE: Unilateral twin ectopic pregnancy managed by operative laparoscopy. A case report. J Reprod Med 1993 Apr; 38(4):314–6
An unusual case of unilateral twin ectopic pregnancy occurred. The patient was managed successfully by operative laparoscopic salpingostomy.

Sibai BM see **Mercer BM**

Sigue AB see **Imoedemhe DA**

Silberg JL see **Eaves LJ**

Silman AJ see **Worthington J**

Silverman NH see **Hanley FL**

Simpson JA see **Gangestad SW**

Sjaastad O, Shen JM, Stovner LJ, Elsås T: Cluster headache in identical twins. Headache 1993 Apr; 33(4):214–7
Twin brothers with cluster headache are described. Monozygosity was demonstrated by conventional genetic markers and DNA-typing. Both had "mini-bouts" in the early stages. In the one, attacks were always excruciatingly severe; in the other, they started out as "mild", eventually becoming more severe. Both brothers also suffered from paroxysmal tachycardia. The connection between attacks of tachycardia and cluster headache remains enigmatic. The observation of cluster headache in monozygotic twins underscores the importance of genetic factors in the etiology. The ratio between cluster headache prevalence in close family members vs. prevalence in the general population may be higher in cluster headache than in migraine.

Skre I see **Onstad S**

Smith SD: Identification of genetic influences. Clin Commun Disord 1992 Fall;2(4):73–85 (57 ref.)

Soler A, Carrio A, Perez-Vidal MT, Borrell A, Fortuny A: Unusual segregation for 11q;22q parental translocation in a triplet pregnancy: prenatal diagnosis in chorionic villi and amniotic fluid. Prenat Diagn 1993 Feb;13(2):137–41
The prenatal diagnosis of an 11q;22q translocation in a triplet pregnancy detected at the time of chorionic villus sampling (CVS) because of advanced maternal age is reported. Karyotypes obtained from two apparently different CV samples showed the balanced form of translocation, while the one obtained from a third empty sac showed the unbalanced form: 46,XX,-22,+der(22)t(11;22). Second-trimester amniocentesis confirmed the balanced translocation in one of the two viable fetuses and a normal karyotype in the other. The detected karyotypes derived from two different types of meiotic segregation, alternate and adjacent 1. To our knowledge, this is the first reported case of an unbalanced karyotype not due to a 3:1 meiotic segregation of this specific translocation.

Søndervang A see **Hansen HE**

Sozer AC see **Reiss AL**

Span J, Koopmans P, Jansen J: A reversible case of pernicious anemia. Am J Gastroenterol 1993 Aug; 88(8):1277–8

Spelman LS see **Duffy DL**

Sreenan JM see **Morris DG**

Stabenau JR, Pollin W: Heredity and environment in schizophrenia, revisited. The contribution of twin and high-risk studies. J Nerv Ment Dis 1993 May; 181(5):290–7 (57 ref.)
Life history study of monozygotic (MZ) twins discordant for schizophrenia led to the 1967 hypothesis that phenotypic schizophrenia was an expression of genotypic vulnerability interacting with prenatal and/or perinatal environmental experience. This report is a selected review of partial answers to five questions facing research efforts that have attempted to clarify the interactive gene–environment model of schizophrenia. Follow-up study of the offspring of MZ twins with a diagnosis of schizophrenia and their MZ co-twins without schizophrenia demonstrated equal rates of schizophrenia; hence, each group of offspring carried equal genetic vulnerability for schizophrenia. Magnetic resonance imaging study of MZ discordant twins found that phenotypic schizophrenia was characterized by brain ventricular enlargement and hippocampal reduction in 87–93% of the schizophrenic twins, when compared with their nonschizophrenic co-twins. A longitudinal study of teenage children at differential risk for schizophrenia showed that brain ventricular enlargement in adulthood correlated significantly and positively with genetic risk for schizophrenia and number of perinatal complications, and negatively with birth weight. Significantly greater dysmorphological hand skin signs among schizophrenic MZ twins when compared with their nonschizophrenic co-twins have suggested an in utero second trimester fetal developmental abnormality for the schizophrenic subjects. Simultaneous neuroanatomic, neurophysiological, and neurocognitive evaluation of MZ twin pairs discordant for schizophrenia demonstrated decreased prefrontal physiological cerebral blood flow activation during Wisconsin Card Sorting Test for affected twins correlated with decreased hippocampal volume determined by magnetic resonance imaging. These neurocognitive studies have suggested that schizophrenia involves neocortical–limbic pathology and dysfunction implicated in performance of cognitive tasks requiring working memory.(ABSTRACT TRUNCATED AT 250 WORDS)

Steel CM see **Ford AM**

Stewart G, Burke S, Rosenberg N: Haemophilus influenzae meningitis in twins. Pediatr Emerg Care 1993 Jun;9(3):151–2

Stewart PA see **Heydanus R**

Stone PR see **Murray HG**

Stovner LJ see **Sjaastad O**

Strand L see **Murray HG**

Strong TH Jr, Howard MW, Wade BK, Miura CS, Elliott JP: Intrapartum amnioinfusion in twin gestation. A preliminary report of three cases. J Reprod Med 1993 May;38(5):397–9
Amnioinfusion is an intrapartum technique that is not usually attempted in twin gestations. This report describes infusion of normal saline into the amniotic sacs of three twin gestations with oligohydramnios. All the twins were safely delivered vaginally. No untoward effects were noted. Ultrasound is advised following amnioinfusion to assess the increase in the amniotic fluid volume.

Stronge JM see **Byrne BM**

Stroufová A see **Mardesič T**

Sukcharoen N, Wannakrairot P: Sonographic prenatal diagnosis of congenital heart defects in

AUTHOR SECTION

thoraco-omphalopagus.
Asia Oceania J Obstet Gynaecol 1993 Mar; 19(1):43-9
Thoraco-omphalopagus is the most common variety of conjoined twins. About 90% of the conjoined thoraco-omphalopagus twins have a common pericardium, and 75% have conjoined hearts. Options for the treatment of thoraco-omphalopagus are largely dependent on the anatomy of the cardiovascular system. The extent of the conjunction of the heart and the severity of the associated cardiac defects primarily determine the feasibility of successful separation of the infants.
Two-dimensional echocardiography and color Doppler examination has become the method used to investigate cardiovascular system of conjoined twins with a high degree of confidence. A case of thoraco-omphalopagus conjoined twins prenatally determined of the extent of cardiac conjunction and diagnosis of associated defects by these methods is presented.

Sumi K see **Tsukamoto H**
Sutton MS see **Lo SS**
Swift PJ see **Morris DG**
Syrop CH see **Wenstrom KD**
Szilágyi N see **Láng E**

T

Tabsh KM: A report of 131 cases of multifetal pregnancy reduction. Obstet Gynecol 1993 Jul; 82(1):57-60
OBJECTIVE: To evaluate multifetal pregnancy reduction as a treatment for patients seeking to reduce the risks of multiple gestation. METHODS: One hundred thirty-one women had transabdominal multifetal pregnancy reduction performed by a single practitioner; 103 have delivered. RESULTS: Multifetal pregnancy reduction was associated with a 7% pregnancy loss rate and no losses within the first 4 weeks after the procedure. The mean gestational age at delivery overall was 35.5 weeks. The mean gestational age at delivery for singletons was 37.5 weeks, for twins 35.5 weeks, and for triplets 35 weeks. The incidence of maternal and fetal complications was no more than that previously reported for nonreduced multiple gestations. CONCLUSIONS: Multifetal pregnancy reduction is a safe option for patients who desire to reduce the risks of multiple gestation. The ultimate successful outcome of reduced pregnancies may be enhanced by extensive experience with the procedure.

Takahasi S see **Hayakawa K**
Takauchi Y see **Ohashi Y**
Tambs K, Moum T: Low genetic effect and age-specific family effect for symptoms of anxiety and depression in nuclear families, halfsibs and twins. J Affect Disord 1993 Mar;27(3):183-95
Questionnaire information on symptoms of anxiety/depression was obtained from 61,286 persons, most of whom could be grouped in families as spouses, parents, offspring, siblings, halfsibs and twins. The correlations between mental health in relatives, varying somewhat by sex, were: 0.27 for 18,768 pairs of spouses, 0.12 to 0.17 for 30,888 pairs of parents and offspring, 0.11 to 0.18 for 13,134 pairs of siblings, 0.27 to 0.35 for 57 pairs of MS twins, -0.06 to 0.10 for 60 pairs of DZ twins, 0.30 for 88 pairs of halfsibs reared together, and 0.16 for 40 pairs of halfsibs reared apart. The heritability was estimated to be between 0 and 0.20. There was a significant effect of environmental transmission from mother, but not from father, to offspring. The effect of environmental factors shared by sisters was substantial, the corresponding effect was lower in brothers, and zero in siblings of opposite sex. The correlations decreased with increasing age differences between relatives, implying effects of age-specific genes or environmental factors in the family.

Taneja SB see **Chadha R**
Tanigami H see **Ohashi Y**
Taniguchi A see **Kohsaka H**
Taniike M see **Tsukamoto H**
Tanikaze S see **Yokomori K**
Tashiro C see **Ohashi Y**
Tellegen A see **Lykken DT**
ten Kate LP, van Essen AJ, Cornel MC: [Complete situs inversus in one half of monozygotic twins (letter)] Tijdschr Kindergeneeskd 1993 Feb; 61(1):33-4 **(Dut)**
Teng RJ see **Jou HJ**
Thomassen PA see **Akerman BA**
Timor-Tritsch IE see **Monteagudo A**
Tomioka S see **Hayakawa K**
Topolski TD see **Segal NL**
Torgersen S see **Onstad S**
Torrey EF see **Goldberg TE**
Tournaye H see **Bollen N**
Tous J see **Pelloux H**
Tozzi L see **Parazzini F**
Trotman CA, Collett AR, McNamara JA Jr, Cohen SR: Analyses of craniofacial and dental morphology in monozygotic twins discordant for cleft lip and unilateral cleft lip and palate. Angle Orthod 1993 Summer;63(2):135-9
The Michigan Cleft Twin Sample data was analyzed in order to investigate dental arch and craniofacial morphology. The present study consisted of 12 monozygotic twins discordant for either cleft lip or unilateral cleft lip and palate. Individuals having CL (repaired) alone did not differ from their unaffected counterparts in dental arch and skeletal morphology. Repaired UCLP subjects were characterized by having a shorter and more posteriorly positioned maxilla. Although reduction of dental arch width as a result of scar contraction following surgery was evident, the effects of scar tissue pull did not affect maxillary basal width.

Trudinger B see **Giles W**
True WR, Rice J, Eisen SA, Heath AC, Goldberg J, Lyons MJ, Nowak J: A twin study of genetic and environmental contributions to liability for posttraumatic stress symptoms.
Arch Gen Psychiatry 1993 Apr;50(4):257-64
We studied 4042 Vietnam era veteran monozygotic and dizygotic male twin pairs to determine the effects of heredity, shared environment, and unique environment on the liability for 15 self-reported posttraumatic stress disorder symptoms included in the symptom categories of reexperiencing the trauma, avoidance of stimuli related to the trauma, and increased arousal. Quantitative genetic analysis reveals that inheritance has a substantial influence on liability for all symptoms. Symptoms in the reexperiencing cluster and one symptom in the avoidance and numbing cluster are strongly associated with combat exposure, and monozygotic pairs are more highly concordant for combat exposure than dizygotic pairs. By fitting a bivariate genetic model, we show that there are significant genetic influences on symptom liability, even after adjusting for differences in combat exposure; genetic factors account for 13% to 30% of the variance in

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liability for symptoms in the reexperiencing cluster, 30% to 34% for symptoms in the avoidance cluster, and 28% to 32% for symptoms in the arousal cluster. There is no evidence that shared environment contributes to the development of posttraumatic stress disorder symptoms.

Tsukamoto H, Inui K, Taniike M, Kamiyama K, Hori M, Sumi K, Okada S: Different clinical features in monozygotic twins: a case of 7q--syndrome. Clin Genet 1993 Mar;43(3):139-42
We present male monozygotic twins who showed quite different clinical features. Blood chromosome analysis revealed 46,XY/46,XY,del(7) (q32-->qter) mosaicism in both twins. However, cultured skin fibroblasts from the twins showed different karyotypes. Twin 1, with a normal phenotype, had normal chromosomes and was 46,XY. Twin 2, on the other hand, had the characteristic manifestations of 7q- syndrome and chromosomes of 46,XY,del(7) (q32-->qter). DNA fingerprint analysis of their peripheral blood samples revealed the same pattern. However, DNA fingerprint patterns of cultured skin fibroblasts and buccal mucosal cells were different when a 7q terminal marker, probe g3, was used. These identical twins with discordant phenotypes can be explained by the occurrence of twinning and simultaneous erroneous mitosis. In addition, there might be a vascular communication which probably resulted in blood exchange and chromosomal mosaicism of the lymphocytes of the monozygotic twins.

Tuppin P, Blondel B, Kaminski M: Trends in multiple deliveries and infertility treatments in France. Br J Obstet Gynaecol 1993 Apr;100(4):383-5
OBJECTIVE: To point out the association between infertility treatments and the increasing number of multiple deliveries. DESIGN: Comparison over time of the incidence of multiple deliveries, the proportion of deliveries resulting from assisted conception (AC), and ovulation inductor sales. DATA: Use of existing statistics: vital statistics, surveys of AC centres and ovulation inductor sales. RESULTS: Between 1972 and 1989 the incidence of twin deliveries rose from 8.8/1000 to 11.2/1000, and the incidence of triplet deliveries from 0.9/10,000 to 4.4/10,000. This upward trend was particularly remarkable among women aged 30 to 39. Since 1978, the triplet delivery rates and the sales of Human Menopausal Gonadotrophin have been rising similarly. Between 1985 and 1989, 26 per cent of the triplet deliveries followed assisted conception and nearly 50 per cent were estimated to be due to ovulation inductor agents. CONCLUSIONS: The results suggest a strong influence of infertility treatments and especially ovulation inductor agents in the dramatic increase of triplet deliveries.

Turley K see **Hanley FL**

U

Urban A see **Wapner RJ**
Uttley M see **Cates DS**

Utz U, Biddison WE, McFarland HF, McFarlin DE, Flerlage M, Martin R: Skewed T-cell receptor repertoire in genetically identical twins correlates with multiple sclerosis [see comments] Nature 1993 Jul 15;364(6434):243-7
Although the cause of multiple sclerosis (MS) is unknown, it is thought to involve a T cell-mediated autoimmune mechanism. Susceptibility to the disease is influenced by genetic factors such as genes of the HLA and T-cell receptor (TCR) complex. Other evidence for a genetic influence includes the low incidence in certain ethnic groups, the increased risk if there are affected family members and the increased concordance rate for disease in monozygotic twin pairs (26%), compared to dizygotic twins. Epidemiological studies indicate that there may be an additional role for environmental factors. Although the target antigen(s) are not yet identified, several myelin or myelin-associated proteins have been suspected, among them myelin basic protein. A lack of genetically comparable controls has impaired the analysis of the T-cell response in MS patients and caused disagreement on TCR usage in the disease. Here we analyse the role of TCR genes in MS by comparing TCR usage in discordant versus concordant monozygotic twins in response to self and foreign antigens. We find that after stimulation with myelin basic protein or tetanus toxoid, control twin sets as well as concordant twin sets select similar V alpha chains. Only the discordant twin sets select different TCRs after stimulation with antigens. Thus exogenous factors or the disease shape the TCR repertoire in MS patients, as seen by comparison with unaffected genetically identical individuals. This skewing of the TCR repertoire could contribute to the pathogenesis of MS and other T-cell-mediated diseases.

V

Van den Berghe H see **Derom C**
van der Linden JC see **Haring DA**
Vanderzwalmen P see **Nijs M**
Vandongen R see **Williams PD**
van Essen AJ see **ten Kate LP**
van Roosendaal E see **Nijs M**
Van Steirteghem AC see **Bollen N**
Van Voorhis BJ see **Wenstrom KD**
van Vugt JM see **Haring DA**
Vardeu MP see **Franceschini P**
Vavak CR see **Cates DS**
Verdonk P see **Gerris J**
Viala JL see **Boulot P**
Vlietinck R see **Derom C**
Vogtmann C see **Engelmann L**
Vohr BR see **Chen SJ**
Vujanic GM see **Rees AE**

W

Wachmann H see **Konradsen HB**
Wade BK see **Strong TH Jr**
Wang CJ see **Chen CJ**
Wang R see **McFarland JG**
Wannakrairot P see **Sukcharoen N**

Wapner RJ, Johnson A, Davis G, Urban A, Morgan P, Jackson L: Prenatal diagnosis in twin gestations: a comparison between second-trimester amniocentesis and first-trimester chorionic villus sampling. Obstet Gynecol 1993 Jul;82(1):49-56
OBJECTIVE: To evaluate prospectively the relative risks and accuracy of first-trimester chorionic villus sampling (CVS) and second-trimester amniocentesis in the genetic evaluation of twin gestations. METHODS: Between March 1984 and August 1990, patients presenting for prenatal diagnosis of a twin gestation of less than 12 weeks were offered sampling by either first-trimester CVS or amniocentesis at 16-18 weeks' gestation. Selection was based solely on patient preference and was obtained before ultrasound identification of placental position.

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Women presenting beyond 12 weeks' gestation were sampled by amniocentesis. Clinical and laboratory outcomes were evaluated. RESULTS: Eighty-one women had amniocentesis (nine of whom also had CVS), and 161 women had CVS. All fetuses in both groups were successfully sampled and karyotyped; 85.3% of the amniocentesis patients and 75.8% of the CVS patients were sampled in two or fewer passes (P = not significant). There were three cases of twin-twin villus contamination following CVS; one of these led to incorrect gender assignment because of erroneous laboratory interpretation. Loss of the entire pregnancy from the time of sampling until the 28th week of gestation followed amniocentesis in 2.9% of the cass and CVS in 3.2%. The total fetal loss rates were 9.3% for amniocentesis and 4.9% for CVS (P = not significant). When pregnancies having mosaic or abnormal karyotype results are excluded, the total amniocentesis loss rate remained 9.3% and the CVS loss rate became 3.9% (P < .05). CONCLUSION: In the hands of experienced operators, CVS is at least as safe and effective as amniocentesis for the prenatal diagnosis of twin gestations.

Wapner RJ see **Evans MI**

Warren S see **Sadovnick AD**

Washburne JF see **Chauhan SP**

Webb T see **Bailey A**

Wedeking-Schöhl H see **Behrens O**

Weinberger DR see **Goldberg TE**

Weinberger DR see **Hyde TM**

Weinberger DR see **Randolph C**

Weisz J see **Láng E**

Weitzman GA see **Keith SC**

Welsh KA see **Brandt J**

Wenstrom KD: Midtrimester selective delivery of an acardiac twin [letter; comment]
Am J Obstet Gynecol 1993 May;168(5):1647

Wenstrom KD, Syrop CH, Hammitt DG, Van Voorhis BJ: Increased risk of monochorionic twinning associated with assisted reproduction. Fertil Steril 1993 Sep;60(3):510-4
OBJECTIVE: To determine the incidence of monochorionic twinning in pregnancies resulting from assisted reproduction technologies (ARTs). METHODS: We reviewed our experience with 218 ART pregnancies achieved over 3 years. All patients underwent transvaginal ultrasound 26 and 36 days after oocyte retrieval. The presence of two yolk sacs or two fetal poles within one sac suggested monochorionicity, and was confirmed by follow-up ultrasound and placental pathology. The various ARTs were compared to determine if any method had an increased incidence of monochorionicity compared to any other method. Statistical analysis was performed employing Chi Square analysis. RESULTS: The incidence of monochorionicity in all gestations was 3.2% (8 times background rate); among multiple gestations it was 9.8%. The rates of monochorionicity for each ART appeared similar. CONCLUSION: The incidence of monochorionic twinning is increased in pregnancies resulting from ART. Careful ultrasound evaluation of such pregnancies for monochorionicity is strongly recommended, both for planning of prenatal care and when considering a multifetal pregnancy reduction procedure.

Wheeler D, Musgrove K, Oelberg DG: Discordant monozygotic twins with markedly different grades of anterior lens capsule vascularity.
Clin Pediatr (Phila) 1993 Apr;32(4):248-9

Whitam FL, Diamond M, Martin J: Homosexual orientation in twins: a report on 61 pairs and three triplet sets. Arch Sex Behav 1993 Jun;22(3):187-206
Twin pairs in which at least one twin is homosexual were solicited through announcements in the gay press and personal referrals from 1980 to the present. An 18-page questionnaire on the "sexuality of twins" was filled out by one or both twins. Thirty-eight pairs of monozygotic twins (34 male pairs and 4 female pairs) were found to have a concordance rate of 65.8% for homosexual orientation. Twenty-three pairs of dizygotic twins were found to have a concordance rate of 30.4% for homosexual orientation. In addition, three sets of triplets were obtained. Two sets contained a pair of monozygotic twins concordant for sexual orientation with the third triplet dizygotic and discordant for homosexual orientation. A third triplet set was monozygotic with all three concordant for homosexual orientation. These findings are interpreted as supporting the argument for a biological basis in sexual orientation.

Wilczyński J see **Jaczewski B**

Wilhelm C see **Prömpeler HJ**

Williams CJ: On the covariance between parameter estimates in models of twin data. Biometrics 1993 Jun;49(2):557-68
We study the covariance between estimates of additive genetic variance and either dominance genetic variance or common environmental variance in likelihood-based twin analyses. The central tools used in these investigations are the asymptotic covariances of variance component estimates, which we present for several commonly used twin models. We first illustrate the use of the asymptotic covariance terms for determining the optimal ratio of monozygotic to dizygotic group sample sizes for a twin study. We then focus attention on the asymptotic correlations between estimates of additive genetic variance, and either dominance genetic variance or common environmental variance, and their use in understanding when parameters are efficiently estimable from twin data. The results of this investigation are confirmed by simulation studies, and highlight inherent limitations of the twin model, in the sense that having only twin data limits the ability to detect individual variance components. Finally, remarks on possible alternative statistical methods are given, and results are presented to illustrate the improvements in efficiency that are possible with additional family data. In particular, the results provide insight into the limitations of inference from twin data.

Williams N, Kapila L: Posterior urethral valves in twins with mirror image abnormalities. Br J Urol 1993 May;71(5):615-6

Williams PD, Puddey IB, Martin NG, Beilin LJ: Genetic and environmental covariance of serum cholesterol and blood pressure in female twins. Atherosclerosis 1993 Apr;100(1):19-31
Blood pressure elevation is frequently associated with elevated cholesterol, triglyceride or low density lipoprotein (LDL-C) or low high density lipoprotein (HDL-C). The relative importance of genetic and environmental factors in these associations is unclear. We examined the relative contribution of genetic and environmental influences to the association between blood pressure and serum lipids in 75 pairs of female twins using path analysis and maximum-likelihood model fitting. Associations between systolic blood pressure and total cholesterol ($r = 0.44$, $P < 0.001$), and LDL-C ($r = 0.38$, $P < 0.001$), but not HDL-C ($r = 0.05$, N.S.), remained significant after age and body mass index adjustment. Univariate models suggested genetic effects contributed 60-70% to the variance of total cholesterol, LDL-C, HDL-C and

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systolic blood pressure. The remaining variance was explained by age and/or unique environmental influences. Using bivariate models, we demonstrated genetic ($P = 0.017$) and unique environmental covariance ($P = 0.011$) of cholesterol and systolic blood pressure. Significant genetic covariance ($P = 0.038$) was observed between LDL-C and systolic blood pressure. The association between blood pressure and total cholesterol in these twins results from shared genetic and similar unique environmental influences. The association between LDL-C and blood pressure is partly due to shared genetic influences. We conclude that both additive genetic and environmental factors unique to the individual are important determinants of the relationships between serum lipids and blood pressure.

Williams PD, Puddey IB, Beilin LJ, Vandongen R: Genetic influences on plasma catecholamines in human twins. J Clin Endocrinol Metab 1993 Sep; 77(3):794–9

We examined the relative genetic and environmental influences on the variability in plasma epinephrine, norepinephrine, and dopamine levels in 109 twin pairs. Epinephrine levels were lower in females ($P = 0.048$). The norepinephrine concentration increased with age ($r = 0.40$; $P < 0.001$). Blood pressure (BP) was not associated with epinephrine levels in either sex or with norepinephrine levels in females. In males, there was a positive association between norepinephrine concentration and diastolic BP ($r = 0.31$; $P = 0.020$). A negative association between dopamine levels and systolic and diastolic BP in females ($r = -0.22$; $P = 0.014$ and $r = -0.20$; $P = 0.027$, respectively) was not maintained after accounting for age, body mass index, and sex. Using path analysis and maximum likelihood model fitting, genetic, unique environment, and age effects contributed 57% ($P <$ or $= 0.001$), 27% ($P <$ or $= 0.001$), and 16% ($P <$ or $= 0.001$) to the variability in norepinephrine, respectively. Genetic effects explained 64% ($P < 0.1$) and 74% ($P < 0.1$) of the variability in epinephrine concentrations in females and males, respectively. Unique environmental influences explained the remainder. Genetic and unique environmental effects explained 72% ($P < 0.01$) and 28% ($P <$ or $= 0.001$) of the variability in dopamine levels. These results indicate a substantial genetic influence on plasma catecholamine levels. Although consistent associations between plasma catecholamines and BP were not evident in this study, the observed genetic influence on circulating catecholamines may be relevant to the potential role of the sympathetic nervous system in the early stages of essential hypertension.

Williams WM see **Rees AE**
Wilson JR see **Rhea SA**
Wisanto A see **Bollen N**
Witter FR see **Luke B**
Wladimiroff JW see **Heydanus R**
Woods JR Jr see **Mahone PR**

Worthington J, Rigby AS, MacGregor AJ, Silman AJ, Carthy D, Ollier WE: Lack of association of increased antibody levels to mycobacterial hsp65 with rheumatoid arthritis: results from a study of disease discordant twin pairs. Ann Rheum Dis 1993 Jul;52(7):542–4

OBJECTIVES--To investigate the role of humoral immunity to mycobacterial hsp65 in the aetiology of rheumatoid arthritis. METHODS--Levels of IgG antibodies to recombinant mycobacterial hsp65 were measured by enzyme linked immunosorbent assay (ELISA) in serum samples of 152 twin pairs discordant for RA and in serum samples from 62 normal blood donors. RESULTS--No significant differences between antibody levels in the subjects with RA compared either with their unaffected twins or with a group of normal blood donors was observed. In the monozygotic twins there was a strong but negative association between levels of antibody to hsp65 and disease status. Zygosity, sex, and HLA status did not significantly affect levels of antibody to hsp65. CONCLUSION--Previous reports of an association between hsp65 and RA were not confirmed.

Woytoń J see **Florjański J**

Y

Yamada Y see **Yasuda S**
Yamamoto M see **Kobayashi S**
Yamashita PH see **Kumar D**

Yancey MK, Richards DS: Antenatal sonographic findings associated with unilateral pulmonary agenesis. Obstet Gynecol 1993 May;81(5 (Pt 2)):847–9

BACKGROUND: Unilateral pulmonary agenesis is a rare anomaly that has a relatively frequent association with other congenital malformations. Prognosis depends in part upon associated anomalies and whether the right or left lung is involved. The prenatal sonographic findings of this defect share some similarities with those of other intrathoracic lesions or congenital diaphragmatic hernia. CASE: Our patient had a twin gestation complicated by early discordant growth and hydramnios. The smaller fetus had cardiac dextroposition, abnormally echogenic left lung tissue, and a flattened but clearly visible left hemidiaphragm. No abdominal viscera were seen in the thoracic cavity. Postnatally, this infant was found to have agenesis of the right lung, a tracheoesophageal fistula, and pyloric stenosis. CONCLUSION: The diagnosis of unilateral pulmonary agenesis should be considered in a fetus with the sonographic findings of a shift of the mediastinal structures, echogenic lungs, and an intact diaphragm.

Yaron Y see **Botchan A**

Yasuda S, Enomoto T, Yamada Y, Nose T, Iwasaki N: Crouzon disease associated with sinus pericranii: a report on identical twin sisters.
Childs Nerv Syst 1993 Apr;9(2):119–22

Crouzon disease is a form of craniosynostosis with the autosomal dominant mode of inheritance. Among the anomalies associated with craniosynostosis, aberrant dural sinus is well known. We report on identical twin sisters with Crouzon disease and sinus pericranii who were successfully treated surgically. In one of the sisters hydrocephalus was present, which eventually needed a shunt operation. The association of these anomalies is discussed.

Yeager AE see **Ball BA**

Yokomori K, Ohkura M, Kitano Y, Nakajo T, Harii K, Tanikaze S: Comprehensive planning of operative strategy for separation of ischiopagus tripus twins with particular reference to quality of life.
J Pediatr Surg 1993 Jun;28(6):833–7

A 27-year-old mother was diagnosed by prenatal ultrasonography as having triplets at gestational age 32 weeks. Following cesarean section at 37 weeks, a pair of female babies were noted for the first time to be joined by a common pelvis with three lower limbs. They had separate upper gastrointestinal tracts, which joined in the distal ileum, leading to

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a common colon, rectum, and a single anus. Each twin had a functioning kidney, with a single ureter leading to a common bladder. A common urethra originating from the bladder neck ran into the urogenital sinus of one baby. Prior to the surgical separation, placement of four tissue expanders and 20 pneumoperitoneums were performed, in order to stretch the parietes for easier approximation of the wound edges. At 13 months of age, separation was performed, requiring 17 hours. The skin and musculature from the conjoined third leg was used as a fillet for abdominal wall closure in each patient. One infant was given the distal half of the colon and an entire anus with a temporary jejunostomy, and the right half of the bladder with the urethra. The other infant was given the proximal half of the colon with a permanent colostomy, and the left half of the bladder with permanent cystostomy using appendiceal pedicle graft (Mitrofanoff's procedure). This is the 10th case of surgical separation in ischiopagus tripus twins reported in the literature, and the seventh successful separation with both patients alive.

Yokoyama Y see **Hayakawa K**

Yoshimura K, Hamada F, Morita H, Kurashige T: [Identical twins with atypical benign partial epilepsy] No To Hattatsu 1993 May;25(3):283–8 (Eng. Abstr.) **(Jpn)**

Female identical twins with atypical absence in waking state and partial seizures in sleep state were reported. During atypical absence the EEGs of both cases showed bursts in bilateral parietal and temporal regions during waking state and almost continuous diffuse spike-waves during sleep. Phenytoin was effective to discontinue the seizures in both cases. These findings were compatible to atypical benign partial epilepsy first reported by Aicardi et al. A possibility of genetic cause of this disorder may be considered.

Young JD see **Ahmed S**

Yovel I see **Botchan A**

Yu MW see **Chen CJ**

Yura A see **Hayakawa K**

Z

Zador IE see **Evans MI**

Zaeri NN see **Glasser SA**

Zahálková M: [Changes in perinatal mortality in twins] Cesk Pediatr 1993 Jun;48(6):346–50 (Eng. Abstr.) **(Cze)**

Perinatal mortality of twins born in South Moravian Region in the years 1983–1987 was compared with that observed in the years 1970–1976. The perinatal mortality of twins decreased from 119,35 per thousand to 64,21 per thousand (the corresponding numbers for the whole population of the region in question are 16.48 per thousand and 11.30 per thousand respectively). The mortality of twins shows no reasonable changes. The early neonatal mortality decreased from 98.32 per thousand to 41.23 per thousand (the corresponding numbers in the whole population are 10.25 per thousand and 6.05 per thousand respectively). As in other countries the most important cause is the decrease of prematurity. This was observed both in the evaluation according to the birth weight and according to the gestational age as well as when the main cause of death was evaluated. Nevertheless also in the second sample a higher mortality of twins B than that of twins A was observed. The results of the leading clinics in the perinatal care show no more higher mortality of twins B namely due to the decrease of the number of RDS deaths. To achieve such object will be the nearest task in our perinatal care for the twins pregnancies and neonates.

Zajicek G see **Mordel N**

Zalewski J see **Florjański J**

Zappella M: Autism and hypomelanosis of Ito in twins. Dev Med Child Neurol 1993 Sep;35(9):826–32

A pair of monozygotic and a pair of dizygotic twins with autism and hypomelanosis of Ito skin-abnormalities are described. These observations are further evidence of the frequent association between these two conditions, already demonstrated in the literature, and suggest a possibly higher incidence of single gene associations among cases of autism with known genetic basis.

Zerbe G see **Marconi AM**

Zetová L see **Mardesič T**

Zhioua F, Rezigua H, Khouja H, Meriah S, Ferchiou M, Kammoun N, Gara F: [Acardiac malformation: ultrasonographic diagnosis. A case report] Rev Fr Gynecol Obstet 1993 Apr;88(4):267–72 (26 ref.) (Eng. Abstr.) **(Fre)**

Acardia is an extremely rare malformation which is seen in less than 1 per cent of monozygous twin pregnancies. Pathological aspects and etiopathogenic theories concerning this malformation are reviewed on the basis of a case diagnosed in utero at 24 weeks. The value of the antenatal diagnosis of this malformation is that of monitoring the progression of the pregnancy and predicting the fate of the healthy twin.

Zorn B see **Chitrit Y**

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Allen G, Eriksson AW, Fellman J, Parisi P, Vandenberg SG: Twinning and the r/K reproductive strategy: a critique of Rushton's theory.
Acta Genet Med Gemellol (Roma) 1992;41(1):73–83
The theory of r selection, favoring population growth, as opposed to K selection, favoring more efficient utilization of resources, has in recent years been applied by Rushton to contrast human ethnic groups in terms of their r/K reproductive strategies, suggesting the existence of a continuum from r groups, producing many offspring but providing little parental care, to K groups, producing few offspring but providing much parental care. Rushton's theory, which is largely based on ethnic differences in twinning rates, is here critically examined. It is pointed out that twinning rate differences are not necessarily genetic in origin since various environmental factors clearly play a role, and also that twinning, as a mode of reproduction, is not necessarily an r strategy, considering the high prenatal and perinatal selection to which it has been, and still is, associated. Moreover, Rushton misinterprets a number of relevant aspects related to the biology of twinning. The claim that ethnic differences in twinning rates provide evidence for an r/K typology in human populations with respect to reproductive strategies does not appear to be warranted.

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Amino K, Ichioka I, Ichioka H, Matsubara K, Lin YW, Ohta S: Retinoblastoma in dizygotic twins born as extremely low birth weight infants.
Jpn J Ophthalmol 1992;36(3):310–4
A case of bilateral retinoblastoma affecting both of a pair of dizygotic twins was reported. To our knowledge, there has been only one previous report of dizygotic twins, both affected, with this disease. The present twins had no family history of retinoblastoma. They were born prematurely as extremely low birth weight infants after 26 weeks and 4 days of gestation, and 3 of the 4 tumors were detected at 33 weeks after conception. Using LINAC external radiation therapy followed by xenon photocoagulation when necessary, the tumors were successfully treated. These cases show that retinoblastoma can develop in the pre-term period, indicating that the second mutation involved in tumorigenesis can occur in the fetus.

Amit A see **Yovel I**

Anciaux D see **Mohazab HR**

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Asaka A see **Takeshita T**

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Austin MA, Sandholzer C, Selby JV, Newman B, Krauss RM, Utermann G: Lipoprotein(a) in women twins: heritability and relationship to apolipoprotein(a) phenotypes. Am J Hum Genet 1992 Oct;51(4):829–40
Lp(a) is a unique lipoprotein consisting of an LDL-like particle and a characteristic protein, apo(a). Increased levels of Lp(a) constitute a risk factor for coronary heart disease. Variation in the size of the apo(a) protein is a phenotype controlled by the apo(a) gene on chromosome 6 and is related to Lp(a) plasma levels. Based on 169 MZ and 125 DZ adult female twin pairs, this study's purpose was to estimate the proportion of the variation in Lp(a) levels that is due to genetic influences and to determine the extent to which the apo(a) locus explains this heritability. Lp(a) levels were significantly more similar in MZ twins than in DZ twins: mean co-twin differences were 3.9 +/- 5.7 mg/dl and 16.0 +/- 19.9 mg/dl (P less than .001), respectively. Intraclass correlations were .94 in MZ twins and .32 in DZ twins, resulting in a heritability estimate of .94 (P less than .001). Heritability was then calculated using only co-twins with the same apo(a) phenotype: the heritability estimate decreased to .45 but was still highly significant (P less than .001). Therefore, on the basis of heritability analysis of women twins, Lp(a) levels are almost entirely genetically controlled. Variation at the apo(a) locus contributes to this heritability, although other genetic factors could be involved.

B

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Baljet B, Heyke GC: [History of classification systems of conjoined twins by specific consideration of the classification systems of Louis Bolk (1866–1930)] Anat Anz 1992 Aug;174(4):361–8 (Eng. Abstr.) **(Ger)**
Classification systems concerning conjoined twins have been developed in the nineteenth century by many authors, a.o. J. F. Meckel (1816), I. Geoffroy Saint-Hilaire (1832), E. F. Gurlt (1831), Fr. Ahlfeld (1880), C. Taruffi (1881), and in the beginning of the twentieth century, a.o. J. W. Ballantyne (1902) and E. Schwalbe (1907). However, these classification systems were very complex and mainly based on the external morphology of the conjoined twins. In contrast to many other classification systems the professor in Anatomy at the University of Amsterdam Louis Bolk divided conjoined twins in only three main groups: 1 greater than diplopagi simplex caudad; 2 greater than diplopagi simplex craniad; 3 greater than diplopagi simplex mesad. The last group was divided into ventrad and laterad conjuncti. For the study of conjoined twins the Vrolik Collection and many other specimens of the Museum of the Department of Anatomy and Embryology of the University of Amsterdam were

AUTHOR SECTION

very important for Bolk. Three factors were the main reason that the concept of the classification of double monsters of Bolk has not been cited often in the international literature: 1 greater than the publications of the classification in a national journal in Dutch; 2 greater than the coincidence of the publication of E. Schwalbes famous handbook "Die Morphologie der Missbildungen des Menschen und der Tiere II. Die Doppelbildungen" in the same period and 3 greater than the problem that the verification of the classification, mainly based upon morphogenesis, has not been possible because of technical problems in performing these experiments in mammals.(ABSTRACT TRUNCATED AT 250 WORDS)

Ballinger S see **Dunlap NE**

Bamforth F see **Lemke RP**

Baptiste M see **Nasca PC**

Barton JJ see **Ginsberg NA**

Bass M, Hass R: Near death in twins, reported 22 years ago [letter] JAMA 1992 Oct 14;268(14):1860

Batten N see **Stevenson J**

Bear MB see **Sherman SJ**

Beghi A see **Comacchio F**

Beischer NA see **Wein P**

Belfort MA, Moise KJ Jr, Kirshon B, Saade G: The use of color flow Doppler ultrasonography to diagnose umbilical cord entanglement in monoamniotic twin gestations.
Am J Obstet Gynecol 1993 Feb;168(2):601-4
OBJECTIVE: Our purpose was to investigate the use of color flow Doppler ultrasonography to identify umbilical cord entanglement. STUDY DESIGN: Our case series consisted of three monoamniotic twin gestations. Color flow Doppler was used prospectively to study the umbilical cords. RESULTS: Apparent "branching" of the umbilical artery, with evidence of two different heart rates in the two segments of the branch, was seen in all cases. Compression of the umbilical vein was identified by extremely high blood velocity. CONCLUSIONS: Color flow Doppler is useful in the identification of umbilical cord entanglement in monoamniotic twin pregnancies and may provide a method of monitoring the fetuses for evidence of cord compression.

Benirschke K see **Liu S**

Bennett P, Henderson D, Stanier P, Vaughan J, Moore G: Determination of twin zygosity by DNA hybridisation to wild type bacteriophage M13.
Br J Obstet Gynaecol 1992 Oct;99(10):858-9

Benshushan A see **Mordel N**

Berg JM see **Karlinsky H**

Berg K see **Corey LA**

Bergem AL see **Breitner JC**

Berman KF, Torrey EF, Daniel DG, Weinberger DR: Regional cerebral blood flow in monozygotic twins discordant and concordant for schizophrenia.
Arch Gen Psychiatry 1992 Dec;49(12):927-34
We addressed several questions regarding hypofunction of the prefrontal cortex ("hypofrontality") in schizophrenia by measuring regional cerebral blood flow during three different cognitive conditions in monozygotic twins who were discordant or concordant for schizophrenia or who were both normal. These questions included the prevalence of hypofrontality, the importance of genetic predisposition, and the role of long-term neuroleptic treatment. Significant differences between affected and unaffected discordant twins were found only during a task linked to the prefrontal cortex, the Wisconsin Card Sorting Test. During this condition, all of the twins with schizophrenia were hypofrontal compared with their unaffected co-twins, suggesting that, if appropriate cognitive conditions and control groups are used, hypofrontality can be demonstrated in the majority of, if not all, patients with schizophrenia. When unaffected co-twins of patients with schizophrenia were compared with twins who were both normal, no differences were observed, suggesting that nongenetic factors are important in the cause of the prefrontal physiologic deficit that appears to characterize schizophrenia. When concordant twins with a high- vs a low-dose lifetime history of neuroleptic treatment were compared, the twin receiving the higher dose was more hyperfrontal in six of eight pairs, suggesting that long-term neuroleptic treatment does not play a major role in hypofrontality.

Berry DH see **Williams J**

Bianco R see **Orecchia L**

Birkhaeuser M see **Dietz TU**

Bivins HA Jr see **Ellings JM**

Björkman L, Svartengren M, Nordberg M: Individual differences in activity of glutathione peroxidase and catalase studied in monozygotic twins discordant for smoking. Hum Exp Toxicol 1992 Sep;11(5):341-6
1. Cigarette smoke contains free radicals. The enzymes glutathione peroxidase (GSH-px) and catalase are important parts of the anti-oxidative protecting system. 2. Ten pairs of monozygotic twins, who were discordant for smoking, were analysed in order to determine their erythrocyte glutathione peroxidase and catalase activities and their plasma concentrations of selenium. 3. Analysis of variance (ANOVA) revealed that the difference in activities of catalase and glutathione peroxidase was much less within pairs than between pairs, indicating a large individual variation due to genetic expression or shared environment and no major effect from smoking. 4. The plasma selenium levels of the investigated twins revealed sufficient intake of selenium to maintain maximal activity of GSH-px in erythrocytes. The mean +/- s.d. selenium concentration in plasma for smokers was 98 +/- 16 micrograms l-1 and for non-smokers 111 +/- 16 micrograms l-1. There was no correlation between plasma selenium and glutathione peroxidase in erythrocytes.

Bjurman A see **Rodvall Y**

Block SR: Twin studies: genetic factors are important [letter] Arthritis Rheum 1993 Jan;36(1):135-6

Bluth MJ see **Goffner L**

Body G see **Gold F**

Boehm FH, Lombardi SJ, Rosemond RL: Immediate cerclage following delivery of one nonviable twin. A report of three cases. J Reprod Med 1992 Dec; 37(12):986-8

Boggian O see **Comacchio F**

Boice JD Jr see **Rodvall Y**

Bolaji II, Mortimer G, Meehan FP, England S, Greally M: Acardius in a triplet pregnancy: cytogenetic and morphological profile.
Acta Genet Med Gemellol (Roma) 1992;41(1):27-32
We describe a rare case of acardius in a triplet pregnancy terminated by Caesarean Section at 32 weeks gestation. Morphological and chromosomal abnormalities of the fetus as well as structural abnormalities of the placenta are presented. Cytogenetic analysis and examination of the single disc triplet placenta provide evidence for the two major theories of pathogenesis of acardius, the twin reversed arterial perfusion (TRAP) sequence and the genetic theory, which we believe are not necessarily mutually exclusive.

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(Bolk L), Baljet B, Heyke GC: [History of classification systems of conjoined twins by specific consideration of the classification systems of Louis Bolk (1866–1930)] Anat Anz 1992 Aug;174(4):361–8 (Eng. Abstr.) **(Ger)**
Classification systems concerning conjoined twins have been developed in the nineteenth century by many authors, a.o. J. F. Meckel (1816), I. Geoffroy Saint-Hilaire (1832), E. F. Gurlt (1831), Fr. Ahlfeld (1880), C. Taruffi (1881), and in the beginning of the twentieth century, a.o. J. W. Ballantyne (1902) and E. Schwalbe (1907). However, these classification systems were very complex and mainly based on the external morphology of the conjoined twins. In contrast to many other classification systems the professor in Anatomy at the University of Amsterdam Louis Bolk divided conjoined twins in only three main groups: 1 greater than diplopagi simplex caudad; 2 greater than diplopagi simplex craniad; 3 greater than diplopagi simplex mesad. The last group was divided into ventrad and laterad conjuncti. For the study of conjoined twins the Vrolik Collection and many other specimens of the Museum of the Department of Anatomy and Embryology of the University of Amsterdam were very important for Bolk. Three factors were the main reason that the concept of the classification of double monsters of Bolk has not been cited often in the international literature: 1 greater than the publications of the classification in a national journal in Dutch; 2 greater than the coincidence of the publication of E. Schwalbes famous handbook "Die Morphologie der Missbildungen des Menschen und der Tiere II. Die Doppelbildungen" in the same period and 3 greater than the problem that the verification of the classification, mainly based upon morphogenesis, has not been possible because of technical problems in performing these experiments in mammals.(ABSTRACT TRUNCATED AT 250 WORDS)

Bondareff W see **Small GW**

Bondeson J: The Biddenden Maids: a curious chapter in the history of conjoined twins. J R Soc Med 1992 Apr;85(4):217–21

Bondeson J: The Isle-Brewers conjoined twins of 1680. J R Soc Med 1993 Feb;86(2):106–9

Bordugo A see **Goi G**

Borthwick GM see **Norman RJ**

Bosson D see **Linkowski P**

Botchan A see **Yovel I**

Bouchard TJ Jr see **Lykken DT**

Bouchard TJ Jr see **Segal NL**

Bouhelier P see **Lajarrige C**

Boulot P, Hedon B, Pelliccia G, Lefort G, Deschamps F, Arnal F, Humeau C, Laffargue F, Viala JL: Multifetal pregnancy reduction: a consecutive series of 61 cases. Br J Obstet Gynaecol 1993 Jan; 100(1):63–8
OBJECTIVE: The effect of selective fetocide on the course of 61 multiple pregnancies. DESIGN: An observational study. SETTING: A tertiary centre. SUBJECTS: 61 women whose pregnancies included 37 triplets, 18 quadruplets, 5 quintuplets and 1 hepatuplet; 97% followed IVF or the induction of ovulation. The aim of the procedure in most cases was to obtain twins. INTERVENTIONS: Selective reduction was performed before 13 weeks gestation under general anaesthesia, using either a transcervical (n = 26) or transabdominal approach (n = 35). Fifty-four twins, 4 singletons and 3 triplets were obtained after the procedure. MAIN OUTCOME MEASURE: Preterm labour rate. RESULTS: The rate of unplanned fetal loss was 13% and was related to the number of suppressed embryos ($P < 0.05$). The preterm labour rate was 56.6%, the mean gestation at delivery was 35.6 weeks. Seven deliveries were before 32 weeks and led to all neonatal deaths. A comparison with published data suggested that fetal reduction reduced the rate of preterm labour in high multiple pregnancies; in 24 twin pregnancies obtained after reduction of triplets there was probably a gain of 2 weeks gestation. Severe growth retardation occurred in 13%. The perinatal mortality rate was 10.8%. CONCLUSIONS: Selective termination reduces but does not prevent early preterm labour. The procedure is of value in pregnancies with more than 3 fetuses and should be considered carefully for triplet pregnancies.

Bovet J see **Dosso AA**

Brandtzaeg P see **Helgeland L**

Breitner JC, Gatz M, Bergem AL, Christian JC, Mortimer JA, McClearn GE, Heston LL, Welsh KA, Anthony JC, Folstein MF, et al: Use of twin cohorts for research in Alzheimer's disease. Neurology 1993 Feb;43(2):261–7 (91 ref.)
The causes of Alzheimer's disease (AD) remain a mystery despite the recent identification of several putative environmental risk factors and the discovery of several linked genetic loci and point mutations associated with the disease. Particularly uncertain is the generalizability of the genetic findings to the common forms of disease encountered in clinical practice or population research. Twin studies of AD can illuminate causal mechanisms, both genetic and environmental. This consensus document explores the rationale for such twin studies, as well as a number of methodologic problems that render them difficult to implement or interpret. We review existing twin studies of AD and note several ambitious new studies. Finally, we delineate several practical strategies for the near future of twin research in AD.

Brennan B see **Langer JC**

Briles DE see **Dunlap NE**

Brink Henriksen T, Villadsen GE, Hedegaard M, Secher NJ: Prediction of light-for-gestational age at delivery in twin pregnancies: an evaluation of fetal weight deviation and growth discordance measured by ultrasound.
Eur J Obstet Gynecol Reprod Biol 1992 Dec 28; 47(3):195–200
The purpose of this retrospective study was to evaluate and discuss different ultrasound methods widely used, among other things, as predictors for light-for-gestational age (LGA) in twin pregnancies. The methods evaluated and compared as predictors for LGA at birth were: (1) Difference between twins in biparietal diameter; (2) difference in abdominal diameter; (3) the percentage difference in estimated fetal weight between twins; and (4) estimation of the weight deviation from the expected weight during pregnancy. The study comprised 66 twin pregnancies, examined by ultrasound scanning less than 15 days before delivery. Using Relative Operating Characteristic curves (ROC curves) estimated fetal weight deviation was the most sensitive and specific of the methods. It is stressed that fetal discordance is not the appropriate predictor of LGA at birth in twin pregnancies.

Brooks DJ see **Burn DJ**

Brooks M see **Wenk RE**

Brown J see **Kozlowski K**

Bryan EM: The role of twins in epidemiological studies. Paediatr Perinat Epidemiol 1992 Oct; 6(4):460–4

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Buekens P, Wilcox A: Why do small twins have a lower mortality rate than small singletons? Am J Obstet Gynecol 1993 Mar;168(3 Pt 1):937–41
OBJECTIVE: We propose an interpretation of the paradoxically better survival rate among low-birth-weight twins compared with low-birth-weight singletons. STUDY DESIGN: We used data from Belgian birth and death certificates for 1983 and 1984. The data include 229,964 singletons, 2175 first twins, and 2153 second twins. Weight-specific perinatal mortality rates of twins and singletons were compared; the birth-weight distributions were adjusted to a single mean and SD. RESULTS: After adjustment, mortality rates at every weight were higher for twins than for singletons. CONCLUSIONS: The appearance of better survival among small twins compared with small singletons disappears after adjustment to relative birth-weight. There is a large risk resulting from twinning that falls on all twins, regardless of their weight.

Bueso-Ramos C see **Schwartz DA**

Burkhardt A: [The color and structure of the human iris. 2. Studies of 200 twins] Anthropol Anz 1992 Sep;50(3):235–70 (Eng. Abstr.) **(Ger)**
Subject of the present report is an investigation of the heredity of 30 iris characteristics. The material basis of this sample of twins (100 monozygotic and 100 dizygotic pairs), the largest ever taken as a basis for the purpose of iris research, consists of standardized colour photographs of the examined persons' irises and iris-microscopic observations. The pairs of twins are compared to 100 non-related casual pairs in order to render a better estimation of the degree of heredity of the features possible. On every occasion several classes were constituted for the concordance verification. These classes result from the number of the classes of the forms of markedness and present different levels of similarity. The different distribution of the twin pairs and the control pairs on the concordance classes are always examined for their statistical significance, and for each group of pairs a concordance value is computed. The intervals between the concordance values of the monozygotic and dizygotic pairs and the control pairs indicate the degree of heredity of the investigated feature. Taking all the compiled factors and conditions into consideration, an evaluation of the features as heredity features is made. Though a hereditary component can be observed for all iris characteristics, only about a third could be called heredity features. Quantity of pigment and the hitherto undescribed limiting layer folds were evaluated as "very good", whereas pigment colour in the fine analysis, quality of the anterior stroma leaf, frequency of iris crypts and iris frill position were judged as "good". Tone of blue, markedness of Woelfflin nodules, quantity and markedness of contractional rings could be evaluated as "moderately good" as to their heredity. On the basis of the prior concordance investigations for each of the 300 pairs, a "similarity index" and a "concordance index" were computed in order to arrive at evidence as to the degree of similarity of the single pairs; i.e. in order to detect the limits of the similarity between non-identical twins and the dissimilarity between identical twins. This concluding investigations lead to the question of the possibility of a diagnosis of genetic identicalness solely on the basis of the comparison of irises.

Burlina AB see **Goi G**

Burn DJ, Mark MH, Playford ED, Maraganore DM, Zimmerman TR Jr, Duvoisin RC, Harding AE, Marsden CD, Brooks DJ: Parkinson's disease in twins studied with 18F-dopa and positron emission tomography. Neurology 1992 Oct;42(10):1894–900
We used 18F-dopa PET to examine concordance for dysfunction of the nigrostriatal dopaminergic system in 18 co-twins of patients with Parkinson's disease (PD) and scanned one clinically concordant monozygotic (MZ) twin pair, 17 asymptomatic co-twins (10 MZ, 7 dizygotic [DZ]), and 13 twins with PD (8 MZ, 5 DZ). Mean 18F-dopa uptake of the twins with PD was significantly reduced in putamen to 38% and in caudate to 66% of normal. Mean putamen 18F-dopa uptake for the 17 asymptomatic co-twins was also significantly reduced (86% of normal), as was putamen tracer uptake for the 10 MZ (87% of normal) and seven DZ (83% of normal) asymptomatic co-twin subgroups. Four of 10 MZ and two of seven DZ asymptomatic co-twins had putamen 18F-dopa uptake reduced more than 2 SDs below the normal mean. Three of these four asymptomatic MZ co-twins had tremor on examination at the time of PET and one has now developed PD 2 years later. Our PET findings give concordances for nigral dysfunction of 45% in the MZ pairs and 29% in the DZ pairs at a 2-SD threshold, and 18% in MZ and 0% in DZ pairs at a 3-SD threshold of significance. These data suggest that the concordance for nigral pathology in PD twins may be higher than previously realized and that the presence of an isolated postural or rest tremor may be a phenotypic expression of PD.

Buss KA see **Williams CS**

Butcher GJ see **Cryan EM**

C

Caco CC see **Langer JC**

Caffarelli MA see **Ginsberg NA**

Caldwell D see **Williams J**

Camner P see **Ericsson CH**

Campos J see **Emde RN**

Capodieci S see **De Leo D**

Carels C see **Lauweryns I**

Carson DA see **Kohsaka H**

Carter AS see **Grigorenko EL**

Casal E see **Clode N**

Cervera P see **Laplaza FJ**

Chamberlain JC see **Thorn JA**

Chatkupt S, Chatkupt S, Kohut G, Chervenak FA: Antepartum diagnosis of discordant anencephaly in dicephalic conjoined twins.
JCU J Clin Ultrasound 1993 Feb;21(2):138–42

Chatkupt S see **Chatkupt S**

Check JH, Lee G, Nowroozi K, Baker A: Successful delivery of twins in a woman with a unicornuate uterus. Gynecol Obstet Invest 1992;34(2):124–5
The presence of a unicornuate uterus is a rare congenital condition which represents only 1–2% of uterovaginal anomalies. Previous reports have demonstrated an increase in the number of cases of primary infertility, pregnancy loss and preterm labor associated with the unicornuate uterus. Herein, we present a case in which a patient conceived following a thawed frozen embryo transfer. She had been given the option of selective reduction, because of the high risk associated with this pregnancy, but refused and her pregnancy successfully continued to 35 weeks and delivery of twins.

Check JH, Weiss RM, Lurie D: Analysis of serum human chorionic gonadotrophin levels in normal singleton, multiple and abnormal pregnancies.

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Hum Reprod 1992 Sep;7(8):1176–80
Some researchers claim that first trimester beta–human chorionic gonadotrophin (beta HCG) levels have a constant doubling time; others suggest doubling time increases as pregnancy progresses. This study was designed to settle the debate by analysing a large series of serial serum beta HCG determinations from 143 pregnant women whose day of ovulation was precisely determined. Regression analysis was used to evaluate linear and quadratic models for the relationship of HCG with time in normal pregnancies. Doubling times were calculated for three time periods: 10–20 days post–ovulation (period 1); 21–30 days post–ovulation (period 2); greater than 30 days post–ovulation (period 3). Analysis of variance was used to compare the mean doubling time by time period and type of pregnancy (single, multiple, spontaneous abortion and ectopic). The analysis showed that a quadratic model best described the pattern of HCG rise in early normal pregnancy. Furthermore, for normal pregnancies, the mean doubling time increased significantly with advancing gestational age between time periods 1 and 2 and between periods 2 and 3. The mean doubling time was the same for single and multiple pregnancies. The doubling time was prolonged with ectopic pregnancy in period 1; and for aborters reaching ultrasound at 8 weeks, the doubling time was normal in period 1 but prolonged in period 2. Careful observation of the doubling time may aid clinicians in the detection of abnormal pregnancies.

Cheek WR see **Simpson RK Jr**

Chen PP see **Kohsaka H**

Chen SU, Yang YS, Ho HN, Ko TM, Hsieh FJ, Lee TY: Combined cornual pregnancy and intrauterine twin pregnancy after in vitro fertilization and embryo transfer: report of a case.
J Formos Med Assoc 1992 Oct;91(10):1002–5
A case of combined cornual pregnancy and intrauterine twin pregnancy after in vitro fertilization (IVF) and transfer of six embryos is presented. The case was diagnosed as intrauterine triplets ultrasonographically at seven weeks of gestation. Unfortunately, the patient suffered from severe lower abdominal pain and hypovolemic shock at 10 weeks of gestation, and an emergent laparotomy was done. During the operation, a ruptured cornual pregnancy with accompanying hemoperitoneum was found. Because fetal heart beats were not detected by intraoperative ultrasonography in the other two intrauterine fetuses, evacuation of the gestational contents through the uterine defect was done, and the rupture site was repaired. The incidence, mechanism and management of heterotopic pregnancies after in vitro fertilization and embryo transfer are discussed.

Chen Y see **Li D**

Cherner M see **Stevenson J**

Chervenak FA see **Chatkupt S**

Chi JG see **Gerlis LM**

Chiafari FA see **Wenk RE**

Chiarelli A see **Parisi G**

Christian JC see **Breitner JC**

Christian JC see **Dunlap NE**

Christian JC see **Joseph KC**

Christian JC see **Williams CJ**

(Chulkhurst E), Bondeson J: The Biddenden Maids: a curious chapter in the history of conjoined twins.
J R Soc Med 1992 Apr;85(4):217–21

(Chulkhurst M) Bondeson J: The Biddenden Maids: a curious chapter in the history of conjoined twins.
J R Soc Med 1992 Apr;85(4):217–21

Chutke P see **Daga SR**

Cifuentes L see **Daher V**

Clayton PT see **Hyland K**

Clode N, Casal E, Graça LM: [Umbilical flowmetry in twin pregnancy. A method for identifying discordant fetal growth?] Acta Med Port 1992 Oct; 5(9):483–4 (Eng. Abstr.) **(Por)**
Umbilical artery velocimetry was performed in 33 twin gestations to evaluate the predictivity of the test (umbilical artery S/D difference between the pair > 0.4) in the screening of discordant fetal growth. Four out of 10 cases of discordant fetal growth were identified by the test and it was abnormal in 1 out of 23 concordant twins. The sensitivity was 40%, specificity 95%, positive predictive value 80% and negative predictive value of 79%. In spite of its low sensitivity the test can be useful in detecting discordant fetal growth in twin pregnancies.

Coid B, Lewis SW, Reveley AM: A twin study of psychosis and criminality. Br J Psychiatry 1993 Jan; 162:87–92
Lifetime criminal and psychiatric histories were examined in a consecutive series of 280 individuals of twin birth with a diagnosis of major functional psychosis who were seen and followed up at the Maudsley Hospital between 1948 and 1988. Their 210 co–twins, 35% of whom had a similar diagnosis, were ascertained and followed up over the same period. In the absence of reliable general–population estimates for lifetime conviction rates, co–twins were used as case controls. Among the 220 complete pairs, significantly more probands (25.7%) than co–twins (14.0%) were convicted, although there was no evidence for an independent genetic basis for criminal behaviour. Criminal conviction was significantly related to psychiatric diagnosis. There were specific patterns of offending, particularly among the schizophrenic men, who were also significantly more often convicted (48.6%) than the men with affective psychosis (19.4%), and more likely to receive a prison sentence. The schizophrenic patients were younger at their first conviction (mean age 22.6 years v. 30.8 years) and they had committed more violent offences than the affective group. In both diagnostic groups, ages at first psychiatric contact and first conviction were highly correlated.

Comacchio F, Boggian O, Poletto E, Beghi A, Martini A, Rampazzo A: Menière's disease in congenital nephrogenic diabetes insipidus: report of two twins.
Am J Otol 1992 Sep;13(5):477–81
Two cases, twins, affected by congenital nephrogenic diabetes insipidus (CNDI) with a high daily volume of dilute urine excretion and periods of compensatory high levels of antidiuretic hormone (ADH) simultaneously developed a fluctuating Menière–type hearing loss. It is well known that the kidney and the cochlea are linked by structural and anatomic characteristics, as well as by the physiologic mechanism of electrolytes and fluid regulation. The patients herein described seem to be paradoxical, because they suffered from hydropic hearing loss despite the pathophysiologic mechanism of CNDI and the possible role played by ADH in water regulation in the inner ear. The consequences on Menière's disease of the different therapeutic regimens followed by the two CNDI patients are discussed. To our knowledge these are the first cases of CNDI with Menière's disease described in the literature.

Condray R, Steinhauer SR, van Kammen DP, Zubin J: Dissociation of neurocognitive deficits in a monozygotic twin pair concordant for

AUTHOR SECTION

schizophrenia. J Neuropsychiatry Clin Neurosci 1992 Fall;4(4):449–53
Cognitive impairment varies markedly among schizophrenic individuals, although the reason for this is unknown. A monozygotic twin pair concordant for schizophrenia was evaluated using electrophysiological and neurobehavioral measures. Each twin showed a distinctive pattern of deficits; furthermore, clinical course and electrophysiological activity were not consonant with social and neurobehavioral functioning. Results suggest complex interrelationships between neurocognitive functioning and clinical presentation in schizophrenia.

Corey LA, Berg K, Solaas MH, Nance WE: The epidemiology of pregnancy complications and outcome in a Norwegian twin population. Obstet Gynecol 1992 Dec;80(6):989–94
OBJECTIVE: To measure the contribution of genetic factors to selected pregnancy complications, including miscarriage, twinning, hypertension–toxemia, and nausea–vomiting. METHODS: Information on 22,241 pregnancies of 8675 female twins or spouses of male twins was obtained by questionnaire from members of the population-based Norwegian Twin Panel. Comparisons of observed tetrachoric correlations were used to assess the importance of genetic influences on the variables examined. RESULTS: Pregnancy history information was provided by both members of 830 monozygotic and 902 dizygotic female twin pairs and by the spouses of both members of 459 monozygotic and 464 dizygotic male twin pairs. The incidence of twin pregnancy in general, and of opposite-sexed twins in particular, found among dizygotic twin women was nearly twice that observed for any other group. Monozygotic female twin pairs were more concordant than dizygotic female twin pairs for the occurrence of miscarriage, nausea or vomiting during pregnancy, and hypertension or overt toxemia. A similar pattern of twin similarity was observed for the use of certain medications during pregnancy including vitamins, aspirin, and nausea medication. CONCLUSIONS: Maternal genetic factors make an important contribution to a predisposition for dizygotic twinning, contribute to the risk of miscarriage, and appear to determine, in part, whether a woman experiences nausea–vomiting or hypertension–toxemia during pregnancy. In addition, health-seeking behaviors of women during pregnancy, as reflected by the use of several classes of medication, appear to be influenced somewhat by genetic factors.

Corley R see **Emde RN**
Cornet D see **Salat-Baroux J**
Costigan K see **Gallagher MW**

Cristalli B, Stella V, Heid M, Izard V, Levardon M: [Breech extraction of the second twin with or without version by internal maneuvers] J Gynecol Obstet Biol Reprod (Paris) 1992; 21(6):705–7 (Eng. Abstr.) **(Fre)**
A retrospective study was done to appraise the recent practice of breech extraction of the second twin (with or without internal version) in our unity. From January 1st, 1988 to April 30, 1991 23 patients with a twin gestation were delivered in our unity (0.5% of all deliveries). Nineteen patients (83%) were delivered vaginally. Each procedure was done by a resident under control of a senior obstetrician and in the presence of two midwives, a pediatrician, and an anesthesiologist. Ten patients having had a breech extraction (GE group) were studied, 13 patients were excluded for not having had a breech extraction. In the GE group the presentations were: 7 vertex/breech and 3 breech/breech. Mean Apgar scores of the second twin at 3 minutes were 8 in the GE group. These results suggest that breech extraction of the second twin is not a pernicious technique if done by trained operators with precise limits. These results need to be confirmed through a prospective randomized and comparative study.

Cryan EM, Butcher GJ, Webb MG: Obsessive–compulsive disorder and paraphilia in a monozygotic twin pair. Br J Psychiatry 1992 Nov; 161:694–8
We report OCD and paraphilia in two male members of triplets (the two males being monozygotic twins), and discuss the possible aetiological factors for this previously unreported occurrence. We suggest that patients presenting with paraphilia should be examined for OCD and that a detailed sexual history should be obtained in all patients with OCD.

Curole DN see **Dickey RP**
Czeizel A see **Métneki J**

D

Daga SR, Sequera D, Gajendragadkar A, Chutke P, Kamat H: Conservative management of extreme low birth weight quadruplets [letter] Indian Pediatr 1992 Dec;29(12):1583–4

Daher V, Youlton R, Nazer J, Cifuentes L: [Genetic study in twins] Rev Chil Pediatr 1991 Jan–Feb; 62(1):23–8 (Eng. Abstr.) **(Spa)**
During the period june 1987–January 1988, 35 consecutive pairs of twins born at two maternity hospitals in the northern area of Santiago were studied to search evidence of genetic or other factors which could eventually favour twinning. Sixteen of these pairs were considered to be monozygotic (MZ) after studying five blood group systems (ABO, Rh, MNSs, Duffy and Kidd) applying the method of Smith and Penrose. Maternal age was higher in dizygotic twins (DZ) than in the MZ group (average 30.1 yrs. v/s 26.8 yrs. respectively ($p < 0.05$). Family history of twinning was positive in 73% of the MZ and in 82% of the DZ twins. The Duffy and Kidd systems were not in Hardy-Weinberg equilibrium due to a deficit of heterozygotes in MZ as well as in DZ twins. There was a significant increase in MS and Ms haplotypes in both groups of twins respect to the Chilean general population ($p = 0.01$). These results suggest the presence of a genetic determinant that favors the production of twinning of DZ as well as MZ type. A larger number of cases will be required to test this hypothesis.

Dahlén G see **Heller DA**
Daniel DG see **Berman KF**
Danielsson D see **Helgeland L**
Daskal JL see **Ginsberg NA**
David MP see **Yovel I**
Decker K see **Fischer J**
de Faire U see **Heller DA**
DeFries J see **Emde RN**
DeGaetano DH see **Kempton JB**

Degani S, Gonen R, Shapiro I, Paltiely Y, Sharf M: Doppler flow velocity waveforms in fetal surveillance of twins: a prospective longitudinal study. J Ultrasound Med 1992 Oct;11(10):537–41
In 37 consecutive twin pregnancies, monthly Doppler sonographic measurements were made of blood flow velocity waveforms of the internal carotid and umbilical artery of each fetus. A total of 197 Doppler studies were performed. Of the 74

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infants, 23 were small for gestational age (SGA). Thirty-five of the SGA Doppler studies were abnormal, giving an overall sensitivity for predicting SGA fetus of 58% and a positive predictive value of 71%. These data are not as sensitive and specific as our earlier data; however, Doppler criteria preceded sonographic diagnosis of SGA by a mean interval of 3.7 weeks and demonstrated better sensitivity and specificity. A combination of these parameters improves sensitivity to 84%. We conclude that Doppler velocimetry complements real-time ultrasonography for the early diagnosis of abnormal growth in twin pregnancies.

Deighton CM, Watson MJ, Walker DJ: Sex hormones in postmenopausal HLA-identical rheumatoid arthritis discordant sibling pairs. J Rheumatol 1992 Nov;19(11):1663-7

Dehydroepiandrosterone sulfate (DHEAS), testosterone, androstenedione, 17-beta estradiol and sex hormone binding globulin have been assayed in 50 HLA-identical postmenopausal rheumatoid arthritis (RA) discordant sibling pairs. The only difference was for DHEAS, siblings with RA having a significantly lower level than their sisters. However, in 68 patients with RA, the level of DHEAS inversely correlated with disease duration, a radiographic grading score, the Health Assessment Questionnaire score, duration of morning stiffness, and a clinical score of disease activity and severity (the Spread/Severity index). These observations, taken with that of previous work on DHEAS, suggest that low levels may be a consequence of RA rather than predisposing to the disease. The role of sex hormones in RA will have to be approached in alternative ways.

de Jong MW, van Lingen RA, Wildschut J, van Eijck J: Delayed interval delivery of two remaining fetuses in quintuplet pregnancy after embryo reduction: report and review of the literature.

Acta Genet Med Gemellol (Roma) 1992;41(1):49-52 (16 ref.)

A case report is presented with a prolonged interval between delivery of 25 days. A quintuplet pregnancy resulted from hormonal stimulation of ovulation. Two fetuses remained after an embryo reduction was performed at 11 weeks gestation. At 22.5 weeks gestation the first twin (310 g) was delivered after spontaneous rupture of membranes. Using tocolytic agents, the second twin (710 g) was born at 26 weeks of gestation. This case is discussed and a review of the literature is given.

de Kretser DM see **Norman RJ**

De Leo D, Capodieci S, Villa A: Personality factors in monozygotic and dizygotic twins: a comparative study. Psychol Rep 1992 Dec;71(3 Pt 2):1115-22

To explore similarities or differences on a number of psychological variables relating to personality for members of 16 pairs of monozygotic and 16 pairs of dizygotic twins and between the two groups, the Rorschach, Luscher, Cattell 16 PF, Bem Sex-role Inventory, and Symptom Distress Check List were given to 64 subjects. Analysis confirms data in the literature concerning significant similarities on some personality traits for monozygotic and dizygotic pairs, but with some differences between the groups tested. The particular similarity between the twins may be more attributable to the type of relationship developed early between the twins and the mother than to a greater genetic than environmental influence.

Dennerstein L see **Treloar SA**

De Sario PN see **Orecchia L**

Deschamps F see **Boulot P**

de Seta F see **Spinillo A**

De Silva N: Zygosity and umbilical cord length. J Reprod Med 1992 Oct;37(10):850-2

Differences in cord length between weight-concordant pairs were studied in 43 monochorionic, 59 same-sex dichorionic and 42 different-sex dichorionic sets of twins and comparisons were made between groups. Of obvious and curious note was the narrow range of cord length differences between twins in monochorionic pairs (range, 0-5 cm; mean, 2.1 +/- 1.6 cm). Same-sex and different-sex dichorionic groups had significantly wider ranges of cord length differences than the monochorionic group (range, 0-34 cm; means, 7.7 +/- 6.4 and 11.0 +/- 6.1 cm, respectively). In the same-sex dichorionic group no pair whose cord lengths differ by $>$ 5 cm has yet been found to be identical. Discordant monochorionic twins had greater differences in cord length. All other factors being equal, the remarkably similar cord lengths of concordant identical twins strongly supports the hypothesis that a genetic component influences cord length.

Deter RL, Stefos T, Harrist RB, Hill RM: Detection of intrauterine growth retardation in twins using individualized growth assessment: I. Evaluation of growth outcome at birth. JCU J Clin Ultrasound 1992 Nov-Dec;20(9):573-7

The growth of 17 sets of twins was evaluated at 2 to 3 week intervals from 15 weeks to delivery by measurement of the head circumference, abdominal circumference, and thigh circumference, and estimation of weight. The birth characteristics of these twins were compared to those predicted by Rossavik growth models, derived from second-trimester ultrasound measurements, using the Growth Potential Realization Index (GPRI) and by comparison to population standards. Newborns were classified as normal or intrauterine growth retarded (IUGR) based on their Neonatal Growth Assessment Score, determined from GPRI values. All normal twins had birth weights that were appropriate-for-gestational-age and had few abnormal birth measurements. The birth weight differences between normal twin fetuses were all $<$ 20%. IUGR twins were both small for gestational age (78%) and appropriate-for-gestational-age (22%), and all had 3 or 4 abnormal GPRI values. In only 40% of the cases was the birth-weight difference between a normal and an IUGR twin $>$ 20%. No single anatomic parameter evaluated at birth adequately separated the normal twins from those with IUGR. These results indicate the need for multiple parameter Individualized Growth Assessment in the detection of IUGR in twins.

Deter RL, Stefos T, Harrist RB, Hill RM: Detection of intrauterine growth retardation in twins using individualized growth assessment. II. Evaluation of third-trimester growth and prediction of growth outcome at birth. JCU J Clin Ultrasound 1992 Nov-Dec;20(9):579-85

Second- and third-trimester growth in 34 twin fetuses was evaluated with ultrasonography by measurement of five anatomic parameters. Rossavik growth models, derived from second-trimester measurements, were used to specify expected third-trimester growth curves. Actual measurements were compared to predicted measurements by calculation of the percent deviations. Growth outcome at birth [normal, intrauterine growth retardation (IUGR)] was determined from Neonatal Growth Assessment Scores. Growth in the second trimester was similar in normal and IUGR twins.

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In the third trimester, abnormal negative deviations were larger and more numerous in IUGR twins. However, there was considerable individual variability and normal twins also had abnormal negative deviations. In IUGR twins, the first appearance of an abnormal negative deviation was quite variable (range: 28.6 weeks to 35.1 weeks), as was the parameter to show such a deviation. Prediction of neonatal outcome was poor using individual anatomic parameters but improved considerably with use of all five parameters. However, some fetuses were misclassified when only the number of abnormal negative deviations was used. The Prenatal Growth Assessment Score (PGAS), determined by both the number and magnitude of abnormal negative deviations, predicted neonatal outcomes with a sensitivity of 100% and specificity of 100%. On average, PGAS values were abnormal 5 weeks before delivery. These results indicate that normal and IUGR twins can be separated, using third-trimester growth patterns, if multiple parameter Individualized Fetal Growth Assessment is employed.

Devoe LD see **Hiett AK**

D'Hooghe M: Probable cases of mast syndrome in a non-Amish family [letter]
J Neurol Neurosurg Psychiatry 1992 Dec; 55(12):1210

Dickey MH see **Dickey RP**

Dickey RP, Olar TT, Taylor SN, Curole DN, Rye PH, Matulich EM, Dickey MH: Incidence and significance of unequal gestational sac diameter or embryo crown-rump length in twin pregnancy.
Hum Reprod 1992 Sep;7(8):1170-2
The incidence of differences in gestational sac diameter and crown-rump length, measured at the time of the first ultrasound, in which at least one gestational sac or crown-rump length could be visualized, were analysed retrospectively in 260 twin pregnancies in which one or both fetuses were delivered at term. The difference in gestational sac diameter averaged 1.2 +/- 0.1 mm for pregnancies which ended in twin births, compared to 2.0 +/- 0.3 mm when pregnancy ended in single births (P less than 0.02). The difference in crown-rump length averaged 2.4 +/- 0.6 mm for pregnancies which ended in a single birth, compared to 0.9 +/- 0.1 mm for twin births (P = 0.02). Disparities of greater than or equal to 3 mm in gestational sac diameter (P less than 0.05) or crown-rump length (P less than 0.001) were associated with an embryo loss rate greater than or equal to 50%. The disparity in gestational sac diameter (P less than 0.04) and crown-rump length (P less than 0.01) was smaller in pregnancies resulting from assisted reproductive technologies, compared with pregnancies resulting from coitus or insemination. Differences in gestational sac diameter and crown-rump length in early pregnancy were unrelated to differences in birth weight, length or sex.

Dietz TU, Haenggi W, Birkhaeuser M, Gyr T, Dreher E: Combined bilateral tubal and multiple intrauterine pregnancy after ovulation induction.
Eur J Obstet Gynecol Reprod Biol 1993 Jan; 48(1):69-71
Over the last 20 years, the frequency of multiple pregnancy has increased mainly because of the introduction of exogenous pituitary gonadotropins in the treatment of sterility. The incidence of ectopic pregnancies also increased during the same period of time. This paper describes the first reported case of a simultaneous bilateral tubal and multiple intra-uterine pregnancy after ovulation induction with human gonadotropins.

Dodd B see **McEvoy S**

Dooley SL see **Peaceman AM**

Dosso AA, Bovet J: Monozygotic twin brothers with age-related macular degeneration.
Ophthalmologica 1992;205(1):24-8
We report the simultaneous development of exudative macular degeneration in monozygotic twin brothers. This report supports the hypothesis that genetic factors may be implicated in the pathogenesis of age-related macular degeneration.

Doyle P: Twinning and Down syndrome [editorial]
Ir Med J 1992 Dec;85(4):121

Drake-Lee A: Nasal polyps in identical twins.
J Laryngol Otol 1992 Dec;106(12):1084-5
Nasal polyps are multifactorial in aetiology but are associated with respiratory diseases, particularly late onset asthma. Several members of a family may be affected with nasal polyps but there is little evidence for a genetic basis for this. Some evidence to support a genetic predisposition comes from the development of polyps in identical twins.

Dreher E see **Dietz TU**

Drut R, García C, Drut RM: Poorly organized parasitic conjoined twins: report of four cases.
Pediatr Pathol 1992 Sep-Oct;12(5):691-700
We report four examples of parasitic conjoined twins (PCT) that created difficulties in diagnosis and treatment because of their unusual presentation and poor internal organization. Case 1 appeared as a tumor on the back containing an adrenal gland and part of the small bowel and stomach; two spines with spinal cords were present. Case 2 was similar, but mature and immature renal tissue were included and a meningocele with Arnold-Chiari type II malformation was recognized in the autosite spine. Retrospective interpretation of both cases suggested that the left lower limb and pelvis were part of the parasites. In case 3 the parasite was attached at the perineum and lower abdomen, contained a rudimentary spine in continuity with the coccyx of the autosite, and was partially covered by scalp. Case 4 presented as a limblike tumor attached at the suprapubic region. All cases were complicated by disruptions in the autosites. Surgical treatment was successful in cases 1, 2, and 3. These four anatomically poorly organized PCT are best categorized as intermediate between teratomas and the more common types of PCT.

Drut RM see **Drut R**

Dubrey SW see **Hardman TC**

Dudenhausen JW: [7th Workshop on Multiple Pregnancy. Berlin-Charlottenburg, 30 May to 1 June 1991] Gynakol Geburtshilfliche Rundsch 1992; 32(4):246-50 **(Ger)**

Dunlap NE, Ballinger S, Reed T, Christian JC, Koopman WJ, Briles DE: The use of monozygotic and dizygotic twins to estimate the effects of inheritance on the levels of immunoglobulin isotypes and antibodies to phosphocholine.
Clin Immunol Immunopathol 1993 Feb;66(2):176-80
In the elderly there is a pronounced increase in susceptibility to infectious disease. Evidence for particular immune deficits that result in susceptibility to specific agents is lacking, however, and there is little information on the degree to which differences in the susceptibility among the elderly are due to genetic versus environmental effects. A strong association has been observed between eventual fatal pneumonia and elevated levels of IgM antibody to phosphocholine (PC) levels at age 70. In this study we evaluated the heritability of IgM and IgG antibody levels to phosphocholine in the elderly

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using monozygotic and dizygotic male twins. We observed genetic regulation of serum levels of IgM antibody to PC, a finding which suggests that susceptibility of the elderly to fatal pneumonia may be heritable. Levels of total IgM were under separate genetic control and there was no genetic effect on IgG and IgA levels or levels of IgG antibody to phosphocholine.

Duvoisin RC see **Burn DJ**

E

Eaves LJ see **Kendler KS**

Eaves LJ see **Schieken RM**

Egan JF see **Lettieri L**

Eggli K see **Ramer JC**

Egwuatu VE, Iloabachie GC, Okezie O, Ibe BC: Quintuplet pregnancy case report. West Afr J Med 1992 Apr-Jun;11(2):154-7

Eisen SA see **Ramakrishnan V**

Ekbom A see **Hsieh CC**

Ellings JM, Newman RB, Hulsey TC, Bivins HA Jr, Keenan A: Reduction in very low birth weight deliveries and perinatal mortality in a specialized, multidisciplinary twin clinic. Obstet Gynecol 1993 Mar;81(3):387-91

OBJECTIVE: To determine whether a specialized, multidisciplinary twin clinic could reduce rates of very low birth weight (VLBW) and perinatal mortality. Multifetal gestations account for only 1% of all pregnancies, yet are responsible for nearly 10% of all perinatal mortality. Very low birth weight (less than 1500 g) infants are the major contributors to this increased perinatal mortality rate. METHODS: Eighty-nine twin pairs followed in the Twin Clinic since 1988 were compared with 51 contemporary twin pairs who did not attend the Twin Clinic. Patients not attending the Twin Clinic were attended in the high-risk clinic by the obstetric residents and faculty. All maternal transports were excluded. Aspects of prenatal care emphasized in the Twin Clinic that differed from the high-risk clinic included consistent evaluation of maternal symptoms and cervical status by a single certified nurse-midwife, intensive preterm birth prevention education, individualized modification of maternal activity, increased attention to nutrition, and tracking of clinic non-attenders. RESULTS: There were no differences between the groups in demographic characteristics, adequacy of prenatal care, or antepartum complications. However, Twin Clinic attenders had lower rates of VLBW infants, neonatal intensive care unit admission, and perinatal mortality. CONCLUSIONS: These improvements in perinatal outcome for twin gestations are attributed to intensive preterm birth prevention education, individualization of prenatal care, and frequent maternal assessment by a consistent care provider. This approach reduced the rate of very early preterm delivery and its neonatal sequelae.

Emanuel I, Filakti H, Alberman E, Evans SJ: Intergenerational studies of human birthweight from the 1958 birth cohort. II. Do parents who were twins have babies as heavy as those born to singletons? Br J Obstet Gynaecol 1992 Oct;99(10):836-40

OBJECTIVE: To ascertain whether maternal twinning influences the previously described association between the birthweight of singleton mothers and their infants. DESIGN AND SUBJECTS: The association between the birthweight of singleton parents and their offspring and that between twin parents and their offspring was compared using data from the 23-year-old sample of the 1958 British national birth cohort. The numbers available for full comparison were 1027 female and 611 male singleton cohort members, and 26 female and 17 male twin cohort members and their first singleton livebirths. RESULTS: Of the mothers who had been twins, half had been of low birthweight, and overall their mean weight was 700 g less than that of their singleton counterparts. Nevertheless, the mean birthweight of babies of twin mothers was 133 g, and of twin fathers 94 g, greater than of babies of corresponding singletons. For female, but not male, parents this difference persisted after adjustment for confounding variables. CONCLUSIONS: We suggest two possible reasons for the difference between the weight of babies of twin and singleton mothers. Firstly, the growth of twins becomes retarded late in pregnancy, possibly after a period critical in determining long-term reproductive effects. Secondly, the twin survivors were of higher birthweight than the original twin cohort, whilst the singleton survivors were more representative of all singleton births, thus introducing a possible bias.

Emde RN, Plomin R, Robinson JA, Corley R, DeFries J, Fulker DW, Reznick JS, Campos J, Kagan J, Zahn-Waxler C: Temperament, emotion, and cognition at fourteen months: the MacArthur Longitudinal Twin Study. Child Dev 1992 Dec; 63(6):1437-55

200 pairs of twins were assessed at 14 months of age in the laboratory and home. Measures were obtained of temperament, emotion, and cognition/language. Comparisons between identical and fraternal twin correlations suggest that individual differences are due in part to heritable influences. For temperament, genetic influence was significant for behavioral observations of inhibition to the unfamiliar, tester ratings of activity, and parental ratings of temperament. For emotion, significant genetic influence was found for empathy and parental ratings of negative emotion. The estimate of heritability for parental report of expression of negative emotions was relatively high, whereas that for expression of positive emotions was low, a finding consistent with previous research. For cognition and language, genetic influence was significant for behavioral indices of spatial memory, categorization, and word comprehension. Shared rearing environment appears influential for parental reports of language and for positive emotions, but not for other measures of emotion or for temperament.

England S see **Bolaji II**

Engstrom JL, Work BA Jr: Prenatal prediction of small- and large-for-gestational age neonates. J Obstet Gynecol Neonatal Nurs 1992 Nov-Dec; 21(6):486-95

OBJECTIVE: To test the predictive accuracy of five fundal height growth curves in the identification of twin gestations and small-, appropriate-, and large-for-gestational age neonates. DESIGN: Retrospective review of prenatal records. SETTING: Perinatal clinic at a tertiary-care center. PARTICIPANTS: Five hundred seven medically indigent women. MEASURES: Fundal height measurements were tested against the limits of normal for each week of gestation on five fundal height curves. Neonates were classified as small-, appropriate-, or large-for-gestational age (based on weight for gestational age), except for twin gestations, which were classified as twins. RESULTS: The accuracy of the predictions

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depended on which curve was used and what criteria were used to classify fundal height measurements as abnormal. Small-for-gestational age neonates (n = 40) were correctly predicted in 27.5–70% of the cases, large-for-gestational age neonates (n = 74) in 36.5–98.6% of the cases, and all four twin gestations. CONCLUSIONS: Clinicians should test the accuracy of any fundal height curve before using it in practice.

Eppel W see **Wenzl R**

Erickson MT see **Gau JS**

Ericsson CH, Svartengren M, Mossberg B, Camner P: Bronchial reactivity, lung function, and serum immunoglobulin E in smoking-discordant monozygotic twins. Am Rev Respir Dis 1993 Feb; 147(2):296–300

Smokers with chronic bronchitis and/or chronic obstructive pulmonary disease (COPD) have been reported to have an increased bronchial reactivity (BR). It has been discussed whether increased BR is a risk factor for the development of COPD in smokers. We studied 10 monozygotic twin pairs who were discordant for tobacco smoking by means of histamine provocation tests, lung function tests, and serum samples for total IgE. The smokers had a mild obstructive ventilatory impairment, with FEV1 significantly lower than that of the partner both when it was determined from the flow–volume loops (3.2 +/- 1.0 L for smokers and 3.4 +/- 0.8 L for nonsmokers) and by the Vitalograph spirometer (3.5 +/- 1.0 L for smokers and 3.8 +/- 0.8 L for nonsmokers). Forced midexpiratory flow (FEF25–75%) and forced expiratory flow at 75 to 85% of vital capacity (FEF75–85%) were both significantly lower in the smokers ($p < 0.05$). The alveolar plateau phase N2-delta test and lung clearing index in the multibreath nitrogen washout test were both significantly affected in the smokers ($p < 0.05$ and $p < 0.01$, respectively). We found no significant difference in histamine reactivity between smokers and nonsmokers and no correlation between differences in reactivity and differences in lung function within pairs. Total serum IgE was significantly higher in the smokers than in their nonsmoking siblings. These data suggest that obstructive ventilatory impairment and raised serum IgE are earlier and more constant manifestations of tobacco smoking than increased bronchial reactivity. Thus, bronchial hyperreactivity does not seem to be a major risk factor for the development of early airways obstruction in smokers.

Eriksson AW see **Allen G**

Eriksson J see **Kaprio J**

Eskenazi B see **Williams CS**

Evans MI see **Pryde PG**

Evans SJ see **Emanuel I**

F

Faig HG see **Kirschbaum C**

Falls DG 3d see **Hiett AK**

Farrer LA see **Karlinsky H**

Fazzi E see **Spinillo A**

Feasby TE see **Tawil R**

Feekery CJ, Parry-Fielder B, Hopkins IJ: Landau-Kleffner syndrome: six patients including discordant monozygotic twins. Pediatr Neurol 1993 Jan-Feb;9(1):49–53

This is the first published report of Landau-Kleffner syndrome occurring discordantly in monozygotic twins. The implications of this finding in the understanding of the etiology of this condition are discussed. Five other patients are reported and comparisons are drawn with other series.

Fellman J see **Allen G**

Fich M, Rosenberg T: Birdshot retinochoroidopathy in monozygotic twins. Acta Ophthalmol (Copenh) 1992 Oct;70(5):693–7

Birdshot retinochoroidopathy is a rare ocular disorder which was named and delineated as a separate clinical entity by Ryan & Maumenee in 1980. We diagnosed birdshot retinochoroidopathy in a monozygotic pair of twins, who were affected with a time interval of 12 years, respectively. These are the first with birdshot retinochoroidopathy to be reported from the Nordic countries and the first report on this disorder in monozygotic twins. Due to night-blindness, visual field defects and a severely affected electroretinogram one of our cases initially was diagnosed as a choroidoretinal dystrophy. Birdshot retinochoroidopathy should be kept in mind as a differential diagnosis in retinitis pigmentosa-like disorders with widespread choroidal involvement. Our cases substantiated the evidence of a strong correlation with the presence of HLA-A29 antigen.

Fignon A see **Gold F**

Filakti H see **Emanuel I**

Finberg HJ: The "twin peak" sign: reliable evidence of dichorionic twinning. J Ultrasound Med 1992 Nov;11(11):571–7

In twin pregnancies with a single placental zone, the presence of a triangular projection of placental tissue beyond the chorionic surface, extending between the layers of the intertwin membrane, has provided reliable evidence that there are two fused placentas (dichorionic, diamniotic) rather than a single shared placenta (monochorionic, diamniotic). This observation, dubbed the "twin peak" sign, was identified in 15 twin pregnancies, all proven to be dichorionic at birth, and in five triplet pregnancies, all proven to be trichorionic. This finding is produced by proliferating chorionic villi growing into the potential space between the two layers of chorion in the intertwin membrane. The single chorion of a monoplacental twin pregnancy serves as an intact barrier, preventing villi from growing between the two amniotic layers. A decision sequence incorporating the use of the twin peak sign is described for determining the type of twinning that has occurred.

Fischer J, Rozenbajgier C, Schulze M, Decker K, Stoll P: [Fatal course of peracute fatty liver of pregnancy] Geburtshilfe Frauenheilkd 1992 Sep;52(9):564–7 (Eng. Abstr.) **(Ger)**

A fatal case of acute fatty liver of pregnancy (AFLP) is reported. After admission, the patient was delivered within 3 hours. Routine laboratory investigation revealed acute liver insufficiency with advanced coagulopathy. Despite substitution therapy, the severe coagulation defect progressed to lethal intracerebral bleeding. Advanced AFLP can only be satisfactorily diagnosed in time, if non-specific symptoms or icterus lead to studies of blood chemistry, especially liver function tests, coagulation parameters (including platelet count, fibrinogen, AT III), blood glucose and renal function (including uric acid). This will enable an adequate management of the patient. The clinical problem of AFLP still remains that of early diagnosis.

Fischer RL: Quadruplet pregnancy: contemporary management and outcome [letter] Obstet Gynecol 1993 Mar;81(3):476–7

Fishman A, Grubb DK, Kovacs BW: Vaginal delivery of the nonvertex second twin.

Am J Obstet Gynecol 1993 Mar;168(3 Pt 1):861–4

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OBJECTIVE: The purpose of our study was to test the hypothesis that there is no increased morbidity or mortality associated with vaginal delivery of the nonvertex second twin. STUDY DESIGN: The medical records of 781 consecutive twin gestations achieving a gestational age > or = 20 weeks and delivering between Jan. 1, 1985, and Dec. 31, 1988, were reviewed. All live-born, vaginally delivered second twins were identified, grouped by presentation, and compared with respect to 5-minute Apgar scores, length of neonatal hospital stay, neonatal intensive care unit admissions, and neonatal deaths. RESULTS: Of the 390 live-born, vaginally delivered second twins, 207 were delivered as vertex and 183 were delivered as breech. Ninety-five percent of the breech deliveries were total breech extractions. There were no statistically significant differences between the vaginal breech and vaginal vertex deliveries in any of the neonatal outcome measures studied even when stratified by birth weight. CONCLUSIONS: These results support the null hypothesis and suggest that vaginal delivery of the nonvertex second twin is a safe intrapartum management option, although no conclusion can be reached in infants weighing < 1500 gm. We found no evidence of excessive morbidity or mortality associated with total breech extraction of the second twin.

Folstein MF see **Breitner JC**
Fruauff A see **Goffner L**
Frydman R see **Pons JC**
Fuji T see **Uchida M**
Fujihara T see **Uchida M**
Fujimura M see **Nishikuni K**
Fukui R see **Nishikuni K**
Fulker DW see **Emde RN**
Futagi Y see **Nishikuni K**

G

Gajendragadkar A see **Daga SR**

Gallagher MW, Costigan K, Johnson TR: Fetal heart rate accelerations, fetal movement, and fetal behavior patterns in twin gestations.
Am J Obstet Gynecol 1992 Oct;167(4 Pt 1):1140-4
OBJECTIVE: Previous studies have shown that twins, when monitored simultaneously, show a remarkably high incidence of coincident fetal heart rate accelerations (about 58%). The current study examines synchrony of behavior patterns in twins. STUDY DESIGN: We examined 37 fetal monitor strips from 15 sets of twins with simultaneous fetal heart rate and fetal movement recorded by means of Doppler techniques (Toitu MT-430 fetal actocardiograph). The strips were analyzed for coincidence of fetal heart rate accelerations and fetal movement episodes and then conceptually for synchrony of fetal behavior patterns on the basis of descriptions of behavioral states by Prechtl. RESULTS: Thirty-six percent of fetal heart rate accelerations were found to be simultaneous. Forty-three percent of movement epochs were considered simultaneous. We found that twins exhibited synchronous behavior patterns (basically sleep or awake state) 94.7% of the time. CONCLUSION: Twin-twin interactions are more consistently related than suspected when observation is limited to heart rate alone, and the synchrony and role of fetal behavior states must be considered when twin interactions and behavior are studied.

Galton D see **Thorn JA**
García C see **Drut R**

García-Aguayo FJ, Menargues Irles MA: Evolution of diamniotic-dichorionic pregnancy into complete hydatidiform mole and normal fetus.
JCU J Clin Ultrasound 1992 Nov-Dec;20(9):604-7

Garden GM, Rothery DJ: A female monozygotic twin pair discordant for transsexualism. Some theoretical implications. Br J Psychiatry 1992 Dec;161:852-4
A 13-year-old girl was referred because of sexual identity problems. There was no mental illness or neurological abnormalities. As her twin sister had no sexual identity problems, it appears that transsexualism is not transmitted by a simple genetic mechanism.

Gathof BS, Zöllner N: The restriction enzyme Mse I applied for the detection of a possibly common mutation of the APRT locus. Clin Investig 1992 Jun; 70(6):535

Gatz M, Pedersen NL, Plomin R, Nesselroade JR, McClearn GE: Importance of shared genes and shared environments for symptoms of depression in older adults. J Abnorm Psychol 1992 Nov; 101(4):701-8
The Center for Epidemiologic Studies-Depression scale was administered to 68 identical and 161 fraternal twin pairs reared apart and 114 identical and 138 fraternal pairs reared together to ascertain relative genetic and environmental contributions to individual differences in self-reported depressive symptoms. Intraclass correlations and model fitting indicated that genetic influences explained 16% of the variance in total depression scores and 19% for the Psychomotor Retardation and Somatic Complaints subscale, but heritability was minimal for the Depressed Mood and Well-Being subscales. Influence of family rearing context played a substantial role in explaining twin similarity, whereas unique life experiences accounted for the greatest proportion of variance. Significant age group differences were observed, with heritability greater in twins of 60 years of age or older than in twins under 60, especially for Psychomotor Retardation.

Gatz M see **Breitner JC**

Gau JS, Silberg JL, Erickson MT, Hewitt JK: Childhood behavior problems: a comparison of twin and non-twin samples.
Acta Genet Med Gemellol (Roma) 1992;41(1):53-63
This study compares standardized measures of childhood behavior problems in a community-based twin sample with those for normative samples from the general population. Maternal parent ratings on the Child Behavior Checklist (CBCL) for 1824 twins were compared with the CBCL normative sample. The results indicated that twins showed small but consistently higher levels of problem behaviors. These elevations were significant for older children on both internalizing and externalizing behaviors; for younger children the elevations were significant for externalizing but not internalizing behaviors.

Gaudette S see **Shimizu T**

Gedda L, Martins M, Parisi P: Twinning in the Palestinian population of Jerusalem and the West Bank. Acta Genet Med Gemellol (Roma) 1992; 41(1):1-3

Geddes S see **Winchester B**
Genet S see **Winchester B**
George RE see **Simpson RK Jr**

Gerlis LM, Seo JW, Ho SY, Chi JG: Morphology of the cardiovascular system in conjoined twins: spatial and sequential segmental arrangements in 36 cases. Teratology 1993 Feb;47(2):91-108 (32 ref.)
Thirty-six pairs of conjoined twins are reviewed from the joint experience of the authors. The external forms of conjunctions were 18 thoracopagus

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(joined at chest), eight cephalothoracopagus (joined at head and chest), eight dicephalus (single trunk and two heads), one craniopagus (joined at head), and one omphalopagus (joined at abdomen). There was one case with a single conventional heart in association with isomerism of the left lungs and absence of the heart in the left-side twin. Six cases had two conventional hearts. All of them had associated lesions, which were more severe in three cases (50%) with abnormal laterality. All of the cephalothoracopagus (eight cases) had two shared hearts. Cardiac lesions were commonly seen in the posterior heart, but the arrangement of atrial appendages were normal in every heart. Twenty-one cases of either dicephalus or thoracopagus had a compound heart. Three cases (14%) had fusion only at the level of venous sinus; three others (14%) were fused at the atrial level only, but 15 cases (71%) had fusion at both atrial and ventricular levels. Abnormal laterality was an associated lesion in ten cases (48%) with a compound heart. The fusion at the atrial level always occurred between right atriums, but ventricular fusion was more commonly between two left ventricles. Four atrial or ventricular chambers, if fused, were arranged in a cruciate arrangement. Mode of conjunction was as important, in the formation of the cardiovascular system, as was the degree of fusion. Abnormal laterality, which is commonly associated in lateral or mixed lateral/facing conjunction, was the most important factor affecting the general morphology of the cardiovascular system.

Gerritsen J** see **Mannes GP

Gibson KM, Lee CF, Wappner RS: 3-Methylglutaconyl-coenzyme-A hydratase deficiency: a new case. J Inherit Metab Dis 1992; 15(3):363-6

Ginsberg NA, Applebaum M, Rabin SA, Caffarelli MA, Kuuspalu M, Daskal JL, Verlinsky Y, Strom CM, Barton JJ: Term birth after midtrimester hysterotomy and selective delivery of an acardiac twin. Am J Obstet Gynecol 1992 Jul;167(1):33-7
OBJECTIVE: Our aim was to determine whether hysterotomy and selective removal of an acardiac twin could improve the outcome of the "pump" twin. STUDY DESIGN: A literature and case review of the outcome of the acardiac twin malformation was performed. When an acardiac malformation was diagnosed at 19 weeks' gestation the patient was monitored with weekly ultrasonographic examinations. At 23 weeks' gestation, no blood flow could be demonstrated to the acardiac twin and it was thought that the continued presence of the acardiac twin posed a risk to the "pump" twin. A midtrimester hysterotomy was performed and the acardiac twin was delivered. RESULTS: After the midtrimester hysterotomy, the pregnancy progressed to term and a healthy female infant was delivered by elective cesarean section at 37 weeks' gestation. CONCLUSION: Midtrimester hysterotomy may be a useful intervention in cases of twinning when one fetus is a threat to the health of the other.

Goble MM see **Schieken RM**

Goffner L, Bluth MJ, Fruauff A, Losada RA: Ectopic gestation associated with intrauterine triplet pregnancy after in vitro fertilization.
J Ultrasound Med 1993 Jan;12(1):63-4

Goi G, Burlina AB, Bairati C, Bordugo A, Zanardo V, Zacchello F, Tettamanti G, Lombardo A: Enzymes of lysosomal origin in plasma of twin neonates.
Clin Chim Acta 1993 Jan 31;214(1):61-71
The levels of some enzymes of lysosomal origin were assayed during days 2 and 5 of life in plasma from 11 sets of twin neonates and from 25 neonates from single pregnancies (13 of weight appropriate for gestational age and 12 small for their gestational age) as controls. The plasma enzyme levels were also determined in the correspondent twin and control mothers 2 days after delivery.
N-Acetyl-beta-D-glucosaminidase isoenzymes were assayed after chromatofocusing separation. All the plasma enzyme levels were higher in the group of twin neonates and of their mothers than in the respective control groups with differences highly statistically significant for two enzymes, beta-D-galactosidase and alpha-D-glucosidase. In neonate plasma lysosomal enzymes are increased at the fifth day of life with respect to the second day. Full term control neonates showed the same enzyme trend. For the N-acetyl-beta-D-glucosaminidase the more significant differences concerned the isoenzyme I2-P (pregnancy). The pattern of the lysosomal enzymes in the twins resembled that of neonates of diabetic mothers who had had no insulin therapy. Since lysosomal enzymes are considered to be particularly sensitive indicators of carbohydrate metabolism abnormalities, we conclude that twin pregnancies are more at risk for these abnormalities than single ones.

Gold F, Saliba E, Grangeponte MC, Paillet C, Pourcelot D, Toutain A, Pierre F, Fignon A, Body G, Laugier J: [Cerebral lesions observed in a twin after the in utero death of the other twin. Fetal anoxia-ischemia can be the possible mechanism (3 cases)]
Arch Fr Pediatr 1992 Jun-Jul;49(6):529-33 (Eng. *Abstr.*) **(Fre)**
BACKGROUND: The death of one twin in utero may result in visceral lesions, of possible vascular origin, in the surviving twin when the pregnancy is monochorionic and diamniotic. CASES REPORT: Case n. 1: The death of one twin and enlargement of the ventricular system in the other were seen by ultrasonography at 24 weeks of pregnancy, 8 weeks after the mother had a fall on the stairs. The heterogeneous imaging in the inferior part of placenta suggested a clot in this area. The pregnancy was terminated at 28 weeks because the ventricular dilatation continued to increase. The newborn died a few minutes later and examination of the placenta showed that the pregnancy was monochorionic and monoamniotic. Case n. 2: The death of one twin with macerating features was seen by ultrasonography at 31 weeks. The other twin was born at 32 weeks of a dichorionic, diamniotic pregnancy. Injection of milk into the placental vasculature failed to visualize any vascular anastomoses between the two placentas, but ultrasonography showed bilateral cystic lesions in the frontal lobes of the brain. Case n. 3: Acute polyhydramnios developed at 21 weeks of pregnancy; it was treated by 3 amniocenteses, while ultrasonography of the twins was normal. A fetal transfusion syndrome was observed at birth, the pregnancy being monochorionic and diamniotic. Cranial ultrasound on day 6 was normal in the recipient twin, but showed numerous cerebral cavities in the donor, which was confirmed at autopsy after that this twin suddenly died at 2 months of age. CONCLUSIONS: Brain lesions of vascular origin, can be observed in any type of twin pregnancies. They may be the result of transfusion of clot or thromboplastin-rich blood from the donor fetus through vascular anastomoses in a monochorionic placenta. They also may be due to anoxo-ischemic lesions in the absence of such anastomoses, or, in the fetal transfusion syndrome,

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to circulatory difficulties in one of the twins, as observed in premature singletons. In the cas of anoxo-ischemic lesions, anticipating the birth of the surviving twin is not justified.

Goldberg J see **Ramakrishnan V**

Gonen R see **Degani S**

Goodman JC see **Simpson RK Jr**

Gordon PH see **Nunn JH**

Grab D, Hütter W, Haller T, Sterzik K, Terinde R: [Discordant growth in twin pregnancy--value of Doppler ultrasound] Geburtshilfe Frauenheilkd 1993 Jan;53(1):42-8 (Eng. Abstr.) **(Ger)**
A 4 MHz continuous-wave Doppler device was used to study uterine and umbilical arterial wave forms in 91 pairs of twins between 18th and 40th week of gestation. Biometry and cord localisation were effected by real-time ultrasound. The results of 182 Doppler flow examinations showed that umbilical flow velocimetry may prove relevant for early identification of twin pregnancies with discordant growth. Depending on the interval between examination and delivery, sensitivity and specificity values between 44% and 66%, and 66% and 73%, respectively, were obtained. A high resistance index in umbilical arteries was indicative of intrauterine growth retardation, at a specificity of 69% and a sensitivity of 44%. For uteroplacental as well as foetoplacental flow velocity waveform assessment, singleton reference values may be used, whereas, by reason of its low sensitivity, Doppler flow velocimetry does not lend itself as a primary diagnostic tool for intrauterine growth retardation. It can signal pathologic blood flow profiles, which are often associated with added risks, such as pregnancy-induced hypertension, foetal acidosis and stillbirth and can contribute to early detection of twin pregnancies that require close clinical and cardiotocographic surveillance.

Graça LM see **Clode N**

Grangeponte MC see **Gold F**

Gray PJ: Monozygotic twins concordant for both open-angle glaucoma and bronchospasm induced by beta-blockers [letter] Postgrad Med J 1992 Jun; 68(800):484-5

Greally M see **Bolaji II**

Green-Abate C see **Nunn JH**

Greig PC, Veille JC, Morgan T, Henderson L: The effect of presentation and mode of delivery on neonatal outcome in the second twin.
Am J Obstet Gynecol 1992 Oct;167(4 Pt 1):901-6
OBJECTIVE: The purpose of this study was to determine if cesarean delivery of the nonvertex second twin improved neonatal outcome. STUDY DESIGN: We examined the maternal and neonatal records from 457 sets of twins delivered from 1985 to 1990. We compared 1- and 5-minute Apgar scores, umbilical artery and vein blood pH values, duration of neonatal hospitalization, the incidence and length of ventilation, intraventricular hemorrhage, birth trauma, and mortality rate between vertex and nonvertex second twins delivered either vaginally or by cesarean section. RESULTS: The presentation and mode of delivery of the second twin was not associated with a significant difference in any of the outcome variables except for the 1-minute Apgar score, which was lower in the nonvertex group delivered vaginally. CONCLUSION: Our data do not support routine cesarean delivery for twins of any birth weight when the second twin is nonvertex.

Griggs RC see **Tawil R**

Grigorenko EL, LaBuda MC, Carter AS: Similarity in general cognitive ability, creativity, and cognitive style in a sample of adolescent Russian twins.
Acta Genet Med Gemellol (Roma) 1992;41(1):65-72
Data on five tests of general and specific cognitive abilities, cognitive styles, and creativity, obtained from members of 60 identical and 63 fraternal Russian adolescent twin pairs, are presented. All tests are adaptations of standardized instruments widely used outside of the Soviet Union. Identical and fraternal twin correlations for general cognitive ability yielded a lower estimate of heritability (0.29) than generally found in other countries worldwide (0.52) although the twin correlations themselves are fairly comparable to figures from other countries and cultures--0.83 and 0.69 for Russian identical and fraternal twin pairs, respectively, vs 0.86 and 0.60 for non-Russian identical, and fraternal twin pairs. Twin correlations for other cognitive-related abilities assessed were also comparable to correlations obtained outside the Soviet Union with the exception of creativity which yielded higher within-pair resemblance than reported in previous twin studies.

Groothuis JR see **Simoes EA**

Grubb DK see **Fishman A**

Gründer K see **Mayser P**

Grundy H see **Pryde PG**

Grygar J see **Kudlac E**

Gurusinghe NT see **Parekh HC**

Gyr T see **Dietz TU**

H

Habel A see **Winchester B**

Haenggi W see **Dietz TU**

Hafiz M see **Hardman TC**

Haller JA Jr see **Walker LK**

Haller T see **Grab D**

Hamer F see **Oates S**

Harding AE see **Burn DJ**

Hardman TC, Dubrey SW, Leslie DG, Hafiz M, Noble MI, Lant AF: Erythrocyte sodium-lithium countertransport and blood pressure in identical twin pairs discordant for insulin dependent diabetes.
BMJ 1992 Jul 25;305(6847):215-9
OBJECTIVE--To investigate whether insulin dependent diabetes is responsible for the abnormal behaviour of the carrier in sodium-lithium countertransport and whether the diabetic state is associated with rise in blood pressure.
DESIGN--Case-control study.
SETTING--London teaching hospital.
SUBJECTS--44 twin pairs discordant for insulin dependent diabetes living in United Kingdom and 44 healthy control subjects matched for age, sex, and body mass index. None of the twin pairs or the controls had evidence of microalbuminuria. MAIN OUTCOME MEASURES--Sodium-lithium countertransport activity in erythrocytes and arterial blood pressure. RESULTS--The mean (95% confidence interval) sodium-lithium countertransport activity (mmol Li per litre of red blood cells per h) of the diabetic twins (0.291 (0.244 to 0.338)) was similar to that of their non-diabetic cotwins (0.247 (0.204 to 0.290)); both values were significantly higher than that of the controls (0.187 (0.157 to 0.216); $p < 0.05$). In addition, systolic blood pressure was higher in those twins with diabetes (127 (122 to 133) mm Hg) than in the non-diabetic cotwins (122 (117 to 127) mm Hg; $p < 0.01$). There were no significant differences in mean diastolic blood pressure between any of the groups studied. CONCLUSIONS--The raised erythrocyte

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sodium–lithium countertransport activity in the diabetic twins compared with the controls seems to be inherited rather than a consequence of overt diabetes. The higher systolic blood pressure in diabetic twins than non-diabetic cotwins indicates that insulin dependent diabetes does exert a small influence on systolic blood pressure.

Hardwick R see **Kozlowski K**

Harris GJ, Soper RT, Kimura KK: Foramen of Morgagni hernia in identical twins: is this an inheritable defect? J Pediatr Surg 1993 Feb; 28(2):177–8 (11 ref.)
Twins with Down's syndrome, foramen of Morgagni hernias, and similar cardiac anomalies are described. While diaphragmatic hernias are not uncommon, the occurrence of this congenital defect in twins with very similar congenital anomalies raises the possibility that diaphragmatic hernias may result *from an inheritable defect.*

Harris JR see **Lichtenstein P**

Harrist RB see **Deter RL**

Hass R see **Bass M**

Hawes GE, Struyk L, van den Elsen PJ: Differential usage of T cell receptor V gene segments in CD4+ and CD8+ subsets of T lymphocytes in monozygotic twins. J Immunol 1993 Mar 1; 150(5):2033–45
The TCR confers immunity by the specific recognition of foreign Ag peptides in the context of self-MHC molecules. The mechanisms controlling TCR selection and repertoire generation are not clearly understood and seem to occur in an apparently random, (self) Ag-driven manner. To address the question to what extent the TCR repertoire is randomly shaped or genetically predetermined, we have analyzed the alpha beta TCR repertoire of the CD4+ and CD8+ subsets of peripheral blood lymphocyte cultures of monozygotic twins by using the polymerase chain reaction technique with TCR V region gene family-specific oligonucleotide primers. Our studies demonstrate that there is high concordance in the overall patterns of V gene usage within a pair of twins, particularly in V beta usage (mean V beta CD4+ R2 = 0.869 and CD8+ R2 = 0.833) and to a lesser extent V alpha usage (mean V alpha CD4+ R2 = 0.621 and CD8+ R2 = 0.627); whereas the patterns between unrelated individuals show more variability. This study has also demonstrated that the V alpha and V beta genes are not randomly used within the CD4+ and CD8+ subsets. We observed significant preferential skewing of several V alpha or V beta gene families to either the CD4+ or CD8+ subset in the majority of individuals analyzed (p-value range = 0.0476 to < 0.001). In particular, V alpha 11, 17, 22, and V beta 3, 9, 12, 18 were skewed to the CD4+ subset; whereas V alpha 2, 6, 12, 15, 20 and V beta 7, 14, 17 were skewed to the CD8+ subset. Furthermore, a number of the V genes showed patterns of skewing consistent only within a pair of twins. In three pairs of twins, V beta 2 was skewed to the CD4+ subset, whereas the fourth pair used almost equal frequencies of V beta 2 in both subsets. This observation was made for the V beta 2, 4, 5, 6, 8, 19 and V alpha 7, 16, 18, 21 families. Finally, the ratio of the relative V gene usage frequency that could be observed within an individual was conserved within the sets of twins; for instance, the relative amount of V beta 2 to that of V beta 3 was higher in both individuals of one set of twins, whereas it was lower in all of the other three sets. Together these observations suggest that the predominant influence shaping the TCR repertoire is genetically predetermined, of which, HLA-predicted selection mechanisms exerted during thymic maturation might be contributing factors.

Hayakawa T see **Nishikuni K**

Heath AC see **Kendler KS**

Heath AC see **Treloar SA**

Hebisch G see **Kurmanavicius J**

Hedegaard M see **Brink Henriksen T**

Hedon B see **Boulot P**

Heid M see **Cristalli B**

Helgeland L, Tysk C, Järnerot G, Kett K, Lindberg E, Danielsson D, Andersen SN, Brandtzaeg P: IgG subclass distribution in serum and rectal mucosa of monozygotic twins with or without inflammatory bowel disease. Gut 1992 Oct;33(10):1358–64
Serum samples from 26 monozygotic twin pairs *concordant or discordant with regard to* inflammatory bowel disease, and rectal biopsies from 42 twins of the same subject group, were examined for IgG subclasses. They were all compared with normal controls. Almost all affected twins were in clinical remission. Paired immunofluorescence staining of the rectal mucosa showed that those with ulcerative colitis had a significantly higher ($p < 0.01$) proportion of IgG1 producing mucosal immunocytes than normal controls (78.1% v 55.9%). Conversely, the IgG2 cell fraction was significantly reduced (15.9% v 34.6%). Healthy twins from ulcerative colitis pairs tended to show a raised proportion of IgG1 cells and the IgG2 cell fraction was significantly reduced ($p < 0.05$). In discordant ulcerative colitis twin pairs, no difference appeared in the cellular IgG subclass pattern between healthy and affected twins. Furthermore, the proportion of IgG1 in these healthy and diseased twins showed good correlation ($T = 0.867$). The results in rectal mucosa of twins with Crohn's disease were widely scattered and affected twins did not differ significantly from normal controls. Healthy twins, however, showed a marginally raised IgG1 cell proportion, but no correlation was seen between the IgG subclass fractions in discordant Crohn's disease twin pairs. The serum concentrations of IgG1 and IgG2 did not differ from normal controls in twins of either category. These results suggested that in ulcerative colitis, the aberrant mucosal production of IgG1 and IgG2 does not depend on active disease, but is apparently at least partially explained by a genetic impact. Conversely, the mucosal IgG subclass pattern in Crohn's disease appears to be determined mainly by exogenous variables.

Heller DA, de Faire U, Pedersen NL, Dahlén G, McClearn GE: Genetic and environmental influences on serum lipid levels in twins. N Engl J Med 1993 Apr 22;328(16):1150–6
BACKGROUND. The extent to which serum lipid levels are affected by genetic and environmental factors remains a point of controversy. We examined both genetic and environmental influences on serum lipid levels in twins reared either together or apart who participated in the Swedish Adoption/Twin Study of Aging. METHODS. We studied 302 pairs of twins (mean age, 65.6 years; range, 52 to 86); 146 pairs had been reared apart. We simultaneously compared the twins on the basis of both zygosity and rearing status, which allowed joint estimation of genetic and environmental influences on serum lipid levels. Genetic influence was expressed in terms of heritability, the proportion of the population variation attributable to genetic variation (a value of 1.0 indicates that all of the population variation

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is attributable to genetic variation). The serum lipids and apolipoproteins measured included total cholesterol, high-density lipoprotein cholesterol, apolipoproteins A-I and B, and triglycerides. RESULTS. Structural-equation analyses revealed substantial heritability for the serum levels of each lipid measured, ranging from 0.28 to 0.78. Comparisons of the twins reared together with those reared apart suggested that the environment of rearing had a substantial impact on the level of total cholesterol (accounting for 0.15 to 0.36 of the total variance). Sharing the same environment appeared to affect the other lipid measures much less, however, than did genetic factors and unique environmental factors not shared by twins. Comparisons of younger with older twins suggested that heritability for apolipoprotein B and triglyceride levels decreased with age. CONCLUSIONS. The effect of genetic factors on the serum levels of some but not all lipids appears to decrease with age. Early rearing environment appears to remain an important factor in relation to levels of total cholesterol later in life, but it has less effect on other serum lipids and apolipoproteins in the elderly.

Hellhammer DH see **Kirschbaum C**

Henderson D see **Bennett P**

Henderson L see **Greig PC**

Henderson WG see **Ramakrishnan V**

Herman TE, Siegel MJ: Special imaging casebook. Posterior urethral valves. J Perinatol 1993 Jan-Feb; 13(1):76-8

Hersh JH see **Robinson TW**

Heston LL see **Breitner JC**

Hewitt JK see **Gau JS**

Hewitt JK see **Schieken RM**

Heyke GC see **Baljet B**

Hiett AK, Devoe LD, Falls DG 3d, Martin SA: Ultrasound diagnosis of a twin gestation with concordant body stalk anomaly. A case report. J Reprod Med 1992 Nov;37(11):944-6
Concordant body stalk anomaly in an 18-week twin gestation was diagnosed by ultrasound and confirmed by pathologic examination after elective termination of pregnancy. The ultrasonographic presentation of this rare anomaly and its embryogenesis are discussed.

Higashi S see **Uchide K**

Hill RM see **Deter RL**

Ho HN see **Chen SU**

Ho SY see **Gerlis LM**

Hobbins JC see **Winn HN**

Högberg U, Wall S: Secular trends of twinning rate in Sweden. J Biosoc Sci 1992 Oct;24(4):487-96
The change in parity and maternal age in Sweden accounts for the decline in the twinning rate from the 19th century to the middle of the 20th century. The later decline in twinning rate cannot be explained by changes in maternal age and parity. Fecundity appears to be higher in mothers of twins than in other mothers.

Hollenberg RD see **Langer JC**

Hopkins IJ see **Feekery CJ**

Houtz T see **Wenk RE**

Hrubec Z see **Rodvall Y**

Hsieh CC, Lan SJ, Ekbom A, Petridou E, Adami HO, Trichopoulos D: Twin membership and breast cancer risk. Am J Epidemiol 1992 Dec 1;136(11):1321-6
Pregnancy estrogens are substantially elevated in twin pregnancies and are likely to be more so in the case of dizygotic twins. If levels of pregnancy estrogens were positively related to breast cancer risk in the offspring, female twin members would be expected to be at slightly higher risk. Data from an international case-control study were utilized to assess this hypothesis. The analysis was based on 870 cases with breast cancer and 2,641 hospital controls from two sites: Glamorgan, Wales (1965-1967), and Boston, Massachusetts (1965-1966). Seventeen cases were members of twin pairs, and 8 of them had a twin brother; 33 controls were members of twin pairs and 14 had a twin brother. Among all women, the odds ratios for breast cancer were as follows: for twins with brothers, 1.54 (95% confidence interval (CI) 0.64-3.71); for twins with sisters, 1.30 (95% CI 0.58-2.92); and for all twins, 1.40 (95% CI 0.77-2.55). The odds ratios were higher among premenopausal women. These findings are not conclusive, but they are compatible with the hypothesis that pregnancy estrogens may affect the risk of breast cancer in the offspring.

Hsieh FJ see **Chen SU**

Huch A see **Kurmanavicius J**

Huch R see **Kurmanavicius J**

Hulsey TC see **Ellings JM**

Hülsmann C: ["Production" and "reduction" of high degree multiple pregnancies from the legal viewpoint] Geburtshilfe Frauenheilkd 1992 Sep; 52(9):570-3 **(Ger)**

Humeau C see **Boulot P**

Hurst J see **Winchester B**

Hütter W see **Grab D**

Hyland K, Surtees RA, Rodeck C, Clayton PT: Aromatic L-amino acid decarboxylase deficiency: clinical features, diagnosis, and treatment of a new inborn error of neurotransmitter amine synthesis. Neurology 1992 Oct;42(10):1980-8
We report the clinical features, biochemical details, and treatment of the first detected cases of an inborn error of aromatic L-amino acid decarboxylase. Male monozygotic twins presented with extreme hypotonia and oculogyric crises. Concentrations of biogenic amines and their metabolites were reduced considerably both centrally and peripherally. Pterin and phenylalanine metabolism were normal. Activity of aromatic L-amino acid decarboxylase was virtually absent in a liver biopsy sample and greatly reduced in plasma. Concentrations of L-dopa, 3-methoxytyrosine, and 5-hydroxytryptophan were elevated in CSF, plasma, and urine. CSF S-adenosylmethionine concentrations were reduced. Pyridoxine treatment had no clinical effect but led to a fall in CSF L-dopa and 3-methoxytyrosine and a rise in S-adenosylmethionine. Treatment with either bromocriptine or tranylcypromine stopped the abnormal eye movements; tranylcypromine treatment also improved muscle tone and led to a rise in plasma norepinephrine and whole blood serotonin. Combined treatment with pyridoxine, bromocriptine, and tranylcypromine produced sustained improvement in tone and voluntary movements. The twins' parents were asymptomatic but had reduced plasma aromatic L-amino acid decarboxylase activity, consistent with heterozygosity. We monitored a subsequent pregnancy through biochemical analyses of a fetal liver biopsy sample and of amniotic fluid. We predicted an unaffected fetus, which was confirmed clinically and biochemically after birth.

I

Iasci A see **Spinillo A**

Iavarone A see **Orecchia L**

Ibe BC see **Egwuatu VE**

Ichia H see **Nishikuni K**

https://doi.org/10.1017/S0001566000003329 Published online by Cambridge University Press

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Ichioka H see **Amino K**
Ichioka I see **Amino K**
Iffy L, Apuzzio JJ: Zavanelli maneuver for locked twins [letter] Am J Obstet Gynecol 1993 Mar;168(3 Pt 1):1003
Igwegbe AO see **Iloabachie GC**
Ihara Y see **Adachi N**
Iijima S see **Takeshita T**
Iikura Y, Akasawa A: [Etiology of asthma: viewpoint from genetic aspect] *Nippon Naika Gakkai Zasshi* 1992 Jun 10;81(6):796–801 **(Jpn)**
Iloabachie GC, Igwegbe AO, Izuora KL: Cervico-isthmic twin pregnancy carried to 37 weeks. Int J Gynaecol Obstet 1993 Jan;40(1):59–61
The management of twin pregnancy located in the cervico-isthmic region of the uterus in a primigravida has been described. Cesarean section performed at 37 weeks resulted in live female and male infants weighing 2.5 kg and 2.2 kg, respectively. Complications were primary and secondary hemorrhage and post partum morbidity.
Iloabachie GC see **Egwuatu VE**
Ingemarsson I see **Rydhström H**
Isada NB see **Pryde PG**
Isakova GK: [Activity of nucleolus organizer regions (NORs) in embryonic livers from twin minks] *Genetika* 1992 Aug;28(8):60–8 (Eng. Abstr.) **(Rus)**
Ag-NOR patterns were studied in hepatocytes from nine mink embryo siblings, including a pair of monochorionic (presumably monozygotic, MZ) twins. Both the number and the size of Ag-NORs per cell were found to be identical in MZ twins. All the other sibs had the patterns different from each other and from the MZ ones. The conclusion is that the NORs activity is a strongly inherited character and the Ag-NOR pattern can be used as a reliable genetic marker to distinguish the twin zygosity.
Ito H see **Adachi N**
Itokazu N, Ohba K, Sonoda T, Ohdo S: [Infantile spasms in monozygotic twins with Smith-Lemli-Opitz syndrome type I] *No To Hattatsu* 1992 Sep;24(5):485–90 (22 ref.) (Eng. Abstr.) **(Jpn)**
Monozygotic twins with Smith-Lemli-Opitz syndrome who developed infantile spasms were presented. They were the result of the first full-term pregnancy of non-consanguineous parents. They had following abnormalities: marked growth and developmental retardation, congenital heart disease, light brown hair which is rare in Japanese, small dolichocephaly, hypertelorism, anteverted nostrils, micrognathia, hypospadias and shawl scrotum. The cranial MRI showed the delayed myelination of occipital lobe. As far as we could review published reports, we were unable to find other report on monozygotic twins having the Smith-Lemli-Opitz syndrome.
Izard V see **Cristalli B**
Izuora KL see **Iloabachie GC**

J

Jackson GM, Rubin SM, Sondheimer SJ: Mortality following unilateral twin interstitial ectopic pregnancy. A case report. J Reprod Med 1992 Oct;37(10):896–900
Twin ectopic pregnancy is an uncommon event, usually occurring as simultaneous intrauterine and tubal gestations. Interstitial implantation of an ectopic pregnancy is also a rare event, associated with a high mortality rate. Twin interstitial pregnancy has been previously reported only three times in the English literature. We report a recent case of unilateral twin interstitial ectopic pregnancy that resulted in maternal death and review the literature with regard to both ectopic pregnancy and factors associated with mortality from interstitial implantation.
James WH: The current status of Weinberg's differential rule.
Acta Genet Med Gemellol (Roma) 1992;41(1):33–42
A reanalysis of the data presented in a recent large twin study suggests that opposite-sexed (OS) pairs may be not as exhaustively tested as same-sexed (SS) pairs on genetic markers. This is contrary to an assumption I made in estimating that there are about 8 SS dizygotic pairs to every 7 OS pairs (thus impugning Weinberg's differential rule). If this assumption is false also in regard to the samples I discussed, then that estimate is unsound and Weinberg's rule is unscathed by empirical data. However, regardless of such considerations, there are strong theoretical reasons for questioning the status of Weinberg's rule. It is based on two assumptions, namely that p (the probability that a dizygotic twin zygote is male) is equal and independent for all dizygotic twin zygotes. Data are adduced here to suggest that both assumptions are false. The upshot is that, at present, without testing, we cannot know, of any given population, whether the rule holds or not. Otherwise, though Weinberg's rule may be useful (like Hellin's law) as a rule-of-thumb, it cannot be assumed as a basis for serious scientific argument.
Järnerot G see **Helgeland L**
Jarvik LF see **Small GW**
Johnson A see **Kurtz AB**
Johnson MP see **Pryde PG**
Johnson TR see **Gallagher MW**
Jorch G see **Schaarschmidt K**
Joseph KC, Baker R, Christian JC, Narnberger JI Jr, Sitaram N: Pupillometry in identical twins [letter] Psychiatry Res 1992 Sep;43(3):299–302
Jost BF see **Vaiser A**

K

Kagan J see **Emde RN**
Kaji M see **Tsuchida S**
Kajii T see **Uchida M**
Kamat H see **Daga SR**
Kaprio J, Tuomilehto J, Koskenvuo M, Romanov K, Reunanen A, Eriksson J, Stengård J, Kesäniemi YA: Concordance for type 1 (insulin-dependent) and type 2 (non-insulin-dependent) diabetes mellitus in a population-based cohort of twins in Finland. Diabetologia 1992 Nov;35(11):1060–7
We studied the cumulative incidence, concordance rate and heritability for diabetes mellitus in a nationwide cohort of 13,888 Finnish twin pairs of the same sex. The twins were born before 1958 and both co-twins were alive in 1967. Data on diabetes were derived through computerized record linkage from death certificates, the National Hospital Discharge Register and the National Drug Register. Records were reviewed in order to assign a diagnostic category to the 738 diabetic patients identified. Of these patients 109 had Type 1 (insulin-dependent) diabetes, 505 Type 2 (non-insulin-dependent) diabetes, 46 gestational diabetes, 24 secondary diabetes, 38 impaired glucose tolerance and 16 remained unclassified. The cumulative incidence of diabetes was 1.4% in men

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and 1.3% in women aged 28–59 years and 9.3% and 7.0% in men and women aged 60 years and over, respectively. The cumulative incidence did not differ between monozygotic and dizygotic twins. The concordance rate for Type 1 diabetes was higher among monozygotic (23% probandwise and 13% pairwise) than dizygotic twins (5% probandwise and 3% pairwise). The probandwise and pairwise concordance rates for Type 2 diabetes were 34% and 20% among monozygotic twins and 16% and 9% in dizygotic twins, respectively. Heritability for Type 1 diabetes was greater than that for Type 2 where both genetic and environmental effects seemed to play a significant role.

Kaprio J see **Koskenvuo M**

Karlinsky H, Berg JM, Lennox A, Ray PN, St. George-Hyslop P, Farrer LA, Percy ME, Andrews DF, Atack EA: Monozygotic twins concordant for late-onset probable Alzheimer disease with suspected Alzheimer disease in four sibs.
Am J Med Genet 1992 Nov 15;44(5):591–7
Probable Alzheimer disease (AD) is described in 79-year-old male twins with monozygosity confirmed by DNA examination. The first twin to be affected began to show signs of intellectual deterioration at age 70. In the other, onset was at age 72. Four of their living sibs (current age range = 75–92) are also suspected to have AD. The possible roles of genetic and environmental factors in the development of AD in this sibship are discussed.

Keenan A see **Ellings JM**

Keith LG see **Luke B**

Kempton JB, Sirignano A, DeGaetano DH, Yates PJ, Rowe WF: Comparison of fingernail striation patterns in identical twins. J Forensic Sci 1992 Nov; 37(6):1534–40
The fingernail ridge patterns of a pair of identical twins were compared to each other, their parents, and an unrelated subject. The patterns of the twins' nails showed regions of strong similarity but were distinguishable from one another. Fewer similarities were found when comparing the nails to those of the parents and the unrelated control. The twins were shown to be monozygotic by means of DNA profiling. This therefore represents the first demonstration of unique fingernail ridge patterns in subjects shown conclusively to be identical twins. When the fingernail ridge patterns were examined with a scanning electron microscope, the backscattered electron (BEI) images were found to have superior contrast when compared to the secondary electron (SEI) images.

Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ: Familial influences on the clinical characteristics of major depression: a twin study.
Acta Psychiatr Scand 1992 Nov;86(5):371–8
We sought in this study to clarify the role that familial factors play in influencing the clinical presentation of major depression (MD). We examined the similarity of the historical and symptomatic features of MD in 176 pairs of female-female monozygotic (MZ) and dizygotic (DZ) twins from a population-based registry, where both members reported a history of MD defined by DSM-III-R criteria. The age at onset and treatment-seeking were significantly correlated in all twin pairs and the correlation in concordant DZ pairs was actually somewhat higher than in concordant MZ twins. The degree of impairment was modestly correlated in all twin pairs with substantially higher correlations in MZ vs DZ twins. No twin resemblance was observed for number of episodes or longest duration of an episode. Twin resemblance for the clinical features of MD was modest, but so was their consistency for the same individual over successive 1-year periods. However, in 5 of the 6 neurovegetative symptoms involving changes in appetite, weight and sleep, MZ twins were significantly correlated and correlations were significantly greater in concordant MZ vs DZ twins. Although the familial factors that cause twin resemblance for the age at onset and treatment seeking appear to be largely environmental, twin resemblance for the degree of impairment and neurovegetative symptoms are probably due largely to genetic factors. Our results suggest that familial factors influence the predisposition to some clinical features of MD.

Kendler KS, Heath AC, Neale MC, Kessler RC, Eaves LJ: A population-based twin study of alcoholism in women. JAMA 1992 Oct 14;268(14):1877–82
OBJECTIVE—To clarify the role of genetic factors in the etiology of alcoholism in women. DESIGN AND SETTING—Personal structured psychiatric interviews conducted by researchers "blinded" to the status of the co-twin in an epidemiologic sample of 1030 female-female twin pairs of known zygosity from the population-based Virginia Twin Registry. MEASURES—Three definitions of lifetime prevalence of alcoholism based on Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised criteria: (1) alcoholism with tolerance or dependence; (2) alcoholism with or without tolerance-dependence; and (3) alcoholism with or without tolerance-dependence or problem drinking. RESULTS—Using narrow, intermediate, or broad definitions, the probandwise concordance for alcoholism was consistently higher in monozygotic than in dizygotic twin pairs. Multifactorial threshold models suggested that the heritability of liability to alcoholism in women is in the range of 50% to 60%. CONCLUSIONS—The results support the hypothesis that genetic factors play a major role in the etiology of alcoholism in women. Women should be well represented in the efforts currently under way to elucidate the molecular basis of the genetic susceptibility to alcoholism.

Kerkhofs M see **Linkowski P**

Kerremanns J see **Schaarschmidt K**

Kesäniemi YA see **Kaprio J**

Kessler RC see **Kendler KS**

Kett K see **Helgeland L**

Khoury M see **Lajarrige C**

Kimura KK see **Harris GJ**

King SJ see **Simoes EA**

Kirschbaum C, Wüst S, Faig HG, Hellhammer DH: Heritability of cortisol responses to human corticotropin-releasing hormone, ergometry, and psychological stress in humans.
J Clin Endocrinol Metab 1992 Dec;75(6):1526–30
The present study investigated cortisol responses to three different stimulation procedures, with a focus on the contribution of genetic factors. Thirteen monozygotic (MZ) twin pairs and 11 dizygotic (DZ) twin pairs performed bicycle ergometry until exhaustion and were exposed to the psychological stress of public speaking and mental arithmetic in front of an audience. Furthermore, 9 MZ pairs and 10 DZ pairs were injected with 100 micrograms synthetic human CRH (hCRH). The adrenocortical response to these challenges was monitored by determination of cortisol in saliva. Significant intraindividual stability of baseline cortisol levels was found in females, but was less in males. Maximum

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cortisol responses to all three stimulation procedures were significantly intercorrelated in males, but in females only the cortisol responses to hCRH and ergometer exercise showed a significant correlation. While a decided influence of genetic factors was observed for all three baseline cortisol levels as well as for the response to hCRH, heredity appeared to be play a minor role in the adrenocortical response to psychological stress. Cortisol changes after bicycle ergometry revealed no impact of genetic factors on the secretion of cortisol in response to strenuous physical exercise.

Kirshon B see **Belfort MA**

Kirshon B see **Mari G**

Klink R see **Lajarrige C**

Knisely AS: Regarding Corsello et al. [letter] Am J Med Genet 1992 Dec 1;44(6):841, 843

Ko TM see **Chen SU**

Kohsaka H, Chen PP, Taniguchi A, Ollier WE, Carson DA: Divergent T cell receptor gamma repertoires in rheumatoid arthritis monozygotic twins. Arthritis Rheum 1993 Feb;36(2):213-21
OBJECTIVE. To determine if the expressed T cell receptor (TCR) gamma repertoire is altered in rheumatoid arthritis (RA). METHODS. Peripheral blood lymphocytes were collected from monozygotic twins who were either concordant or discordant for RA, or from a normal twin pair. TCR gamma-specific complementary DNA libraries were constructed using the anchored polymerase chain reaction. Gene usage was analyzed by plaque hybridization and sequencing. RESULTS. The expressed TCR V gamma repertoires both in RA patients and normal subjects were extremely diverse. Monozygotic twins who were concordant for RA expressed very different frequencies of TCR V gamma genes. CONCLUSION. RA does not lead to a specific clonal expansion or deletion of TCR V gamma genes in peripheral blood.

Kohut G see **Chatkupt S**

Kok JH see **Teeuw AH**

Koopman WJ see **Dunlap NE**

Koskenvuo M, Kaprio J, Romanov K: Twin studies in metabolic diseases. Ann Med 1992 Oct;24(5):379-81
The traditional role of twin studies has been to assess the relative role of genetic factors as a first step in defining the genetic architecture of complex traits. This has been based on the realization that monozygotic pairs (MZ) share all their genes, while dizygotic pairs (DZ) share 50% of their genes on average. Thus, greater similarity of MZ pairs compared to DZ pairs has been taken as prima facie evidence of the role of genetic factors. This is true provided the environmental similarity of MZ pairs is not greater than for DZ pairs for effects relevant to the trait in question. This first step in genetic studies was carried out long ago in many research areas, but not in others. More detailed knowledge of the genetic architecture of traits is then obtained by other means. In this paper, we give a brief overview of some results for metabolic diseases (ischaemic heart disease, hypertension, subarachnoid haemorrhage, NIDDM and IDDM) using the classical twin approach in a large, unselected population-based twin cohort. We also outline approaches to using twins that we believe will continue to be useful, particularly for the study of environmental effects.

Koskenvuo M see **Kaprio J**

Kovacs BW see **Fishman A**

Kovacs BW see **Sherman SJ**

Kozlowski K, Brown J, Hardwick R, Sillence D: A new syndrome? Unusual facies, hooked clavicles, 13 pairs of ribs, widened metaphyses, square shaped vertebral bodies and communicating hydrocephalus. Pediatr Radiol 1992;22(5):328-30
Two strikingly similar twin sisters presented with characteristic facial anomalies and distinctive radiographic findings. The occurrence of this unique pattern of malformations in two sisters with unaffected parents suggests recessive inheritance. They most likely represent a previously unrecognised malformation syndrome.

Krauss RM see **Austin MA**

Kremp L see **Lajarrige C**

Kudlac E, Grygar J: [Early sonographic diagnosis of twin pregnancy in mares and its reduction to a single pregnancy] Tierarztl Prax 1992 Aug;20(4):399-404 (17 ref.) (Eng. Abstr.) **(Ger)**
The frequency of double ovulation and the chances of twin pregnancy in the mare are presented with reference to the relevant literature. A novel manual technique for reducing the embryo number from two to one is introduced and illustrated by ultrasonographic images.

Kurmanavicius J, Hebisch G, Huch R, Huch A: Umbilical artery blood flow velocity waveforms in twin pregnancies. J Perinat Med 1992;20(4):307-12
To detect discordant fetal growth in twin pregnancies and assess a possible role for Doppler ultrasound measurements of blood flow velocity waveforms in umbilical arteries in such cases, 32 twin pregnancies were examined on 125 occasions. The last examination was within 14 days of delivery. There was postpartum death of one pair of twins with the twin transfusion syndrome. Birthweight was appropriate for gestational age in 15 twin pairs, both infants were small for gestational age (SGA) in 5, and one of the infants was SGA in 12 twin pairs. The correlation coefficient of RI difference at the last examination and percentage birth weight difference in twin pairs was 0.68. Cutoff points for the delta RI and weight difference were established. The sensitivity of delta RI (0.1) was 77.8%; specificity, 95.8%; positive predictive value, 87.5%; and negative predictive value, 92.0%.

Kurtz AB, Wapner RJ, Mata J, Johnson A, Morgan P: Twin pregnancies: accuracy of first-trimester abdominal US in predicting chorionicity and amnionicity. Radiology 1992 Dec;185(3):759-62
A first-trimester transabdominal ultrasound (US) study was performed on twin pregnancies to determine the utility of US in predicting chorionicity and amnionicity. Among 85 dichorionic-diamniotic (DC-DA) twin pairs, a thick membrane was present in 78 (92%). Four of the DC-DA cases without a thick membrane had two distinct placental sites, allowing 82 DC-DA pregnancies (96%) to be predicted. Among 16 monochorionic-diamniotic (MC-DA) twin pairs, a thin membrane was present in 14 (88%). None of the four monochorionic-monoamniotic (MC-MA) cases had an identifiable membrane. The lambda sign had no value in this evaluation and was actually misleading, while a thick membrane or the identification of two separate placentas was always predictive of DC-DA twinning. However, a thin membrane, while usually predictive of an MC-DA pregnancy, did not exclude a DC-DA gestation. When no membrane is present, an MC-MA gestation is probable; however, a diamniotic pregnancy may still be present, and further evaluation is suggested.

Kuuspalu M see **Ginsberg NA**

Kuznetsova IV see **Malykh SB**

AUTHOR SECTION

L

La Rue A see **Small GW**
LaBuda MC see **Grigorenko EL**
Ladda RL see **Ramer JC**
Laffargue F see **Boulot P**
Lajarrige C, Adafer M, Yassine B, Atallah W, Mouthemy G, Klink R, Khoury M, Bouhelier P, Kremp L: [Multicystic encephalomalacia in a surviving twin after death of the other twin in utero] Ann Pediatr (Paris) 1993 Jan;40(1):37–40 (22 ref.) (Eng. Abstr.) **(Fre)**
A case of multicystic encephalomalacia in a twin is reported. The other twin died in utero at 32 weeks gestational age. Because there was no evidence of fetal distress the pregnancy was allowed to continue until 36 weeks gestational age. Injuries to the surviving twin due to disseminated intravascular coagulation (DIVC) and vascular thrombosis or to anoxia and ischemia may occur when there are anastomoses between the circulatory systems of the two twins, i.e., in monochorionic pregnancies. The classically recommended strategy is to wait for adequate maturity of the surviving fetus (36 weeks). It is suggested that this attitude may be overly expectant and may deserve reappraisal.
Lan SJ see **Hsieh CC**
Langer JC, Brennan B, Lappalainen RE, Caco CC, Winthrop AL, Hollenberg RD, Paes BA: Cloacal exstrophy: prenatal diagnosis before rupture of the cloacal membrane. J Pediatr Surg 1992 Oct; 27(10):1352–5
Embryologically, cloacal exstrophy is thought to result from persistence and subsequent rupture of the infraumbilical cloacal membrane during the fifth embryonic week. We report a case of cloacal exstrophy in which a prenatal diagnosis was made prior to rupture of the cloacal membrane. A routine ultrasound at 17 weeks' gestation demonstrated monoamniotic twins. One twin was normal, but the other was found to have a sacral myelomeningocele, "rocker-bottom" feet, splaying of the pubic rami, and a large cystic mass protruding from the infraumbilical anterior abdominal wall. A repeat ultrasound was performed at 22 weeks, with the same findings. At 26 weeks, further examination showed disappearance of the abdominal cyst, a small omphalocele, no demonstrable bladder, and the suggestion of prolapsed bowel inferior to the umbilical cord insertion. After delivery at 34 weeks, the abnormal twin was found to have the typical findings of cloacal exstrophy, myelomeningocele, bilateral lower limb anomalies, and extremely foreshortened small bowel. Rupture of the presumed cloacal membrane after 22 weeks in this case is inconsistent with our current understanding of the embryology of this anomaly, and should stimulate a reexamination of the current concepts. If the characteristic features are recognized, cloacal exstrophy can be diagnosed by prenatal ultrasound, permitting prenatal counseling and appropriate perinatal management.
Lant AF see **Hardman TC**
Laplaza FJ, Root L, Tassanawipas A, Cervera P: Cerebral palsy in twins. Dev Med Child Neurol 1992 Dec;34(12):1053–63
Eighty-six children with cerebral palsy (CP) born as a product of twin pregnancies were studied. Data regarding their co-twins were also gathered. The authors' findings suggest that (1) monozygotic twins have a higher risk of CP than dizygotic twins, (2) twin order at birth does not seem to be a relevant factor in the etiology of CP, (3) mothers less than 24 or more than 34 years of age had the highest incidence of children with CP as a product of a twin pregnancy, and (4) the data do not support a genetic basis for the disease.
Lappalainen RE see **Langer JC**
Laufer N see **Mordel N**
Laugier J see **Gold F**
Laurent JP see **Simpson RK Jr**
Lauweryns I, Van Cauwenberghe N, Carels C, van Steenberghe D, Vlietinck R: The validity of the masseteric post-stimulus electromyographic complex: a twin study. Arch Oral Biol 1992 Nov; 37(11):979–82
The twin model was used to assess the validity of an electromyographically recorded, masseter muscle reflex by measuring the sensitivity and specificity. Results were satisfying, implying that in future studies this reflex could be used to calculate heritability estimates between monozygotic and dizygotic twins.
Lauweryns I, Carels C, Vlietinck R: The use of twins in dentofacial genetic research.
Am J Orthod Dentofacial Orthop 1993 Jan; 103(1):33–8 (74 ref.)
A literature review is given on the different results obtained with twin and family studies in relationship to the development and structure of the dentofacial complex. Recent advances in twin and family studies are mentioned. Attention is focused on functional components considered to be of primary importance in craniofacial growth.
Lee CF see **Gibson KM**
Lee G see **Check JH**
Lee TY see **Chen SU**
Lefort G see **Boulot P**
Lehr MV see **Simoes EA**
Lemke RP, Machin G, Muttitt S, Bamforth F, Rao S, Welch R: A case of aplasia cutis congenita in dizygotic twins. J Perinatol 1993 Jan–Feb;13(1):22–7 (26 ref.)
We report a newborn infant with extensive aplasia cutis congenita of the flanks and thighs, associated with a co-twin fetus papyraceus. DNA restriction fragment polymorphism analysis of the twins proved dizygosity. The association of these two conditions in twins is reviewed.
Lennox A see **Karlinsky H**
Leow SW see **Yang ST**
Lerner JP see **Timor-Tritsch IE**
Leslie DG see **Hardman TC**
Lessing JB see **Yovel I**
Lettieri L, Vintzileos AM, Rodis JF, Egan JF, Wolf EJ, McLean DA: Transverse cerebellar diameter measurements in twin pregnancies and the effect of intrauterine growth retardation.
Am J Obstet Gynecol 1992 Oct;167(4 Pt 1):982–5
OBJECTIVES: Transverse cerebellar diameter measurements have been established for singleton but not twin pregnancies. In singleton pregnancies controversy exists on whether cerebellar growth is affected by intrauterine growth retardation. We undertook this retrospective study in twin pregnancies to establish a nomogram for the transverse cerebellar diameter in twins and to assess the effect of growth retardation on this measurement. STUDY DESIGN: A retrospective review was performed on 171 patients with twin pregnancies with reliable dating from 15 to 36 weeks' gestation who had been referred to our antenatal evaluation unit for routine ultrasonographic examination. Of the 342 fetuses, 322 were available for analysis and establishment of a nomogram for

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the transverse cerebellar diameter. Twenty-four twin, growth-retarded fetuses were analyzed separately. RESULTS: The transverse cerebellar diameter increased linearly with gestational age ($r = 0.94$, $p < 0.001$). Fifteen (63%) of the growth-retarded fetuses had a transverse cerebellar diameter of < or = 5th percentile for gestational age. CONCLUSION: We suggest that intrauterine growth retardation may affect cerebellar growth in twins.

Leuchter AF see **Small GW**

Levardon M see **Cristalli B**

Lewis BA, Thompson LA: A study of developmental speech and language disorders in twins.
J Speech Hear Res 1992 Oct;35(5):1086–94
Fifty-seven same-sex twin sets (32 monozygotic and 25 dizygotic) were examined for concordance of speech and language disorders. Results showed monozygotic twins to have higher concordance than dizygotic twins. In addition, monozygotic twins were more similar in the types of disorders they presented than dizygotic twins. Positive family histories for speech, language, and learning disorders were reported in the nuclear families of the twins.

Lewis SW see **Coid B**

Li D, Chen Y: A consanguineous mating couple and their concomitant esotropia twins.
Yen Ko Hsueh Pao 1991 Sep;7(3):153–5
A first cousin marriage couple and their 8-year-old identical twin daughters with concomitant strabismus are described. This family would indicate an autosomal recessive inheritance in concomitant strabismus.

Lichtenstein P, Harris JR, Pedersen NL, McClearn GE: Socioeconomic status and physical health, how are they related? An empirical study based on twins reared apart and twins reared together.
Soc Sci Med 1993 Feb;36(4):441–50
This investigation used the powerful combined twin and adoption design to assess the validity of three different hypotheses--social causation, childhood experiences, and health selection--on the origin of the association between socioeconomic status (SES) and health. The sample contains 99 pairs of monozygotic twins reared apart, 166 pairs of monozygotic twins reared together, 238 pairs of dizygotic twins reared apart, and 221 pairs of dizygotic twins reared together, who completed questionnaire items concerning their SES and health status. Genetic effects, environmental effects unique to the individual, as well as environmental effects shared by twins were involved in mediating the associations between SES and health. However, the relative importance of these effects varied for the different associations depending on the measures of health and SES respectively. The results indicate that social causation, childhood experiences, and health selection may all be important for the association between SES and health. It is argued that these hypotheses are not contradictory, rather the relationship between the complex dimensions SES and health may be explained by several different causes.

Lin YW see **Amino K**

Lindberg E see **Helgeland L**

Linkowski P, Van Onderbergen A, Kerkhofs M, Bosson D, Mendlewicz J, Van Cauter E: Twin study of the 24-h cortisol profile: evidence for genetic control of the human circadian clock. Am J Physiol 1993 Feb;264(2 Pt 1):E173–81
To determine whether genetic factors control the expression of human circadian rhythmicity, we analyzed the 24-h profile of plasma cortisol in 11 monozygotic and 10 dizygotic pairs of normal male twins. Blood was sampled every 15 min, and sleep was monitored. Circadian rhythmicity was characterized by measures of amplitude, phase, and overall waveshape. Pulsatility was quantified by pulse frequency, pulse amplitude, and relative contribution of pulsatile vs. circadian variations. Data were analyzed by a procedure specifically developed for twin studies. Genetic control was demonstrated for the timing of the nocturnal nadir and for the proportion of overall temporal variability associated with pulsatility. Environmental effects were detected for the 24-h mean and the timing of the morning acrophase. The timing of the cortisol nadir is a robust marker of human circadian phase and is dependent, under entrained conditions, on the length of the endogenous period. Animal studies have shown that the endogenous period and the pattern of entrainment to exogenous 24-h periodicities are genetically controlled. Our results indicate that, despite the increased impact of social inputs, genetic factors also control human circadian rhythmicity.

Liu H see **Winn HN**

Liu S, Benirschke K, Scioscia AL, Mannino FL: Intrauterine death in multiple gestation.
Acta Genet Med Gemellol (Roma) 1992;41(1):5–26
Intrauterine death of one fetus in a multiple gestation is associated with significant morbidity and mortality in the surviving infant. This study is a retrospective review of 38 twin and 3 triplet gestations involving the intrauterine death of at least one fetus. The obstetrical history, placental pathology, autopsy findings, and neonatal history of the surviving infant are reviewed. Three cases involved the recent stillbirth of both twins, the remaining cases involved a surviving infant. In one case, neonatal death of a surviving twin occurred on day 19. In two sets of triplets, two stillbirths occurred, in the third case two infants were liveborn. The incidence of preterm delivery was 34%, which decreased to 18% if fetal cotwin death had occurred before 20 weeks gestation. Cesarean section was the method of delivery in 16 cases. There was an excess of velamentous cord insertions, which was most pronounced in the stillborn twin. Monochorionic placentation was found in 72%, also an excess. Neurological damage was known to have occurred in 19 of the 39 surviving infants. Fifteen of these 19 (79%) were associated with monochorionic placentation. The neurologically damaged twin infants, when compared to the normal infants, had the cotwin die later in gestation (31 vs 16.5 weeks), had a shorter duration between the death of the cotwin and delivery (2.5 vs 21 weeks), and delivered earlier in gestation (36.5 vs 39.5 weeks). The probable cause of neurological damage, in our opinion, was either exsanguination into the dead twin fetus, or disseminated intravascular coagulation which occurred in at least 13 cases. The incidence of antepartum death in a multiple gestation, and the potential for neurological damage is probably higher than previously thought. A review of the literature is presented and the clinical implications of this phenomenon are discussed.

Livneh A see **Shohat M**

Lombardi SJ see **Boehm FH**

Lombardo A see **Goi G**

Losada RA see **Goffner L**

Lufkin RB see **Small GW**

Luke B, Keith LG: The contribution of singletons, twins and triplets to low birth weight, infant mortality and handicap in the United States.

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J Reprod Med 1992 Aug;37(8):661-6
Among multiple gestations the magnitude of neonatal mortality, morbidity and postneonatal handicap is unknown. Although the proportion of multiple births has risen dramatically during the past decade, the proportion of total births in the United States is relatively small. The vast majority of multiples are low birth weight (LBW) or very low birth weight (VLBW), conditions that magnify both short-term and long-term risks. In this study, the risks for infant mortality and for postneonatal morbidity and handicap have been calculated from race-, plurality- and birth weight-specific mortality rates from the National Infant Mortality Surveillance (NIMS) Project and birth weight-specific postneonatal handicap rates from the Office of Technology Assessment report Healthy Children in proportion to the 1988 U.S. birth cohort. U.S. health objectives for the year 2000 for race-specific birth weight and infant mortality rates were used for comparison. Compared with that of singletons, twins' and triplets' relative risks for LBW are 10.3 and 18.8, respectively. Their relative risks for VLBW are 9.6 and 32.7. Compared with singletons, twins and triplets have relative risks for infant mortality of 6.6 and 19.4, respectively. For twins and triplets, postneonatal survivors' relative risks for severe handicap are 1.7 and 2.9 while those for overall handicap are 1.4 and 2.0, respectively. Recommendations for optimizing pregnancy outcomes in multiple gestations include liberalized weight gains, reduced physical effort and early, comprehensive prenatal care.

Lurie D see **Check JH**

Lykken DT, McGue M, Tellegen A, Bouchard TJ Jr: Emergenesis. Genetic traits that may not run in families. Am Psychol 1992 Dec;47(12):1565-77
Traits that are influenced by a configuration--rather than by a simple sum--of polymorphic genes may not be seen to be genetic unless one studies monozygotic twins (who share all their genes and thus all gene configurations) because such "emergenic" traits will tend not to run in families. Personal idiosyncrasies that have been found to be surprisingly concordant among MZ twins separated in infancy and reared apart may be emergenic traits. More speculatively, important human traits like leadership, genius in its many manifestations, being an effective therapist or parent, as well as certain psychopathological syndromes may also be emergenic. These ideas reemphasize the importance of the role played in human affairs by genetic variation.

Lyons MJ see **Ramakrishnan V**

M

McClearn GE see **Breitner JC**
McClearn GE see **Gatz M**
McClearn GE see **Heller DA**
McClearn GE see **Lichtenstein P**

McEvoy S, Dodd B: The communication abilities of 2- to 4-year-old twins. Eur J Disord Commun 1992; 27(1):73-87
The speech and language abilities of pre-school multiple-birth children (MBC) are often reported to be impaired. In this study, teh syntactic, semantic, pragmatic, articulation and phonological skills of 19 sets of MBC were assessed. The comparisons made were between MBC and matched singleton controls, between siblings within multiple-birth sets, and for each multiple-birth child with different conversational partners (sibling versus speech and language therapist). The results indicated that the MBC performed more poorly than the singleton controls on measures of syntax and phonology. Whilst there were quantitative and qualitative similarities between siblings' linguistic abilities, their phonologies were not identical, and the MBC's speech and language changed with different conversational partners. The implications of the results for the existence of 'twin language', choice of language sample for assessment of functional communication and the need for preventive intervention programmes are discussed.

McFarland HF: Twin studies and multiple sclerosis [editorial; comment] Ann Neurol 1992 Dec; 32(6):722-3

McGue M see **Lykken DT**
Machin G see **Lemke RP**

Machin GA: Thanatophoric dysplasia in monozygotic twins discordant for cloverleaf skull: prenatal diagnosis, clinical and pathological findings [letter] Am J Med Genet 1992 Dec 1;44(6):842-3

McLean DA see **Lettieri L**
MacLennan AH see **Norman RJ**
McLoughlin JW see **Norman RJ**
Mahoney M see **Nasca PC**
Malcolm S see **Winchester B**

Malykh SB, Kuznetsova IV: [Structure of phenotypic variability in readiness potential in 6-7 year-old children] Genetika 1992 Nov;28(11):172-5 (Eng. Abstr.) **(Rus)**
This report is a part of a larger project, the major purpose of which is a longitudinal study of developmental changes in genetic control of variation in Bereitshaft potentials (BP). 15 pairs of MZ and 15 pairs of DZ twins aged 6-7 years participated in the BP study. 2 second epochs of EEC time-locked to the movement were digitized off-line at 500 Hz (DAS-16G "Metrabyte"), for 1500 msec, prior to and 5000 msec after movement. A complex BP waveform with the positive components was discovered in young children. We fitted four basic models to the twin data for each of the BP in F3, F4, C3, C4. Since the models (VA, EW) in F3, F4, C3 and (EB, EW) in C4 fit very well and cannot be improved markedly by adding the most important alternative parameters, we conclude that variation of BP of F3, F4, C3 is best explained by a very simple genetic model, and variation of BP of C4 is best explained by a simple environmental model.

Mandai M see **Adachi N**
Mandelbaum J see **Salat-Baroux J**
Mandelkern MA see **Small GW**

Mannes GP, van der Heide S, van Aalderen WM, Gerritsen J: Itraconazole and allergic bronchopulmonary aspergillosis in twin brothers with cystic fibrosis [letter] Lancet 1993 Feb 20; 341(8843):492

Mannino FL see **Liu S**
Maraganore DM see **Burn DJ**

Mardesic T, Zetova L, Muller P, Mikova M, Stroufova S: Multiple pregnancies as a result of IVF and ET in a program without cryopreservation possibility. Zentralbl Gynakol 1993;115(1):24-6
Of the 71 clinical pregnancies achieved in the IVF and ET program at the Institute for the Care of Mother and Child between January 1989 and June 1992 22 were multiple (30.9%). In seven cases (31.3%) spontaneous reduction occurred. A total of six patients underwent a multi-fetal pregnancy reduction. Close monitoring of ovarian response, limitation of the number of transferred embryos,

AUTHOR SECTION

selection of the most viable embryos using cocultivation systems and embryo freezing should be used to avoid the higher order multiple pregnancies after IVF ET.

Mari G, Wasserstrum N, Kirshon B: Reduction in the middle cerebral artery pulsatility index after decompression of polyhydramnios in twin gestation. Am J Perinatol 1992 Sep–Nov;9(5–6):381–4
Amniotic fluid decompression was performed for symptomatic polyhydramnios complicating four sets of discordant twin gestations. Doppler ultrasound waveforms of the middle cerebral artery were determined before and after the procedure in seven of the eight fetuses. After amniocentesis, the pulsatility index of the middle cerebral artery (PIMCA) was reduced in all fetuses ($p < 0.01$). When one considers only the larger twin in each set, the magnitude of the change in PIMCA was relatively consistent among the different sets (−0.60 +/− 0.14; $p < 0.01$; range, −0.45 to −0.79). The smaller twins showed a much more variable response (−0.82 +/− 0.70; range, −0.05 to −1.75). The pulsatility index of the umbilical artery (PIUA) showed no consistent trend in the five subjects in which it was determined. In principle, the cerebrovascular dilation indicated by the PIMCA measurements may in part be due to acute increases in maternal and fetal carbon dioxide tensions following relief of maternal restrictive lung dysfunction. More importantly, the acute fall in amniotic fluid pressure—the external pressure to which the fetoplacental unit is exposed—leads to pooling of blood in fetal and placental veins, and thereby reduces the effective blood volume of the fetoplacental unit. This effective hypovolemia, functionally analogous to that produced by fetal hemorrhage, elicits changes in regional vascular resistances that favor cerebrovascular perfusion. The impact of acute amniotic fluid decompression on the fetal circulation reflected in the marked changes in PIMCA suggests a role for monitoring to avoid large acute changes in pressure during therapeutic amniocentesis.

Mark MH see **Burn DJ**

Markovic MD: At the crossroads of oral facial genetics. Eur J Orthod 1992 Dec;14(6):469–81

Markovitz J see **Oettinger M**

Marsden CD see **Burn DJ**

Martin NG see **Treloar SA**

Martin SA see **Hiett AK**

Martini A see **Comacchio F**

Martins M see **Gedda L**

Mata J see **Kurtz AB**

Matsubara K see **Amino K**

Matsuyama SS see **Small GW**

Matthews CD see **Norman RJ**

Matulich EM see **Dickey RP**

Mayser P, Spornraft P, Gründer K, Schill WB: [Cutis marmorata teleangiectatica congenita (Van Lohuizen syndrome)] Hautarzt 1992 Nov; 43(11):721–3 (Eng. Abstr.) **(Ger)**
The 2-year spontaneous course of a case of cutis marmorata teleangiectatica congenita in a girl is reported. The child had typical cutis marmorata, with teleangiectasis, phlebectasias and ulceration particularly on parts of the left leg and in the anogenital region, with no further anomalies. During symptomatic therapy over 2 years the lesions faded spontaneously.

Medearis AL see **Sherman SJ**

Meehan FP see **Bolaji II**

Menargues Irles MA see **García-Aguayo FJ**

Mendlewicz J see **Linkowski P**

Metlay LA see **Sherer DM**

Métneki J, Pazonyi I, Czeizel A: Unidentified multiple congenital abnormalities in twins. A population-based Hungarian study.
Acta Paediatr Hung 1992;32(3):203–17
Of 1038 index patients with multiple congenital abnormalities, 34 were twins. This 3.3 per cent is higher than the Hungarian birth rate of about 2.1 per cent. However, after the exclusion of cases with congenital abnormality association of low birth weight newborn infants and with genital anomalies of the male, the twin birth rate was 1.8 per cent. Thus, the unidentified multiple congenital abnormalities have no common cause with twinning.

Middleton-Price H see **Winchester B**

Mikova M see **Mardesic T**

Millar WJ, Wadhera S, Nimrod C: Multiple births: trends and patterns in Canada, 1974–1990.
Health Rep 1992;4(3):223–50 **(Eng, Fre)**
This paper examines Canadian trends and patterns in multiple births in relation to total confinements, singleton births, maternal age, parity, gestational age and birth weight using vital statistics from 1974 to 1990. Multiple-birth rates in Canada increased from 912.8 to 1,058.9 per 100,000 confinements between 1974 and 1990. The increase is especially noticeable for women over 30. The rate of triplet and higher-order births increased from 8.3 to 21.7 per 100,000 confinements between 1974 and 1990. The proportion of multiple-birth babies that were pre-term (< 37 weeks gestation period) increased from 32.8% in 1974 to 45.8% in 1990. Factors associated with the increase in multiple births may include the use of assisted pregnancy techniques, and the fact that women aged 30 and older, who are at higher risk of a multiple birth, and who postponed their child bearing, have increased their fertility. The sharp increase in multiple-birth rates has implications for maternal and child health and health care costs.

Miura T see **Tsuchida S**

Mohazab HR, Spigos DG, Anciaux D, Nadimapalli V: Fetus papyraceus [letter] AJR Am J Roentgenol 1993 Mar;160(3):663–4

Moise KJ Jr see **Belfort MA**

Molino O see **Parisi G**

Monteagudo A see **Timor-Tritsch IE**

Moore G see **Bennett P**

Mordel N, Zajicek G, Benshushan A, Schenker JG, Laufer N, Sadovsky E: Elective suture of uterine cervix in triplets. Am J Perinatol 1993 Jan;10(1):14–6
The incidence of triplet pregnancies has increased several times due to the widespread use of ovulation induction agents. Premature delivery is the main complication of triplet gestations. In twin conceptions it was shown definitely that elective cervical suture does not prolong these pregnancies. However, in higher order multifetal gestations the uterus is extremely overdistended and the application of cerclage is equivocal. This work intended to assess the value of elective cervical sutures in prolonging triplet pregnancies. Twelve of 35 women with triplet conceptions hospitalized at our high-risk pregnancy unit underwent an elective cerclage at 12 to 14 weeks and 23 women served as control subjects. None of them had any history or physical findings of cervical incompetence prior to the procedure. The gestational age (weeks) at delivery was 33.0 +/− 5.1 and 34.7 +/− 2.8 (mean +/− SD) for the sutured and noncerclage groups, respectively. The birthweight (grams) of the neonates was 1833.0 +/− 524.5 and 1884 +/− 455.5 (mean +/− SD) for the cerclage and nonsutured women, respectively. It

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seems that triplet gestations as such do not benefit from an elective cervical suture.

Morgan P see **Kurtz AB**
Morgan T see **Greig PC**
Morimoto K see **Nishikuni K**
Mortimer G see **Bolaji II**
Mortimer JA see **Breitner JC**
Moskowitz WB see **Schieken RM**
Mossberg B see **Ericsson CH**
Mosteller M see **Schieken RM**
Mouthemy G see **Lajarrige C**
Muller P see **Mardesic T**
Mutinelli F, Nani S, Zampiron S: Conjoined twins (thoracopagus) in a Wistar rat (Rattus norvegicus). Lab Anim Sci 1992 Dec;42(6):612–3
Muttitt S see **Lemke RP**
Muzii U see **Parisi G**

N

Nadimapalli V see **Mohazab HR**
Nakamura T see **Takeshita T**
Nakata Y see **Tsuchida S**
Nance WE see **Corey LA**
Nance WE see **Schieken RM**
Nani S see **Mutinelli F**
Narayansingh G see **Ramsewak S**
Narnberger JI Jr see **Joseph KC**
Nasca PC, Weinstein A, Baptiste M, Mahoney M: The relation between multiple births and maternal risk of breast cancer. Am J Epidemiol 1992 Dec 1; 136(11):1316–20
Data from two case–control studies conducted in New York State during 1982–1986 were used to examine the relation between multiple births and the maternal risk of breast cancer. The cases were 2,561 women between 20 and 79 years of age with a diagnosis of primary breast cancer. Controls (n = 2,616) were selected from driver's license files and matched to cases by year of birth and county of residence. The odds ratio for any multiple birth was 0.94 (95% confidence interval (CI) 0.56–1.56) in women less than 55 years of age and 0.95 (95% CI 0.62–1.46) in women aged 55–79 years. A previous study had shown a multiple last birth to be protective against breast cancer in women less than 55 years of age (odds ratio (OR) = 0.60, 95% CI 0.43–0.85). A decreased risk of breast cancer was also observed for this age group in the present study, but the magnitude of the effect was not as strong and the confidence interval included unity (OR = 0.85, 95% CI 0.43–1.68). A logistic model that controlled for age at first pregnancy, number of live births, age, and county of residence increased the odds ratio to 0.97 for a multiple last birth. The current study does not support an association between multiple births and maternal risk of breast cancer.
Nawrocki MN see **Sherer DM**
Nazer J see **Daher V**
Neale MC see **Kendler KS**
Nesselroade JR see **Gatz M**
Newman B see **Austin MA**
Newman RB see **Ellings JM**
Nimrod C see **Millar WJ**
Nimrod C see **Shimizu T**
Nishikuni K, Morimoto K, Wakayama A, Fukui R, Suehara N, Ichia H, Fujimura M, Tagawa T, Futagi Y, Hayakawa T: [Perinatal neurosurgical care for one fetal hydrocephalus on twin gestation]
No To Shinkei 1992 Jul;44(7):633–8 (Eng. Abstr.) **(Jpn)**
Twin gestations are responsible for a disproportionate amount of perinatal mortality and morbidity. Such gestations may impose greater demands on maternal and child physiologic systems than singleton pregnancies. The most common antenatal complications were preterm labor. The clinical record of myelomeningocele infant· presenting with overt hydrocephalus in utero at 27 weeks of twin gestation and operated miniature Ommaya's reservoir placement early after birth and intentional delayed back closure for myelomeningocele was reported. Although perinatal neurosurgical care for one fetal hydrocephalus on twin gestation is clearly advantageous, it alone is relatively ineffective in reducing the incidence of the complication, preterm labor.
Niwa H see **Adachi N**
Noble MI see **Hardman TC**
Noguchi C see **Tsuchida S**
Nordberg M see **Björkman L**
Norman RJ, McLoughlin JW, Borthwick GM, Yohkaichiya T, Matthews CD, MacLennan AH, de Kretser DM: Inhibin and relaxin concentrations in early singleton, multiple, and failing pregnancy: relationship to gonadotropin and steroid profiles. Fertil Steril 1993 Jan;59(1):130–7
OBJECTIVE: To examine the inter-relationships between inhibin, relaxin, steroid concentrations, estradiol (E2), progesterone (P), and gonadotropins in early pregnancy. DESIGN: Hormone concentrations in plasma were measured during the luteal phase of subjects who became pregnant (n = 58) or failed to become pregnant (n = 47) after ovarian hyperstimulation for in vitro fertilization–gamete intrafallopian transfer (IVF–GIFT) (group 1). A further group of subjects became pregnant (n = 7) or failed to become pregnant (n = 8) during endocrinology tracking of a natural cycle (group 2). Blood was obtained every 3 days in the luteal phase from day 5 in group I (day 0 was oocyte recovery) and from day 0 (first increase in luteinizing hormone [LH]) in group II. RESULTS: Progesterone and E2 were increased over nonpregnant values by day 11 (P) and day 16 (E2) in group I and by day 11 (E2 and P) in group II. Inhibin and relaxin concentrations were significantly increased by day 16 in group I (often by day 11) and by day 14 in group II pregnancy subjects. A direct relationship existed between inhibin, P, relaxin, and human chorionic gonadotropin (hCG). Subjects who had twin pregnancies demonstrated higher concentrations of all hormones and often exhibited increases earlier (by day 11 in group I) than singleton pregnancy subjects. Pregnancies that ended in miscarriages tended to have lower concentrations of P and inhibin. None of the hormones reliably discriminated between the clinical conditions of blighted ovum and of spontaneous abortion, and the predictive value of any hormone measured for miscarriage was not high. CONCLUSIONS: The trend of inhibin and relaxin concentrations closely parallels rises in P during early pregnancy. Luteinizing hormone (LH) and follicle-stimulating hormone (FSH) levels are suppressed very early in pregnancy. The suppression of LH and FSH in hyperstimulated cycles is more governed by E2 than inhibin in stimulated cycles. Some subjects destined to miscarry exhibit abnormal endocrine changes very early in the luteal phase.
Norton JA Jr see **Williams CJ**
Novokreshchenov LB: [Conjoined twins]
Khirurgiia (Mosk) 1992 Nov–Dec;(11–12):98–100 **(Rus)**
Nowak J see **Allgulander C**

AUTHOR SECTION

Nowroozi K see **Check JH**

Numano F: Hereditary factors of Takayasu arteritis. Heart Vessels Suppl 1992;7:68–72 (35 ref.)
Takayasu arteritis is a chronic vasculitis characterized by a clinical pulseless condition and is predominant in young female patients. Its loci is found mainly in Asian countries, and its etiology is still unknown. Our experiences of cases of twin sisters with Takayasu arteritis led us to suppose that hereditary factors participate in the pathophysiology of this disease. Population and family-incidence studies employing HLA analysis in Japan have focused on an complotype Aw24–DW52–C4A2–C4BQ0–Dw12 which was in disequilibrium with Takayasu arteritis. Clinical features and clinical courses were found to be intimately related to this complotype. Recent studies on HLA typing in other countries have also suggested the important roles of hereditary factors in this morbid condition and international collaborative studies on these hereditary factors are now under way.

Nunn JH, Welbury RR, Gordon PH, Stretton-Downes S, Green-Abate C: Dental health of children in an integrated urban development programme for destitute mothers with twins in Addis Ababa. Int Dent J 1992 Dec;42(6):445–50
The Ethiopian Gemini Trust in Addis Ababa is a charitable organisation which cares for mothers who have delivered twins or triplets. A dental preventive programme for the disadvantaged children in the Trust was begun and this paper describes the first objective of the programme, the determination of the levels of dental disease. Caries, periodontal disease, malocclusion and enamel opacities were recorded.

O

Oates S, Hamer F: Monitoring of triplet pregnancy during labour. J R Soc Med 1992 Apr;85(4):241–2

Odeh M see **Oettinger M**

Oettinger M, Ophir E, Markovitz J, Stolero E, Odeh M: Is cesarean section necessary for delivery of a breech first twin? Gynecol Obstet Invest 1993; 35(1):38–43
Eighty-two pregnancies involving a breech first twin were retrospectively analyzed over two study periods during which the cesarean section rates were 20.9 and 94.9%, respectively. The neonatal and maternal morbidity in both study periods was compared. There were no neonatal deaths during either study period and no cases of interlocking twins among patients delivered vaginally. Neonatal morbidity was unrelated to the mode of delivery. The incidence of maternal fever was, however, significantly higher in the cesarean section group compared with the vaginal delivery group ($p < 0.001$). Our study suggests that vaginal delivery of selected twin gestations with a breech first twin should be an alternative to cesarean delivery.

Ofner S, Samples JR: Low-tension glaucoma in identical twins [letter] Am J Ophthalmol 1992 Dec 15;114(6):764–5

Ohba K see **Itokazu N**

Ohdo S see **Itokazu N**

Ohta S see **Amino K**

Okezie O see **Egwuatu VE**

Okonek A see **Small GW**

Olar TT see **Dickey RP**

Ollier WE see **Kohsaka H**

Olsen ME: Monoamniotic twin gestations. J Tenn Med Assoc 1992 Nov;85(11):511–2

Ometto A see **Spinillo A**

Ophir E see **Oettinger M**

Orecchia L, Signorile G, Pezzano A, Bianco R, Iavarone A, Stradoni P, De Sario PN: [Niemann-Pick disease type C in monozygotic twins] Minerva Pediatr 1992 Oct;44(10):491–5 (Eng. Abstr.) **(Ita)**
The Authors describe two monochorionic twins affected by Niemann-Pick disease type C with a clinical picture beginning in the neonatal age and with a progressive mental deterioration, loss of speech and spasticity started at 30 months. The importance of cultured skin fibroblasts is emphasized. The evidence of a defective intracellular cholesterol esterification is established as an intrinsic feature of Niemann-Pick disease type C.

Orimo H see **Takeshita T**

O'Shea P: Congenital syphilis in a twin gestation. Pediatr Pathol 1992 Nov-Dec;12(6):865–70

Ouchi Y see **Takeshita T**

P

Pace JL see **Scerri L**

Paes BA see **Langer JC**

Paillet C see **Gold F**

Paltiely Y see **Degani S**

Parekh HC, Gurusinghe NT, Sharma RR: Cerebral berry aneurysms in identical twins: a case report. Surg Neurol 1992 Oct;38(4):277–9 (12 ref.)
A pair of identical twins in whom cerebral berry aneurysms were found is reported. One presented with epilepsy, and the aneurysm was discovered incidentally. The other presented with a spontaneous bleed, which was fatal.

Parisi G, Squadrone NP, Rojo S, Muzii U, Molino O, Chiarelli A: [Herpes simplex virus infection in pregnancy: epidemiologic, diagnostic and therapeutic data. An unusual case of HSV-1 in monozygotic twins] Minerva Pediatr 1992 Oct; 44(10):459–67 (Eng. Abstr.) **(Ita)**
The Authors report a case of two pre-term monocorial twins affected by HSV-1 infection (Herpes Simplex Virus type 1), with generalized sepsis and involvement of the central nervous system (CNS), born by mother with primary infection who presented a typical vesicular eruption a week before delivery. As the HSV-1 was a disseminated type and the CNS was involved in both the twins, the diagnosis was based on clinical and laboratory findings (specific IgM and IgG) and on the use of Delpech-Lichtblau antibody liquoral index, a significant results both in the first and the second twin. Intensive care and early specific treatment with Acyclovir allowed a slow but progressive improvement of the twins' clinical picture. The antibody liquoral index may therapy of the viral sepsis cases involving the CNS, more than the cultural or antigen isolation of the treated virus.

Parisi P see **Allen G**

Parisi P see **Gedda L**

Parry-Fielder B see **Feekery CJ**

Paul RH see **Sherman SJ**

Pazonyi I see **Métneki J**

Peaceman AM, Dooley SL, Tamura RK, Socol ML: Antepartum management of triplet gestations. Am J Obstet Gynecol 1992 Oct;167(4 Pt 1):1117–20
OBJECTIVE: We evaluated an alternative approach to the management of triplet gestations that did not include home uterine monitoring, prophylactic tocolysis, or routine antepartum hospitalization. STUDY DESIGN: Fifteen patients were managed

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over a 42-month period by an antepartum protocol that emphasized patient education regarding signs and symptoms of preterm labor, weekly prenatal visits after 24 weeks' gestation with cervical examination, and increased rest in an outpatient setting. Tocolytic therapy was only used for regular uterine contractions when cervical change was documented. RESULTS: Nine of 15 (60%) patients with management in this uniform manner were delivered at > or = 35 weeks' gestation, and six patients (40%) completed 37 weeks of pregnancy. Only five patients (33%) received tocolytic therapy. The mean birth weight was 1957 +/- 488 gm, and only 19 of 45 neonates (42%) were admitted to the intensive care nursery. CONCLUSION: This management scheme was effective in reducing preterm delivery and thereby optimizing perinatal outcome.

Pearse RG see **Price KJ**
Peco NE see **Sherer DM**
Pedersen NL see **Gatz M**
Pedersen NL see **Heller DA**
Pedersen NL see **Lichtenstein P**
Peisner DB see **Timor-Tritsch IE**
Pelliccia G see **Boulot P**
Percy ME see **Karlinsky H**
Perkins S see **Ramsewak S**
Persad P see **Ramsewak S**
Pershagen G see **Rodvall Y**
Petridou E see **Hsieh CC**
Peyser MR see **Yovel I**
Pezzano A see **Orecchia L**
Pierre F see **Gold F**
Piotrowski J see **Skład M**
Plachot M see **Salat-Baroux J**
Playford ED see **Burn DJ**
Plomin R see **Emde RN**
Plomin R see **Gatz M**
Poletto E see **Comacchio F**

Pons JC, Frydman R: [Quadruplet pregnancies: management and obstetric and pediatric outcome] J Gynecol Obstet Biol Reprod (Paris) 1992; 21(5):557-62 (18 ref.) (Eng. Abstr.) **(Fre)**
Multi-fetal gestations are associated with increased frequency of maternal, fetal and neonatal complications. Data on the prognosis of multi-fetal pregnancies are of particular importance when the option of selective termination is considered. The present study details the obstetric management, neonatal outcome, and follow-up of seven quadruplet pregnancies in a french university center. The perinatal mortality was 250/1000. The neonatal mortality was 214/1000. The incidence of respiratory distress syndrome was 38%, bronchopulmonary dysplasia 19% and intraventricular hemorrhage 9.5%. Follow-up from one to 16 years shows that no child is handicapped. Our specific management for higher order multi-fetal pregnancies include early diagnosis, meticulous follow-up, early decrease of maternal activity, midwives at home, psychological care, delivery by cesarean section and a neonatalogist for each baby at the time of delivery.

Pourcelot D see **Gold F**

Powell FC: Parity, polypregnancy, paternity, and PUPPP [letter] Arch Dermatol 1992 Nov; 128(11):1551

Pras M see **Shohat M**

Price KJ, Roberton NR, Pearse RG: Intussusception in preterm infants. Arch Dis Child 1993 Jan;68(1 Spec No):41-2
Two cases of intussusception in infants born at 26 and 30 weeks' gestation are described. The two infants presented in the neonatal period with abdominal distension, intolerance of feeds, and rectal bleeding. An initial diagnosis of necrotising enterocolitis was made and the infants were treated medically. This led to a delay in the diagnosis of the intussusception. Published work on neonatal intussusception is reviewed and attention is drawn to the fact that the presenting signs and symptoms can be similar to those of necrotising enterocolitis. A diagnosis of intussusception should therefore be considered in any preterm infant with suspected necrotising enterocolitis.

Pryde PG, Isada NB, Johnson MP, Grundy H, Evans MI: Triply discordant triplets: probability, management options, and risks. Am J Med Genet 1992 Oct 1;44(3):361-4
The spontaneous occurrence of triplets is rare. With increased utilization of "assisted reproductive technologies," multifetal gestations have become more common. The empiric fetal risk for major malformation is approximately 3%. In a triplet pregnancy each fetus independently carries this risk so that the probability of having at least one malformed fetus is approximately 9%. It is much less likely to have 2 or 3 simultaneously but discordantly malformed fetuses in a multizygotic triplet gestation (.09% and .0027% risk, respectively). We report on the first case, to our knowledge, of an ovulation-stimulated triplet pregnancy complicated by 3-way discordance for major malformations diagnosed in the late second trimester by ultrasound. Fetus A was affected by congenital diaphragmatic hernia and trisomy 21; fetus B had encephalocele, a midline facial defect, and a cleft palate; and fetus C had evidence of unilateral claw hand but an otherwise normal fetal survey. At 19 weeks of gestation, fetus A was found to have spontaneously died, and a selective termination of triplet B was performed. We conclude: (1) the finding of a single major malformation in one fetus should lead to extensive search for malformations in all members of the pregnancy, and (2) the simultaneous occurrence of major malformations in more than one member of a multifetal gestation is a circumstance under which multiple selective termination deserves consideration. In this article we discuss important issues and caveats in the performance of selective termination for abnormal members of multifetal gestations.

R

Rabin SA see **Ginsberg NA**

Ramakrishnan V, Goldberg J, Henderson WG, Eisen SA, True W, Lyons MJ, Tsuang MT: Elementary methods for the analysis of dichotomous outcomes in unselected samples of twins. Genet Epidemiol 1992;9(4):273-87
This paper presents an elementary statistical method for analyzing dichotomous outcomes in unselected samples of twin pairs using stratified estimators of the odds ratio. The methodology begins by first randomly designating one member of each twin pair as an "index" twin and the other member as the "co-twin." Stratifying on zygosity, odds ratios are used to measure the association between disease in the index twin and disease in the co-twin. From these zygosity-specific tables we calculate the Woolf-Haldane estimator of the common odds ratio (psi F, the weighted average of the zygosity-specific odds ratios), the Mantel-Haenszel test statistic (chi 2M-H) for the common odds ratio, and a test (chi

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2G) for the difference in the zygosity-specific odds ratios. In this application, psi F provides an estimate of the familial association for disease and the accompanying chi 2M–H provides a test of the null hypothesis, psi F = 1 (i.e., there is no evidence for a familial influence on disease). The chi 2G is a test of the null hypothesis that psi MZ = psi DZ; a significant value for chi 2G suggests a genetic influence on disease (assuming that the observed odds ratios follow a pattern where psi MZ greater than psi DZ). A new test statistic (chi 2c) is proposed that incorporates the expectation that psi MZ = psi 2DZ under a purely additive genetic model with no common environmental effects. A significant value of chi c2 indicates that the different odds ratios across zygosity are partly due to common environmental influences. Conversely, a nonsignificant value of chi 2c is an indication that the zygosity-specific odds ratios are due solely to additive genetic effects and not to common environment. This basic approach is extended to examine the effects of measured indicators of the specific environment and the assessment of certain forms of gene by environment interaction. All of the methods are easily understood, highly flexible, readily computed using a hand calculator, and incorporate the inherent genetic information contained within twin samples.

Ramer JC, Eggli K, Rogan PK, Ladda RL: Identical twins with Weissenbacher-Zweymüller syndrome and neural tube defect. Am J Med Genet 1993 Mar 1;45(5):614–8
Neurologic abnormalities have been described only once previously in a child with Weissenbacher-Zweymüller syndrome (WZS), a rare skeletal dysplasia, evident neonatally. We report on identical twin male infants with skeletal findings typical of WZS, including small size at birth, proximal limb shortness, mid face hypoplasia, and myopia. In addition, twin B had a parieto occipital encephalocele while twin A had a meningocele at the same location. Twin B has had significant delays in development and hearing loss.

Rampazzo A see **Comacchio F**

Ramsewak S, Persad P, Perkins S, Narayansingh G: Twin pregnancy in a patient with complete heart block. A case report. Clin Exp Obstet Gynecol 1992; 19(3):166–7
A 22 year old primigravida with previously undiagnosed congenital complete heart block and a twin gestation is described. Early diagnosis of both problems and cardiac consultation allowed a temporary pacemaker to be inserted early in the third trimester. The patient was delivered by caesarean section at 36 weeks following spontaneous rupture of membranes. Maternal and fetal outcomes were excellent.

Rao S see **Lemke RP**
Raphael B see **Treloar SA**
Ray PN see **Karlinsky H**
Reed T see **Dunlap NE**
Reichl D see **Thorn JA**
Reinold E see **Wenzl R**
Reunanen A see **Kaprio J**
Reveley AM see **Coid B**
Reznick JS see **Emde RN**
Rice JP see **Allgulander C**
Richards CS see **Zneimer SM**
Ritter S: [Twins with testicular tumors] Med Klin 1992 Sep 15;87(9):489–94 (40 ref.) **(Ger)**
Roberton NR see **Price KJ**
Roberts A see **Winn HN**
Robinson JA see **Emde RN**

Robinson TW, Stewart DL, Hersh JH: Monozygotic twins concordant for Rubinstein-Taybi syndrome and implications for genetic counseling. Am J Med Genet 1993 Mar 15;45(6):671–3

Rodeck C see **Hyland K**
Rodis JF see **Lettieri L**

Rodvall Y, Hrubec Z, Pershagen G, Ahlbom A, Bjurman A, Boice JD Jr: Childhood cancer among Swedish twins. Cancer Causes Control 1992 Nov;3(6):527–32
The risk of childhood cancer was evaluated among 35,582 twins born in Sweden between 1952 and 1967. Cancers were identified through linkage with national cancer and mortality registries. Overall, 59 childhood cancers and 41 deaths from cancer occurred before the age of 16. For both sexes combined, the cancer incidence was similar to that in the general population of primarily single-born children (number observed/number expected [O/E] = 1.0, 95 percent confidence interval [CI] = 0.7–1.2). For males under age five, cancer incidence was reduced significantly (O/E = 0.3, CI = 0.1–0.7). There was a substantial increase in all-cause mortality among twins (O/E = 3.7), attributable to a high mortality during the first year of life. Excluding this first year, the O/E for death (all causes) was 1.1 (CI = 1.0–1.3). For cancer mortality of both sexes, the O/E was 0.9 (CI = 0.6–1.2), with no significant reduction of risk in any sex-age group. We conclude that with the possible exception of males aged 0–4 years, the childhood cancer risk of twins appears similar to that of singletons.

Rogan PK see **Ramer JC**
Rojo S see **Parisi G**
Rokugo M see **Takematsu H**
Romanov K see **Kaprio J**
Romanov K see **Koskenvuo M**
Romero R see **Winn HN**
Root L see **Laplaza FJ**
Rosemond RL see **Boehm FH**
Rosenberg T see **Fich M**

Rosner F: Pregnancy reduction in Jewish law [letter] Am J Obstet Gynecol 1993 Jan;168(1 Pt 1):278–9

Rothery DJ see **Garden GM**

Rouse DJ, Skopec GS, Zlatnik FJ: Fundal height as a predictor of preterm twin delivery. Obstet Gynecol 1993 Feb;81(2):211–4
OBJECTIVE: To determine whether fundal height might predict early delivery in twin pregnancies; that is, whether larger fundal heights predispose to earlier delivery. METHODS: From the charts of 336 well-dated twin pregnancies, we generated a series of fundal height curves. RESULTS: Within our population of twin pregnancies, the mean fundal height at any given gestational age did not differ between pregnancies delivered before 34 weeks and those delivered at or after 34 weeks. A single fundal height measurement above the 90th percentile before 34 weeks yielded a sensitivity of 23% and a specificity of 79% for delivery before 34 weeks, with a positive predictive value of 38% and a negative predictive value of 64%. CONCLUSION: Factors other than uterine overdistention (as measured by fundal height) must be implicated in preterm twin delivery.

Rowe WF see **Kempton JB**
Rozenbajgier C see **Fischer J**
Rubin SM see **Jackson GM**

Rydhström H: A birthweight-for-gestation standard based on 4737 twins born in Sweden between 1983 and 1985. Acta Obstet Gynecol Scand 1992 Oct; 71(7):506–11
OBJECTIVE: To construct a birthweight-for-gestation chart based on a

AUTHOR SECTION

population-based material of twins born during a restricted period of time. MATERIAL AND METHODS: Nearly all live-born twins born in Sweden between 1983 and 1985, 4737 all told, were included. Excluded from the analysis were 4.7% of the twins that were not on record at the Medical Birth Registry, 1.8% that died before or during birth, and 8.8% that were without a recorded date of birth or only had information on gestational duration estimated from the first day of the last menstrual period. RESULTS: The standard deviation in birthweight was considerable in most gestational weeks; the range (+/- 2 SD) was 1000-3400 g even if exclusively twins (pregnancies) with estimated date of birth from ultrasound examination early in the second trimester were included. Intra-pair discordance increased with gestational duration, especially for unlike-sexed twins, to reach over 400 g at term. On average, boys weighed 92 g more than girls and twins to multiparae weighed 250 g more than twins to primiparae. Maternal age affected birthweight for twins to primiparae, but not to multiparae. CONCLUSION: Although the problems with secular trends in birthweight were avoided by using a population-based material during a restricted time period, and only twin pregnancies dated with ultrasound were included, the standard deviation in most gestational weeks was still considerable, reflecting the multiplicity of factors involved in determining the birthweight of twins.

Rydhström H, Ingemarsson I: Prognosis and long-term follow-up of a twin after antenatal death of the co-twin. J Reprod Med 1993 Feb;38(2):142-6
It is generally believed that among twin pregnancies with one fetal loss prior to delivery, the surviving twin has an increased rate of perinatal mortality and childhood morbidity (cerebral palsy and mental retardation). By using data from the National Medical Birth Registry of Sweden between 1973 and 1983, we identified 206 gestations with the death of at least one twin (in 36 pregnancies both twins died) prior to delivery. The original medical records were retrieved for study. The presence of childhood morbidity for 65 of 129 surviving (8 years of age or older) twins born between 1973 and 1980 was evaluated by a questionnaire sent to rehabilitation centers for disabled children, as well as to offices for the Provision of Care for the Mentally Retarded. Perinatal mortality for a twin after the antenatal death of the co-twin was considerable. Fifty percent of survivors died before 34 weeks' gestation, and 18.7% thereafter. At follow-up, 8 years or more after birth, three twins (4.6%) were handicapped. Our results indicate the need for careful monitoring of the surviving twin fetus after one twin has succumbed prenatally.

Rye PH see **Dickey RP**

S

Saade G see **Belfort MA**

Sadovsky E see **Mordel N**

St. George-Hyslop P see **Karlinsky H**

Salat-Baroux J, Aknin J, Antoine JM, Alvarez S, Cornet D, Plachot M, Mandelbaum J: Is there an indication for embryo reduction? Hum Reprod 1992 Jun;7 Suppl 1:67-72 (37 ref.)
The selective reduction of embryos in multiple pregnancies poses numerous medical, technical, ethical and psycho-social problems. In a retrospective study, we analysed nine hundred and twenty-two pregnancies obtained using medically assisted procreation between May 1982 and May 1990. Among 922 successful pregnancies, 372 were singleton, 102 were twin and 13 were triplet. Data from this analysis and from a French multicentre study of 262 embryo reduction procedures demonstrated the value of an embryo quality score for minimizing the risk of multiple pregnancy and the existence of extremely infrequent, ethically acceptable indications for embryo reduction. These indications included ultrasound-proven malformations of one fetus, multiple pregnancies in patients with extensive uterine scarring, and multiple pregnancy despite the appropriate use of preventative measures which can be expected to make this technique unnecessary in the future.

Saliba E see **Gold F**

Samples JR see **Ofner S**

Sandholzer C see **Austin MA**

Sasaki M see **Adachi N**

Scerri L, Pace JL: Identical twins with identical alopecia areata. J Am Acad Dermatol 1992 Nov;27(5 Pt 1):766-7

Schaarschmidt K, Willital GH, Jorch G, Kerremanns J: Delayed primary reconstruction of an esophageal atresia with distal esophagotracheal fistula in an infant weighing less than 500 g. J Pediatr Surg 1992 Dec;27(12):1529-31
Delayed primary reconstruction of an esophageal atresia (Vogt IIIb) was undertaken in an extremely small-for-date baby (second twin, 36th week) with a birth weight of 445 g. After initial insertion of a gastrostomy under local anesthesia on the 29th day of life, ligation of the fistula and end-to-end anastomosis were performed by transpleural access (weight then, 535 g). There were no complications related to the operative procedure. The baby weighed 1,600 g at the age of 8 months.

Schenker JG see **Mordel N**

Schieken RM, Mosteller M, Goble MM, Moskowitz WB, Hewitt JK, Eaves LJ, Nance WE: Multivariate genetic analysis of blood pressure and body size. The Medical College of Virginia Twin Study. Circulation 1992 Dec;86(6):1780-8
BACKGROUND. In subjects of all ages, those who weigh the most often have the highest blood pressure. Thus, in epidemiological studies, weight is the most important correlate of blood pressure. Using the data from the Medical College of Virginia Twin Study, we asked these questions: 1) Do the same genetic paths that regulate body size also regulate systolic and diastolic blood pressure? 2) Are there distinct genetic pathways that regulate each of these variables? 3) Does environment play a major regulatory role? 4) Are the correlations among these variables mainly due to genetic or environmental effects? 5) Do genetic paths that regulate body size mediate the correlation between systolic blood pressure and diastolic blood pressure? METHODS AND RESULTS. We ascertained 253 Caucasian twin pairs living in the Commonwealth of Virginia. The average age was 11.2 +/- 0.2 years. We used multivariate path analyses to investigate the genetic relations among systolic blood pressure, diastolic blood pressure, and body size. We found that there was a highly significant genetic relation between systolic blood pressure and body size and between systolic and diastolic blood pressure. There are genetic paths that are shared within these two sets of variables, but in each case, the paths for each pair appear to be separate from one another. CONCLUSIONS. These analyses provide a method to partition correlation coefficients found in epidemiological studies into genetic and

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environmental components. The correlations found among these three variables are in large part due to these genetic relations. We found no genetic relation between diastolic blood pressure and body size.

Schill WB see **Mayser P**

Schneider NR see **Zneimer SM**

Schön HJ see **Wenzl R**

Schulze M see **Fischer J**

Schurz B see **Wenzl R**

Schwartz DA, Bueso-Ramos C, Siegel R: Disseminated herpes simplex infection in a twin: the role of the "stat" autopsy in immediate therapeutic intervention for survival of multiple birth neonates.
J Perinat Med 1992;20(4):281–7
Multiple birth neonates are unique in sharing similar intrauterine, and commonly the extrauterine, environments. The development of an infectious disease in one infant during the perinatal period assumes special significance in this setting, and the other siblings are often at high risk for a similar disease. Under these circumstances it is important to make a rapid etiologic diagnosis to provide appropriate therapeutic intervention. The immediate, or "stat", autopsy is a diagnostic modality involving the use of multiple procedures for the rapid diagnosis of perinatal infection which may be lifesaving in the setting of multiple birth neonates. This report describes the use of the "stat" autopsy to diagnose a fatal case of disseminated herpes simplex infection in a twin, which lead to the immediate treatment of the surviving sibling with appropriate antiviral medication.

Scioscia AL see **Liu S**

Secher NJ see **Brink Henriksen T**

Segal NL, Bouchard TJ Jr: Grief intensity following the loss of a twin and other relatives: test of kinship genetic hypotheses [published erratum appears in Hum Biol 1993 Apr;65(2):following 336]
Hum Biol 1993 Feb;65(1):87–105
Following Darwin, we summarize evidence that grief may be an evolved adaptive mechanism with complex physiological and psychological correlates. Given this state of affairs, kinship genetic theory suggests that in humans ratings of grief intensity should increase with increasing genetic relatedness to the deceased. A study of the bereavement experiences of 49 surviving monozygotic (MZ) and 19 surviving dizygotic (DZ) co-twins provides informative tests of this hypothesis. Participants completed a comprehensive Twin Loss Survey, which was designed to assess intensity of bereavement in response to the death of the twin and other relatives. The mean grief intensity rating for the deceased twin was significantly higher for surviving MZ twins than for surviving DZ twins ($p < 0.01$). Mean grief intensity ratings for twins significantly exceeded those for mothers ($p < 0.05$), fathers, grandfathers, grandmothers, and other relatives ($p < 0.01$). These findings are consistent with kinship genetic predictions.

Selby JV see **Austin MA**

Seo JW see **Gerlis LM**

Sequera D see **Daga SR**

Shapiro I see **Degani S**

Sharf M see **Degani S**

Sharma RR see **Parekh HC**

Sharma S see **Timor-Tritsch IE**

Sherer DM, Nawrocki MN, Abramowicz JS, Peco NE, Metlay LA, Woods JR Jr: Is there a "dominant twin" in utero? Am J Perinatol 1992 Sep–Nov;9(5–6):460–3
A prospective study of 98 pairs of nonstress tests (NSTs) was obtained simultaneously from members of 30 twin gestations. Fifty-five percent of the total fetal heart rate (FHR) accelerations of both twins were associated with each other and occurred within 15 seconds of each other. There were 8.46% synchronous FHR accelerations of both twins, possibly reflecting evoked fetal movements. Statistical analysis failed to reveal evidence of a dominant twin in utero, with one twin initiating the majority of coinciding fetal movements with statistical significance in only three gestations. Examination of combinations of the 30 separate individual significance tests using techniques of meta-analysis demonstrated a p value of 0.81, indicating lack of dominance in any of the 30 pairs of twins. The probability plot, consistent with the large p value for the combination test statistic, suggested that fetal movements in two gestations are related, strengthening the hypothesis of in utero tactile communication between twins. We conclude that the existence of a "dominant twin" in utero cannot be detected by electronic FHR monitoring methods.

Sherman SJ, Kovacs BW, Medearis AL, Bear MB, Paul RH: Nonstress test assessment of twins.
J Reprod Med 1992 Sep;37(9):804–8
Twin pregnancies have higher perinatal morbidity and mortality rates than singleton pregnancies. Researchers have demonstrated that one major benefit of prenatal care in the twin gestation is reduced fetal death rate. This study to determine the relationship of nonstress tests (NSTs) to pregnancy outcome in twin gestations comprised 665 women who delivered at Los Angeles County–University of Southern California Women's Hospital from January 1985 to January 1989. These patients, all of whom had prenatal care (PNC), were subdivided into two groups: (1) PNC and NSTs and (2) PNC and no NSTs. The groups did not differ statistically with regard to gravidity, parity and abortions. NSTs were selectively done on twin gestations complicated by discordancy or other fetal/maternal complications. Ten pregnancies were complicated by fetal demise of one or both twins in patients who received prenatal care without NSTs. Among the NST group there was one fetal demise. Although the NST group had fewer fetal deaths, the reduction was not statistically significant ($P = .062$). Infant birth weight was identified as a confounder because the NST group had a statistically higher mean birth weight. Definitive proof of the ability of NSTs to reduce the fetal death rate in twin gestations complicated by discordancy or other pregnancy complications awaits a large, prospective, randomized trial.

Shimizu T, Gaudette S, Nimrod C: Transverse cerebellar diameter in twin gestations.
Am J Obstet Gynecol 1992 Oct;167(4 Pt 1):1004–8
OBJECTIVE: The purpose of this study was to evaluate the significance of transverse cerebellar diameter measurements in twin pregnancies. STUDY DESIGN: A prospective, cross-sectional ultrasonographic study was done on 329 normal singleton fetuses and 47 normal twin pairs. Fetal biometric measurements including biparietal diameter, head circumference, abdominal circumference, femur length, and transverse cerebellar diameter were compared between concordant ($n = 13$) and discordant ($n = 11$) twins. RESULTS: (1) There was no significant difference in transverse cerebellar diameter measurements between normal singleton and twin gestations. (2) There was no significant difference in transverse cerebellar diameter measurements in each twin pair.

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(3) Transverse cerebellar diameter was unaffected by the chorionicity or discordancy. (4) Predicted gestational age by transverse cerebellar diameter nomogram for singletons provided satisfactory correlation for twins. CONCLUSION: Transverse cerebellar diameter may be a useful predictor of gestational age and may be independent of discordant growth in twins.

Shohat M, Livneh A, Zemer D, Pras M, Sohar E: Twin studies in familial Mediterranean fever.
Am J Med Genet 1992 Sep 15;44(2):179–82
Familial Mediterranean fever (FMF) is a genetic disease characterized by recurrent short episodes of fever, accompanied by peritonitis, pleuritis, or arthritis. The disease is almost completely ethnically restricted to patients of Mediterranean descent--Sephardic Jews, Armenians, Anatolian Turks, and Arabs. Although many family studies have been performed, no twin study has been reported as yet. We studied 21 di- and monozygotic twin sets, identified among the 1,943 FMF patients in our registry. Full concordance was observed in all the 10 monozygotic twin sets. In the 11 dizygotic twins, concordance for FMF disease was found in only 3 pairs. Variability in the clinical manifestations and degree of severity have been noted within twins. These findings provide definitive evidence for the genetic cause of FMF. They also support the single gene autosomal recessive model, and provide support for the contention that the lower observed than expected incidence found in FMF is due to genetically affected but clinically undiagnosed patients.

Siegel MJ see **Herman TE**

Siegel R see **Schwartz DA**

Signorile G see **Orecchia L**

Silberg JL see **Gau JS**

Sillence D see **Kozlowski K**

Simoes EA, King SJ, Lehr MV, Groothuis JR: Preterm twins and triplets. A high-risk group for severe respiratory syncytial virus infection.
Am J Dis Child 1993 Mar;147(3):303–6
OBJECTIVE--To assess the impact of multiple births and crowded homes on the severity of respiratory syncytial virus illness in preterm infants with bronchopulmonary dysplasia. RESEARCH DESIGN--Retrospective case-control chart review from a prospective longitudinal respiratory illness study. SETTING--Neonatal High-Risk Follow-Up Clinic (outpatient setting) and tertiary care hospitals (inpatient setting). PARTICIPANTS--Fourteen sets of twins and two sets of triplets followed up between 1983 and 1989 and matched with 34 singleton infants for date of birth (within 3 months) and gestational age (within 1 month). MEASUREMENTS/MAIN RESULTS--The risk of developing respiratory syncytial virus illness was significantly higher in multiple-birth infants than in singletons (53% vs 24%; P = .01). Multiple-birth infants were also at greater risk for developing pneumonia (24% vs 6%; P = .05) and requiring hospitalization (32% vs 18%; P = .05) than were singletons. Additional risk factors for developing pneumonia and bronchiolitis were examined in all 68 children. Multiple birth (P = .05), gestational age of less than 30 weeks (P = .02), and crowded homes (defined as more than one person living in 19 m2 of living space [P = .002] or more than one child living in 22 m2 of living space [P = .004]) were additional risk factors for developing pneumonia.
CONCLUSION--Multiple-birth preterm infants are at a higher risk of developing pneumonia than are singletons. Additional risk factors for developing pneumonia in preterm infants with bronchopulmonary dysplasia include gestational age of less than 30 weeks and crowded homes. At-risk infants with any of these risk factors should be targeted for prophylactic and therapeutic interventions against respiratory syncytial virus.

Simonoff E: A comparison of twins and singletons with child psychiatric disorders: an Item Sheet study.
J Child Psychol Psychiatry 1992 Nov;33(8):1319–32
An important assumption underlying the twin method of comparing MZ and DZ twins is that results from twin samples can be generalized to the larger singleton population. This study uses Item Sheet data on child psychiatric patients to compare twins and singletons on demographic, diagnostic and symptomatic variables. Although little difference was found between the two groups, conduct disorders were significantly over-represented in the twin population. The significance of this finding is discussed. This study lends overall support for the use of the twin method in child psychiatric samples.

Simpson RK Jr, Goodman JC, George RE, Laurent JP, Cheek WR: Scalp hamartoma in identical twins.
Pediatr Neurosurg 1993 Mar-Apr;19(2):89–92
Identical twin male infants had scalp hamartomas removed from the occipital region. The histologic features and genetic implications of these unusual lesions are discussed.

Sirignano A see **Kempton JB**

Sitaram N see **Joseph KC**

Skład M, Piotrowski J: [Skeletal development in monozygotic and dizygotic twins]
Z Morphol Anthropol 1992 Nov;79(2):129–55 (Eng. Abstr.) **(Ger)**
The maturation and development of 27 monozygotic and 23 dizygotic twins were studied over a 10 year period with data collected at one year intervals from age 9 to adulthood. In this manner the ossification process was recorded based on X-ray films of the carpal bones. Further information was acquired through anthropometric and somatoscopic data reproduced with standard photography. Sex and phase specific genetic factors influencing the maturation process are presented and analysed.

Skopec GS see **Rouse DJ**

Small GW, Leuchter AF, Mandelkern MA, La Rue A, Okonek A, Lufkin RB, Jarvik LF, Matsuyama SS, Bondareff W: Clinical, neuroimaging, and environmental risk differences in monozygotic female twins appearing discordant for dementia of the Alzheimer type. Arch Neurol 1993 Feb; 50(2):209–19
OBJECTIVE--The study of monozygotic twins can elucidate possible environmental causes for a disease in genetically identical subjects. To this end, we studied a pair of monozygotic female twins appearing discordant for dementia of the Alzheimer type (DAT). DESIGN--Clinical and neuroimaging findings were compared in terms of potential environmental risk factors. SETTING--University referral center. PARTICIPANTS--An 81-year-old female monozygotic twin pair. OUTCOME MEASURES--Clinical assessments, standardized rating scales, and brain imaging studies, including magnetic resonance imaging, positron emission tomography, and electroencephalography, were performed. Neuropsychological tests were performed initially and after 1 year.
RESULTS--Although DAT was confirmed clinically in only one twin, neuropsychological and brain imaging studies suggested that the unaffected twin may be developing the prodrome of DAT. The twins' varied life histories suggest that environmental

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risk factors may contribute to apparent discordance for DAT and possible delay in disease onset for the currently nondemented twin.
CONCLUSIONS--These results suggest that both genetic and nongenetic factors influence disease onset and expression. Moreover, review of previous reports of monozygotic twin pairs concordant or discordant for Alzheimer's disease, with adequate family history data, suggest a pattern indicating interactions among age at dementia onset, sex, and familiarity. Such patterns point to hypotheses regarding neurobiologically meaningful Alzheimer's disease subgroups.

Socol ML see **Peaceman AM**
Sohar E see **Shohat M**
Solaas MH see **Corey LA**
Sondheimer SJ see **Jackson GM**
Sonoda T see **Itokazu N**
Soper RT see **Harris GJ**
Spence GT see **Williams J**

Spencer R: Conjoined twins: theoretical embryologic basis. Teratology 1992 Jun;45(6):591-602 (25 ref.)
A theoretical basis for the embryology of conjoined twins was formulated from clinical experience with ten cases and extensive review of pertinent embryologic and clinical literature, including over 500 cases. Regarding the age old question of fusion or fission, it is concluded that there is no known embryologic process by which conjoined twins can be formed by fission but firm evidence to support fusion in all cases. Whether the fusion occurs between embryos on one embryonic disc or on two is of no consequence since they are all monovular. Intact ectoderm will not fuse to intact ectoderm, and all seven types of conjoined twins are explained by seven possible sites of union in the early embryo. One new term is proposed: parapagus, from the Greek para, meaning "side," combined with pagus, meaning "fixed"; this is the group formerly called dicephalus or diprosopos. These anterolaterally united parapagus twins must result from two nearly parallel notochords in close proximity; craniopagi and pygopagi from fusion at the cranial and caudal neuropores, respectively; cephalopagi and ischiopagi from union at the pharyngeal and cloacal membranes, respectively; thoracopagi from merging of the cardiac anlage; and omphalopagi from fusion of the umbilicus or of the edges of two embryonic discs in any area not including the above sites. Parasitic twins result from embryonic death of one twin, leaving various portions of the body vascularized by the surviving autosite. The rarity of cases (2) not easily explained by the above theories, and the nearly 6% of twins with two umbilical cords arising from the placenta would seem to support these conclusions. Should one wish to learn the methods of a conjurer, he might vainly watch the latter's customary repertoire, and, so long as everything went smoothly, might never obtain a clue to the mysterious performance, baffled by the precision of the manipulations and the complexity of the apparatus; if, however, a single error were made in any part or if a single deviation from the customary method should force the manipulator along an unaccustomed path, it would give the investigator an opportunity to obtain a part or the whole of the secret.(ABSTRACT TRUNCATED AT 400 WORDS)

Spigos DG see **Mohazab HR**

Spinillo A, Stronati M, Ometto A, Fazzi E, de Seta F, Iasci A: The influence of presentation and method of delivery on neonatal mortality and infant neurodevelopmental outcome in nondiscordant low-birthweight (< 2500 g) twin gestations. Eur J Obstet Gynecol Reprod Biol 1992 Dec 28; 47(3):189-94
The effects of birth order, presentation and method of delivery on neonatal mortality and neurodevelopmental outcome in nondiscordant low birthweight (< 2500 g) twin gestations were evaluated. Sixty-four sets of twins were included in the study; 29 sets were in vertex/vertex presentation (Group I), 25 sets in vertex/breech (Group II) and in 10 pregnancies the first twin was nonvertex (Group III). The rate of favorable neonatal outcome (survival and normal neurodevelopmental outcome after a 2-year follow-up) was lower in pregnancies in which at least one twin was in nonvertex presentation (50/70 vs. 52/58 P = 0.02). However, after adjustment by multiple logistic regression analysis for the effects of gestational age, birthweight, birth order and educational level of the mother, this difference was not statistically significant (odds ratio = 0.6; 95% confidence interval 0.44 to 5.9; P = 0.5). In pregnancies in which at least one of the twins was in nonvertex presentation, delivery by cesarean section did not affect the rate of favorable neonatal outcome (odds ratio = 1.8; 95% confidence interval 0.48 to 12.9; P = 0.8). The results of this study suggest that in low birthweight twin gestations, method of delivery in relation to fetal presentation has little or no effect on neonatal mortality and subsequent neonatal neurodevelopmental outcome.

Spornraft P see **Mayser P**
Squadrone NP see **Parisi G**
Stanier P see **Bennett P**
Stefos T see **Deter RL**
Steinhauer SR see **Condray R**
Stella V see **Cristalli B**
Stengård J see **Kaprio J**
Sterzik K see **Grab D**

Stevenson J, Batten N, Cherner M: Fears and fearfulness in children and adolescents: a genetic analysis of twin data. J Child Psychol Psychiatry 1992 Sep;33(6):977-85
A sample of 175 same sex dizygotic pairs and 144 monozygotic twin pairs aged between 8:00 and 18:00 completed the Fear Survey Schedule for Children--Revised. The heritabilities were significant for Fear of the Unknown (h2 = 0.46, p less than 0.001), Fear of Injury and Small Animals (h2 = 0.46, p less than 0.001), Fear of Danger (h2 = 0.34, p less than 0.001) and for Total Fear Score (h2 = 0.29, p less than 0.001). Multiple regression was used to estimate the heritability of extreme fearfulness (h2g). For each of the fear factors the values of h2g were of similar magnitude to those of h2 suggesting that there is no evidence of greater genetic influences at more extreme levels of fearfulness.

Stewart DL see **Robinson TW**
Stocks J see **Thorn JA**
Stolero E see **Oettinger M**
Stoll P see **Fischer J**
Storvick D see **Tawil R**

Stovner LJ: Headache and Chiari type I malformation: occurrence in female monozygotic twins and first-degree relatives. Cephalalgia 1992 Oct; 12(5):304-7; discussion 268
The Chiari type I malformation has recently been reported in three generations of a family, including female monozygotic twins. Headache was the main symptom in several family members. Various headache patterns consistent with migraine without aura, cough headache, tension headache and

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hypoliquorrhoeic headache were present, and different patterns might coexist in the same patient. In the twins and their mother, who all had a headache consistent with migraine without aura, there were atypical features such as occipital pain location, lack of side-shift of the pain, lack of ergotamine effect and precipitation of attacks by Valsalva-like manoeuvres. The headache was significantly relieved by operation in the one twin with major herniation and the most marked headache. We suggest that in these patients the migraine-like headache mimics true migraine but that there is a causal relationship between the different headache types reported and the malformation.

Stradoni P see **Orecchia L**
Stretton-Downes S see **Nunn JH**
Strom CM see **Ginsberg NA**
Stronati M see **Spinillo A**
Stroufova S see **Mardesic T**
Struyk L see **Hawes GE**
Sudo M see **Tsuchida S**
Suehara N see **Nishikuni K**
Surtees RA see **Hyland K**
Svartengren M see **Björkman L**
Svartengren M see **Ericsson CH**

T

Taffel SM: Health and demographic characteristics of twin births: United States, 1988.
Vital Health Stat [21] 1992 Jun;(50):1–17
National trends in twin birth incidence by race of child are analyzed for the period 1950–88. Also reviewed are maternal and infant health and demographic characteristics associated with twin delivery for the year 1988.

Tagami H see **Takematsu H**
Tagawa T see **Nishikuni K**
Takahashi K see **Takematsu H**

Takematsu H, Rokugo M, Takahashi K, Tagami H: Juvenile generalized pustular psoriasis in a pair of monozygotic twins presenting strikingly similar clinical courses. Acta Derm Venereol (Stockh) 1992 Nov;72(6):443–4
We describe an exceptionally rare case of juvenile generalized pustular psoriasis noted in monozygotic twins who, after developing the disease on the same day (the 48th day after birth) continued to show strikingly similar clinical features of generalized pustular psoriasis for 7 years. Not even therapeutic intervention by tonsillectomy performed at age 4 years on one of the twins, which was expected to have some beneficial effect, could decrease the number of attacks or pustulation compared with the counterpart.

Takeshita T, Yamagata Z, Iijima S, Nakamura T, Ouchi Y, Orimo H, Asaka A: Genetic and environmental factors of bone mineral density indicated in Japanese twins. Gerontology 1992;38 Suppl 1:43–9
To evaluate the effects of genetic and environmental factors on the bone mass, we determined the bone mineral density (BMD) in the total body, the lumbar spine and in the femoral neck in 23 Japanese twin pairs including 21 monozygotic (MZ) pairs, applying dual-energy X-ray absorptiometry. In MZ pairs aged 20–49 years, highly significant intraclass correlation coefficients, ranging from 0.775 to 0.926, were observed at several sites, including the lumbar spine and the femoral neck, which suggests considerable contributions of genetic factors to the BMD. Neither intraclass correlation coefficients nor intrapair differences were found to change with increasing age in the present analysis. In female MZ pairs, exercises both at the present time and in the past were correlated with the BMD at several sites as well as body mass index in multiple regression analyses.

Tamura RK see **Peaceman AM**
Tanada S see **Adachi N**
Taniguchi A see **Kohsaka H**
Tassanawipas A see **Laplaza FJ**

Tawil R, Storvick D, Feasby TE, Weiffenbach B, Griggs RC: Extreme variability of expression in monozygotic twins with FSH muscular dystrophy. Neurology 1993 Feb;43(2):345–8
We describe monozygotic twins who are either discordant or show extreme variability in the expression of facioscapulohumeral muscular dystrophy (FSHD). One twin was severely incapacitated by FSHD. The asymptomatic twin demonstrated equivocal facial weakness on physical examination, but no difference on quantitative myometry when compared with normal controls. High-resolution cytogenetic analysis showed no chromosomal abnormalities. Five polymorphic 4q35 markers known to be linked to FSHD showed identical RFLP patterns, indicating that submicroscopic chromosomal rearrangement is unlikely. We conclude that this set of twins represents an extreme case of variability in the expression of the FSHD gene.

Taylor SN see **Dickey RP**

Teeuw AH, Kok JH: [Complete situs inversus in one half of a monozygotic twin]
Tijdschr Kindergeneeskd 1992 Jun;60(3):67–9 (Eng. Abstr.) **(Dut)**
The history of a monochorial monoamniotic twin, born at 27 weeks of gestation, in which a situs inversus was present in one of the twin is given. The incidence of a situs inversus in twins and the etiologic factors as described in literature are given.

Teikari JM, Airaksinen JP: Twin study on cup/disc ratio of the optic nerve head. Br J Ophthalmol 1992 Apr;76(4):218–20
Seventeen healthy twin pairs (10 monozygotic and seven dizygotic) from the Finnish Twin Cohort Study were examined to study the impact of heredity v environment in the determination of cup-to-disc area ratio. These twins were free from any known eye disease. The cup/disc ratio was determined using stereo photography and a computer assisted analysis technique. The zygosity of all twin pairs was confirmed with the DNA 'fingerprint' technique. The intrapair correlations were high among monozygotic pairs compared with those among dizygotic twin pairs. The difference of cup/disc area ratios between the right eyes of members of monozygotic twin pairs was statistically significantly smaller than that of dizygotic twin pairs ($p < 0.001$). The same was true for left eyes ($p < 0.01$). This result confirms a genetic determination in cup/disc area ratio in normal eyes.

Tellegen A see **Lykken DT**
Terada S see **Uchide K**
Terinde R see **Grab D**
Tettamanti G see **Goi G**
Thompson LA see **Lewis BA**

Thorn JA, Stocks J, Reichl D, Alcolado JC, Chamberlain JC, Galton D: Variability of plasma apolipoprotein (apo) A-II levels associated with an apo A-II gene polymorphism in monozygotic twin pairs. Biochim Biophys Acta 1993 Jan 22; 1180(3):299–303
A dimorphic MspI RFLP (alleles M1 and M2) in

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an Alu unit 528 base pairs downstream from the apolipoprotein A-II gene on chromosome 1 was investigated for associations with dyslipoproteinaemia or coronary atherosclerosis. No significant differences were observed between the allele frequencies in healthy random controls (M2 = 0.850, n = 70) and patients with primary hypertriglyceridaemia (M2 = 0.846, n = 52) or severe coronary atherosclerosis (M2 = 0.819, n = 47). The apolipoprotein A-II gene may also contribute to the regulation of plasma levels or composition of HDL in response to environmental changes. To study the effect upon apolipoprotein A-II variability, 42 monozygotic twin pairs were genotyped for the MspI RFLP. Pairs with the genotype M2M2 (n = 28) had significantly smaller within-pair differences in plasma apolipoprotein A-II levels (2.2 vs 5.8 mg/dl, $P < 0.02$; Mann-Whitney) than those with other genotypes (n = 14). The M2 allele may be in linkage disequilibrium with a functional mutation that restricts the variability of plasma apolipoprotein A-II in response to environmental conditions. This provides a new example of a 'variability' gene, one of an important group of loci which may alter responses to hypolipidaemic therapy and cardiovascular risk.

Timor-Tritsch IE, Peisner DB, Monteagudo A, Lerner JP, Sharma S: Multifetal pregnancy reduction by transvaginal puncture: evaluation of the technique used in 134 cases. Am J Obstet Gynecol 1993 Mar; 168(3 Pt 1):799-804

OBJECTIVE: This report reviews multifetal pregnancy reductions performed transvaginally and tests the feasibility and associated pregnancy loss rates with this technique. STUDY DESIGN: One hundred thirty-four consecutive multifetal pregnancy reductions were analyzed regarding different aspects of total pregnancy losses and complications. The first 40 manually performed were compared with the last 94 procedures performed with an automated puncture device and a thin needle. The losses were also analyzed as a comparison of the reduction of the lower-lying with the higher-lying fetuses located in relation to the internal os. RESULTS: A total uncorrected total pregnancy loss rate of 12.6% and a corrected loss rate of 10.6% was observed. Of the 112 pregnancies in which the lower-lying fetus was reduced, 11 losses were seen. The loss rate in the group reducing the upper fetus was three of 22. The manual versus the puncture device groups showed the same loss rate (10%); however, the manual group had a larger number of subchorionic hematomas after the procedure. CONCLUSIONS: The data are indicative of a very low maternal complication rate (infection) and an acceptable loss rate of the entire pregnancy. The loss rates compare favorable with those for multifetal pregnancy reduction performed transabdominally.

Torrey EF see **Berman KF**

Toutain A see **Gold F**

Treloar SA, Martin NG, Dennerstein L, Raphael B, Heath AC: Pathways to hysterectomy: insights from longitudinal twin research. Am J Obstet Gynecol 1992 Jul;167(1):82-8

OBJECTIVE: We hypothesized that genetic influences act on "liability" to hysterectomy, that secular influences might differentially affect relative importance of genetic and environmental influences, and that the sources of genetic influences could be identified from reported risk factors. STUDY DESIGN: Hysterectomy data from an Australia-wide volunteer sample of female adult monozygotic and dizygotic twins are reported. In 1980 through 1982 a mailed questionnaire was completed by 1232 monozygotic female twin pairs and 751 dizygotic female twin pairs (3966 women) from the Australian Twin Register (wave 1). The same twins were surveyed by questionnaire 8 years later (wave 2). RESULTS: A total of 366 had undergone hysterectomy by wave 1 and a further 198 at wave 2. The twin-pair correlations for liability to hysterectomy at wave 1 (0.61 +/- 0.06 for monozygotic and 0.20 +/- 0.11 for dizygotic) and wave 2 (0.65 +/- 0.05 for monozygotic and 0.32 +/- 0.09 for monozygotic) indicated a substantial genetic contribution. Reported risk factors accounted for only 15% of total variance. CONCLUSION: Genetic influences on liability to hysterectomy were substantial and stable across birth cohorts, but the important sources of genetic influence on liability to hysterectomy are yet to be identified.

Trichopoulos D see **Hsieh CC**

True W see **Ramakrishnan V**

Tsuang MT see **Ramakrishnan V**

Tsuchida S, Kaji M, Nakata Y, Noguchi C, Miura T, Sudo M: Case report of an insulin-dependent diabetes multiplex family with a pair of identical twins. Acta Paediatr Jpn 1992 Oct;34(5):554-7

The following is a case of a family with a pair of identical twins and a family history of insulin-dependent diabetes mellitus (IDDM). A 2 year old identical twin was first admitted to our hospital and diagnosed as IDDM based on diabetic ketoacidosis. His father has been treated with insulin since the diagnosis of IDDM at the age of 17. All family members had the HLA-DR4 and DQA1*0301 alleles, which are strongly associated with IDDM. The DR-DQ haplotypes of the father and both twins were DR4-DQW8 (DQB1*0302), which increases susceptibility to IDDM. Islet cell antibodies were positive only in the index twin at the time of diagnosis. The co-twin was considered to have beta-cell dysfunction based on the result of an intravenous glucose tolerance test.

Tsukahara M see **Uchida M**

Tuomilehto J see **Kaprio J**

Tysk C see **Helgeland L**

U

Uchida M, Tsukahara M, Fuji T, Fujihara T, Ueki K, Kajii T: Discordance for anomalous pancreaticobiliary ductal junction and congenital biliary dilatation in a set of monozygotic twins. J Pediatr Surg 1992 Dec;27(12):1563-4

A pair of monozygotic twins, 2-year-old Japanese girls, discordant for both anomalous pancreaticobiliary ductal junction and congenital biliary dilatation, are reported. The pathogenesis of the disease is discussed in relation to the occurrence of discordant monozygotic twins.

Uchide K, Terada S, Akasofu K, Higashi S: Cerebral arteriovenous malformations in a pregnancy with twins: case report. Neurosurgery 1992 Oct; 31(4):780-2; discussion 782

The natural course of cerebral arteriovenous malformations during pregnancy is not well known. An inoperable cerebral arteriovenous malformation was diagnosed by angiography, computed tomography, and magnetic resonance imaging before pregnancy and followed by magnetic resonance imaging during pregnancy. No significant changes

AUTHOR SECTION

were detected in the size of the cerebral arteriovenous malformation during pregnancy, and healthy twins were born by cesarean section.

Ueki K see **Uchida M**

Utermann G see **Austin MA**

V

Vaiser A, Jost BF: Bilateral inferotemporal dialysis in identical twins. Ann Ophthalmol 1992 Oct; 24(10):378–80

Retinal detachment associated with inferotemporal dialysis comprises approximately 10% of all retinal detachments. We describe the cases of two patients with bilateral inferotemporal dialyses who were identical twins. This finding suggests that genetic factors play a role in some cases of inferotemporal dialysis. One of the twins was asymptomatic, stressing the importance of examining other family members of patients with nontraumatic retinal dialysis. We believe that the cause of inferotemporal dialysis is multifactorial and there is a definite subpopulation in which a genetic predisposition is present.

van Aalderen WM see **Mannes GP**

Van Cauter E see **Linkowski P**

Van Cauwenberghe N see **Lauweryns I**

van den Elsen PJ see **Hawes GE**

Vandenberg SG see **Allen G**

van der Heide S see **Mannes GP**

van Eijck J see **de Jong MW**

van Kammen DP see **Condray R**

van Lingen RA see **de Jong MW**

Van Onderbergen A see **Linkowski P**

van Steenberghe D see **Lauweryns I**

Vaughan J see **Bennett P**

Veille JC see **Greig PC**

Verlinsky Y see **Ginsberg NA**

Viala JL see **Boulot P**

Villa A see **De Leo D**

Villadsen GE see **Brink Henriksen T**

Vintzileos AM see **Lettieri L**

Vlietinck R see **Lauweryns I**

W

Wadhera S see **Millar WJ**

Wakayama A see **Nishikuni K**

Walker DJ see **Deighton CM**

Walker LK, Wetzel RC, Haller JA Jr: Extracorporeal membrane oxygenation for perioperative support during congenital tracheal stenosis repair. Anesth Analg 1992 Nov;75(5):825–9

Walker M: Breastfeeding quadruplets [letter] J Obstet Gynecol Neonatal Nurs 1993 Jan–Feb; 22(1):15

Wall S see **Högberg U**

Wapner RJ see **Kurtz AB**

Wappner RS see **Gibson KM**

Warwick MM see **Wein P**

Wasserstrum N see **Mari G**

Watson MJ see **Deighton CM**

Webb M see **Winchester B**

Webb MG see **Cryan EM**

Weiffenbach B see **Tawil R**

Wein P, Warwick MM, Beischer NA: Gestational diabetes in twin pregnancy: prevalence and long-term implications.

Aust N Z J Obstet Gynaecol 1992 Nov;32(4):325–7

During the period 1971–1991 at the Mercy Hospital for Women, gestational diabetes (GDM) was diagnosed in 3,447 of 61,914 tested singleton pregnancies (5.6%) and 59 of 798 tested twin pregnancies (7.4%, p = 0.025). A difference was apparent in the period 1971–1980, when the prevalences of GDM in singleton and twin pregnancies were 3.0% and 5.6% respectively (p = 0.012), but not in the period 1981–1991 when the corresponding prevalences were 7.4% and 8.4% (p = 0.36). Of the 59 patients in whom a diagnosis of GDM in a twin pregnancy was made, 27 attended the follow-up programme. These patients were matched to a control group of 27 patients who had GDM in a singleton pregnancy with similar characteristics for known risk factors for the development of permanent diabetes mellitus. On WHO criteria diabetes mellitus occurred in 5 (18.5%) of the subjects and 2 (7.4%) of the controls (p = 0.21). The difference in prevalence of GDM in twin and singleton pregnancies is less now that the overall prevalence of the disease has more than doubled (1971–1980 versus 1981–1991). Although the increased rate of permanent diabetes mellitus after twin pregnancy is not statistically significant, it would seem wise to make a special effort to enroll these women in the follow-up programme.

Weinberger DR see **Berman KF**

Weinstein A see **Nasca PC**

Weiss RM see **Check JH**

Welbury RR see **Nunn JH**

Welch R see **Lemke RP**

Welsh KA see **Breitner JC**

Wenk RE, Houtz T, Brooks M, Chiafari FA: How frequent is heteropaternal superfecundation?

Acta Genet Med Gemellol (Roma) 1992;41(1):43–7 (13 ref.)

A newly discovered case of heteropaternal superfecundation (HS) is reported. Three HS cases were found in a parentage test database of 39,000 records. The frequency of HS among dizygotic twins whose parents were involved in paternity suits is 2.4%. Although the study population appears similar to the general population with respect to twinning data, inferences about the frequency of HS in other populations should be drawn with caution.

Wenzl R, Schurz B, Amann G, Eppel W, Schön HJ, Reinold E: [Diagnosis of cephalothoracopagus--a case report] Ultraschall Med 1992 Aug;13(4):199–201 (Eng. Abstr.) **(Ger)**

Cephalothoracopagus twins were diagnosed at 22 weeks' gestation, hence this case was diagnosed early enough antenatally to allow vaginal pregnancy termination. This case underlines the need for exact ultrasound screening during early pregnancy.

Wetzel RC see **Walker LK**

Wilcox A see **Buekens P**

Wildschut J see **de Jong MW**

Williams CJ, Christian JC: Plots for examination of univariate twin data. Comput Biomed Res 1992 Dec; 25(6):527–37

We discuss informative plots for univariate twin data that can be used in conjunction with twin data analyses. The plots are useful for spotting outliers, spotting possible single gene effects, and displaying the contribution of individual twin pairs to the fit of genetic models of the data. We illustrate the use of the plots on bone mineral data, and present programs for generating the plots in SAS.

Williams CJ, Christian JC, Norton JA Jr: TWINAN90: a FORTRAN program for conducting ANOVA-based and likelihood-based analyses of twin data. Comput Methods Programs Biomed 1992 Jul;38(2-3):167–76

We discuss the program, TWINAN90, which can perform several different types of analysis of twin

AUTHOR SECTION

data. TWINAN90 incorporates the ANOVA-based twin analyses from the TWINAN twin analysis program, and also includes maximum likelihood estimation of parameters from three path models. Another feature of TWINAN90 is the optional output of a pedigree file which can be read by the quantitative genetics package FISHER. The diagnostic features of the program make TWINAN90 useful also for preliminary analyses prior to the use of more sophisticated modeling procedures which are available in packages such as LISREL and FISHER. An annotated printout from TWINAN90 is presented to illustrate the statistical analyses performed in the program.

Williams CS, Buss KA, Eskenazi B: Infant resuscitation is associated with an increased risk of left-handedness. Am J Epidemiol 1992 Aug 1; 136(3):277-86

The etiology of left lateral preference is not well understood, but some studies have suggested that it can be caused by complications at birth. The authors used data from the Child Health and Development Study, a large prospective study of pregnancy and child development conducted 1959-1966 in the San Francisco Bay Area of California, to examine the association between specific birth stressors and hand and foot preference. The study population consisted of 6,968 5-year-olds with no severe congenital abnormalities, and the authors controlled for potential demographic confounders and familial left-handedness. Infants who required resuscitation after delivery or who were twins or triplets were about twice as likely to demonstrate left hand preference at age 5 years (odds ratio (OR) = 1.8, 95% confidence interval (CI) 1.3-2.5, and OR = 2.2, 95% CI 1.2-4.0, respectively). Left-footedness was also significantly associated with the same stressors. No other individual stresses were significantly associated with left-lateral preference, and a composite measure indicated only a weak association. Although males, blacks, and those with left-handed siblings are more likely to show left lateral preference, these variables do not confound the association between birth stress and left lateral preference. These results indicate that specific types of birth stress are strongly associated with left hand and foot preference; however, much of the left laterality in non-clinical populations remains unexplained.

Williams J, Berry DH, Caldwell D, Zolten AJ, Spence GT: A comparison of neuropsychological and psychosocial functioning after prophylactic treatment for childhood leukemia in monozygotic twins. Am J Pediatr Hematol Oncol 1992 Nov; 14(4):289-96

Outcome findings based on a comprehensive battery of neuropsychological and psychosocial measurements were compared for a set of monozygotic twins. One twin had been diagnosed with acute lymphoblastic leukemia and given prophylactic treatment involving intrathecal methotrexate. Her twin sibling, who developed no signs of the disease, served as a unique control. Remarkably similar profiles were noted for the twins on tests of nonverbal intelligence, visual memory, visual attention, psychomotor speed, and mental flexibility. All performances were in the average to high average range. Significant differences were found on tasks measuring verbal abstract reasoning skills. These differences were postulated to result from prophylactic treatment, leukemia itself, or disruption in normal psychosocial development. As in previous studies, problems with auditory attention were found. However, both children displayed attentional difficulties regardless of treatment status. Emotional assessment indicated that both twins were experiencing a clinically significant level of anxiety that was postulated to play a role in reduced attention skills. Findings argue for the continued need for monitoring the neuropsychological functioning of children given prophylactic treatment and demonstrate the importance of measuring emotional factors in assessment with these children.

Williams N see **Winchester B**

Williams R: Living retained second twin 6 days after first [letter; comment] Trop Doct 1992 Oct;22(4):176

Willital GH see **Schaarschmidt K**

Winchester B, Young E, Geddes S, Genet S, Hurst J, Middleton-Price H, Williams N, Webb M, Habel A, Malcolm S: Female twin with Hunter disease due to nonrandom inactivation of the X-chromosome: a consequence of twinning. Am J Med Genet 1992 Dec 1;44(6):834-8 (24 ref.)

We report the occurrence of Hunter disease (mucopolysaccharidosis type II) in a karyotypically normal girl who was one of identical twins. Molecular studies showed nonrandom X-inactivation in both her fibroblasts and lymphocytes, while her normal twin showed equal usage of both X chromosomes. In view of previous reports of 7 pairs of identical female twins in which one had Duchenne muscular dystrophy, it seems that twinning may be strongly associated with nonrandom X-inactivation, and is not specific to the properties of the disease causing gene.

Winn HN, Romero R, Roberts A, Liu H, Hobbins JC: Comparison of fetal lung maturation in preterm singleton and twin pregnancies. Am J Perinatol 1992 Sep-Nov;9(5-6):326-8

Preterm labor or premature rupture of membranes is one of the major complications of twin pregnancies and contributes to the increased maternal and perinatal morbidity and mortality. Forty-seven twin pregnancies and a comparable group of singleton pregnancies constitute the study population. These patients' pregnancies were complicated only by preterm labor. The lecithin to sphingomyelin ratio is used as an index of fetal lung maturation. Analysis of the data reveals that fetal lung maturation is biochemically comparable between twin and singleton pregnancies and among twins for a given gestational age in this clinical setting.

Winthrop AL see **Langer JC**

Wolf EJ see **Lettieri L**

Woods JR Jr see **Sherer DM**

Work BA Jr see **Engstrom JL**

Wüst S see **Kirschbaum C**

Y

Yamagata Z see **Takeshita T**

Yang ST, Leow SW: Intracranial fetus-in-fetu: CT diagnosis. AJNR Am J Neuroradiol 1992 Sep-Oct; 13(5):1326-9

The authors present a case of fetus-in-fetu in which the CT findings are compatible with an earlier description by Nocera et al., i.e., a "round or tubular collection of very low density fat surrounding a central bony structure (probably one of the legs)." Additionally, sonography showed a heterogeneous mass with limb-like structures in the left lateral ventricle. Plain films can confirm the presence of a vertebral column and identify specific bony structures, but CT is a valuable aid in cases where plain films were not obtained or are inconclusive.

AUTHOR SECTION

Yang YS see **Chen SU**
Yaron Y see **Yovel I**
Yassine B see **Lajarrige C**
Yates PJ see **Kempton JB**
Yohkaichiya T see **Norman RJ**
Youlton R see **Daher V**
Young E see **Winchester B**
Yovel I, Yaron Y, Amit A, Botchan A, David MP, Peyser MR, Lessing JB: Embryo reduction in multifetal pregnancies using saline injection: comparison between the transvaginal and the transabdominal approach. Hum Reprod 1992 Sep; 7(8):1173–5
A total of 30 patients with multifetal pregnancies, all resulting from treatment with superovulatory agents or assisted reproductive techniques, underwent embryo reduction. All patients had three or more fetuses (one sextuplet, two quintuplets, seven quadruplets and 20 triplets). The procedure was carried out using intra-embryonal injection of 0.9% sodium chloride solution. Embryo reduction was carried out via the transabdominal approach in 10 patients, performed at 11–12 weeks of gestation, and via the transvaginal route in 20 other patients, at 8–10 weeks of gestation. In the transabdominal group, one patient aborted following repeated attempts at embryo reduction while the other nine gave birth to healthy newborns (eight twins and one triplet). In the transvaginal group, four pregnancies are currently ongoing (all beyond 28 weeks of gestation), 14 pregnancies resulted in a delivery of at least one live newborn (13 twins and one singleton), one patient had a late abortion at 24 weeks' gestation and another was delivered at 27 weeks' gestation due to severe pre-eclampsia. Transvaginal ultrasound-guided needle procedures are commonly practised in most in-vitro fertilization units. The employment of this route for embryo reduction, performed at an earlier gestational age and with the use of a non-toxic substance such as 0.9% saline solution, is advocated.

Z

Zacchello F see **Goi G**
Zahálková M: [Growth, weight and physical proportionality in twins] Cesk Pediatr 1992 Aug; 47(8):478–83 (Eng. Abstr.) **(Cze)**
The growth, weight and proportionality of twins aged 1–15 years from the South Moravian Region were studied and compared with a control population. The sample of twins was divided in three groups: identical twins, nonidentical like-sexed twins and boys and girls from the unlike-sexed pairs. No reasonable differences between twins A and B were observed, therefore they are not evaluated separately. All the twins were born in years 1973–1987, the total number was 2,226 boys and 2,302 girls. A comparison with a control population revealed a lower mean height as well as weight of identical twins until the age of 15 years. The mean weight of identical twins was lower than that of nonidentical ones. Similar pattern were observed also in height, the statistical significance was found only in boys and only on a 5% level. Twins from unlike-sexed pairs were more like the control population than twins from unidentical like-sexed pairs, however, the differences in height in girls were not statistically significant. The distribution of proportionality values has shown an accumulation near zero--we can conclude that twins are more proportionate than other children of their age (i.e. less obese and less meagre). As expected, the observed intra-pair differences in identical pairs were significantly lower than in nonidentical like-sexed pairs.
Zahn-Waxler C see **Emde RN**
Zajicek G see **Mordel N**
Zampiron S see **Mutinelli F**
Zanardo V see **Goi G**
Zemer D see **Shohat M**
Zetova L see **Mardesic T**
Zimmerman TR Jr see **Burn DJ**
Zlatnik FJ see **Rouse DJ**
Zneimer SM, Schneider NR, Richards CS: In situ hybridization shows direct evidence of skewed X inactivation in one of monozygotic twin females manifesting Duchenne muscular dystrophy. Am J Med Genet 1993 Mar 1;45(5):601–5
A novel combination of conventional and molecular cytogenetic techniques was used to investigate the expression of an X-linked recessive disorder in one of monozygotic (MZ) twin females. These twins carry a deletion, approximately 300 kb in length, in one of their X chromosomes within the dystrophin gene, which is responsible for Duchenne muscular dystrophy (DMD) in one twin [Richards et al.: Am J Hum Genet 46:672–681, 1990]. A unique DNA fragment generated from an exon within this gene deletion was hybridized in situ to both twins' metaphase chromosomes, a probe which would presumably hybridize only to the normal X chromosome and not to the X chromosome carrying the gene deletion. Chromosomes were identified by reverse-banding (R-banding) and by the addition of 5-bromodeoxyuridine (BrdU) in culture to distinguish early and late replicating X chromosomes, corresponding to active and inactive X chromosomes, respectively. Hybridization experiments showed predominant inactivation of the normal X chromosome in the twin with DMD. This is the first report showing direct evidence at the chromosome level of unequal inactivation of cytogenetically normal X chromosomes resulting in the manifestation of an X-linked recessive disorder in one of monozygotic twin females. This study may now facilitate other research of unequal X inactivation and of females manifesting X-linked recessive disorders.
Zöllner N see **Gathof BS**
Zolten AJ see **Williams J**
Zubin J see **Condray R**

ANONYMOUS

Cesk Gynekol
[Case report of an undetected twin] Cesk Gynekol 1992 Sep;57(7):383–5 **(Cze)**

https://doi.org/10.1017/S0001566000003329 Published online by Cambridge University Press