

respiratory, cardiovascular, and alimentary systems, and fewer malformations of the genitourinary and integumentary systems than singletons.

Concordance rates were significantly higher among MZ twins than among DZ for any malformation, and for the categories of single and minor malformations.

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## ANTE- AND POSTNATAL FACTORS AFFECTING LEUKEMIA IN TWINS

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In our 1971 publication of the "Epidemiologic Study of Leukemia in Twins", several significant trends which may have affected the occurrence of this disease were brought to light. The perinatal-congenital period was the time during which concordance was notably highest. Concordance was observed to diminish in later life.

Prior to July 1971, 71 cases of leukemia in twins were reported in the literature. Since then, approximately 17 more cases have been reported. These reported cases cannot be used to determine incidence and prevalence rates since the actual number of twins afflicted with leukemia worldwide is unknown, as is the number of sets of twins presently living.

Reports published since 1971 strengthen the impression that four basic factors affect concordance of leukemia among twins: (1) exposure to ionizing radiation; (2) chromosomal changes; (3) conjoined intrauterine circulation, and (4) direct metastasis.

The cumulative reports of Alice Stewart strongly suggest that routine antenatal radiation is potentially carcinogenic. Although a minimal harmful dose has not yet been established, in light of the available statistics it seems incumbent upon the obstetrician to use the utmost discretion in deciding which radiographic studies must be performed, continuously bear in mind the more benign alternative of ultrasound. The conjoined intrauterine circulation model in twins dramatically modifies the idea of a placental barrier. By means of tracer substances, leukemic cells have been shown to cross the so-called placental barrier, consequently increasing the plausibility of direct metastasis of leukemic cells from mother to child. Also, a series of vessel-to-vessel anastomoses, existing antenatally, is quite feasible in MZ pairs and is an enticing explanation for the high incidence of concordance among such twins early in life.

We suggest long-term longitudinal follow-up studies be performed in the nonleukemic twin of a discordant pair in order to determine the earliest onset of preclinical disease. The results of such studies could conceivably shed light on the question of environmental or hereditary factors influencing the course of leukemia in twins.

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## 2. Twin Psychology

### THE TWIN CONDITION AND THE COUPLE EFFECTS ON PERSONALITY DEVELOPMENT

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Twin psychology has been studied to a very limited extent. Only few remarkable peculiarities of the twins' development are known for sure, such as delayed intellectual development, language retardation with fre-

quent cryptophasia, difficulties and fragility of self consciousness, reduced sociability. Bachelorhood is much more frequent in adult twins than in the general population. These peculiarities obviously hold true only in the average twin population and characterize MZ much more than DZ twins. They may result from a number of different factors: biological (higher risks in fetal development, prematurity, and therefore hampered further development), peculiar parental attitude, and the twin situation itself. The latter would appear to be the most