

Abstract Selection

Evaluation of ornithine decarboxylase activity as a marker for tumour growth rate in malignant tumours. Westin, T., Edstrom, S., Lundholm, K., Gustafsson, B. Department of Otolaryngology and Head and Neck Surgery, Sahlgrenska Hospital, University of Goteborg, Sweden. *American Journal of Surgery* (1991) Oct, Vol. 162 (4), pp. 288–93.

Ornithine decarboxylase (ODC) is a rate-limiting enzyme in the synthesis of polyamines. Polyamines regulate DNA synthesis by a mechanism that is not fully understood. High levels of polyamines and ODC activity are associated with rapid cell growth, particularly in tumour tissues. The aim of this study was to determine whether ODC activity as a marker for rapid alterations in tumour growth could be used to investigate whether nutritional support in cancer patients stimulates tumour cell proliferation. Weight-losing head and neck cancer patients and tumour-bearing mice (MCG 101, C57/BL) were studied during different feeding regimens. The ODC activity in tumour tissue was investigated in relation to the following variables: (1) histopathologic differentiation; (2) DNA content; and (3) bromodeoxyuridine (BrdUrd) incorporation into DNA. After the animals were starved for 24 hours, a significant reduction of tumour growth was demonstrated in the experimental tumour along with a reduction of ODC activity, an accumulation of cells in the G0G1 phase, and a reduction of cells incorporating BrdUrd into DNA. Refeeding after 24 hours generated a response by all variables. Tumour biopsy specimens from patients with head and neck cancer malignancies demonstrated aneuploidy in the cells of 70 per cent of the patients. High ODC activity in tumour tissue was demonstrated mainly among poorly differentiated tumours, and ODC activity was correlated with the compartment size of aneuploidic cells in the tumour. High ODC activity indicated a poor short-term survival (one year). It was concluded that experimental tumour growth is highly dependent on host feeding. However, there was no evidence supporting the claim that nutritional support to cancer patients stimulates tumour cell proliferation. Determination of ODC activity may be used to monitor rapid changes in DNA synthesis and may have prognostic significance for survival. Author.

Metastatic adenocarcinoma to the neck from an unknown primary source. Lee, N. K., Byers, R. M., Abbruzzese, J. L., Wolf, P. Department of Head and Neck Surgery, University of Texas M.D., Anderson Cancer Center, Houston. *American Journal of Surgery* (1991) Oct, Vol. 162 (4), pp. 306–9.

We report a retrospective review of 223 patients who presented to the Department of Head and Neck Surgery from 1970 through 1987 with a diagnosis of metastatic adenocarcinoma of unknown primary origin. Multivariate analysis was performed using the following parameters: age, sex, initial side and site of nodal involvement, involvement of other body sites, degree of differentiation, treatment modality, outcome, and survival. Follow-up was obtained in all patients, with a minimum of two years for survivors. Average age was 55 years, with an approximately equal male:female ratio. The most common site of presentation was the supraclavicular fossa (76 per cent). The initial side of presentation was the left neck in 53 per cent of patients, right neck in 33 per cent and bilateral in 14 per cent. Metastatic disease to other body sites was present in 86 per cent of patients, with the most common sites being mediastinum (35 per cent), lung (21 per cent), and bones (19 per cent). Increased survival was associated with unilateral neck involvement ($p = 0.001$) and disease limited to nodes above the cricoid cartilage ($p = 0.007$). Mean survival was 17 months, with a median of eight months. Death was due to the index cancer in all but four patients; three of these four patients died of treatment-related causes. Survival was 20 per cent at two years and 9 per cent at five years. Length of survival was not affected by age, sex, initial side of neck disease, location of other metastatic sites, histologic appearance, or treatment modality. Our current algorithm for the work-up and treatment of this lethal disease is explained. Author.

Experience with 998 cutaneous melanomas of the head and neck over 30 years. O'Brien, C. J., Coates, A. S., Petersen-Schaefer, K., Shannon, K., Thompson, J. F., Milton, G. W., McCarthy, W. H. Sydney Melanoma Unit, Royal Prince Alfred Hospital, NSW, Australia. *American Journal of Surgery* (1991) Oct, Vol. 162 (4), pp. 310–4. Between 1960 and 1990, a total of 998 patients were treated at the Sydney Melanoma Unit for cutaneous melanoma of the head and neck. There were 595 male and 403 female patients, with a median age of 53 years. The most common primary lesion site was the face (47 per cent), followed by the neck (29 per cent), scalp (14 per cent), and ear (10 per cent). Histologic types were as follows: superficial spreading 30 per cent, nodular melanoma 28 per cent, lentigo maligna melanoma 16 per cent, and other 26 per cent. All patients underwent surgical treatment. Primary closure of wounds was achieved in 52 per cent of patients, and excision margins were 2 cm or less in 45 per cent. A total of 152 patients had therapeutic neck dissections, and 234 had elective neck dissections. The overall local recurrence rate was 13 per cent, and this was significantly influenced by increasing tumour thickness and Clark level. The recurrence rate in the neck after neck dissection was 24 per cent, and the rate of parotid recurrence was 14 per cent. Melanoma-specific survival was 77 per cent at five years, and 66 per cent at 10 years for the entire group. By univariate analysis, survival varied significantly with age, tumour thickness, ulceration, anatomic subsite, histologically positive nodes, and the presence of distant metastases. A diagnosis of lentigo maligna melanoma and elective lymph node dissection both appeared to improve survival. With multivariate analysis, all of these factors remained significant prognostic factors except elective node dissection, which lost its beneficial influence. Author.

Patterns of regional lymph node metastases from cutaneous melanomas of the head and neck. Shah, J. P., Kraus, D. H., Dubner, S., Sarkar, S. Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, New York. *American Journal of Surgery* (1991) Oct, Vol. 162 (4), pp. 320–3.

A consecutive series of 111 patients treated between 1964 and 1989 with primary cutaneous malignant melanoma of the head and neck and histologically proven regional metastases was reviewed to determine the patterns of nodal metastases. The primary sites were grouped in the following categories: face (34), anterior scalp (25), anterior neck (16), posterior scalp (15), ear (11), and posterior neck (10). All patients underwent radical neck dissection: 80 of the procedures were therapeutic and 31 elective. A total of 106 specimens were positive for metastases. Thirty-three of the 57 patients undergoing parotidectomy had positive results for metastases (14 of 20 in therapeutic parotidectomies and 19 of 37 in elective parotidectomies). Based on the incidence of involvement of the parotid gland and the patterns of lymph node metastases from levels I through V, three observations are made. Patients undergoing regional lymphadenectomy for primary melanomas of the ear, face, and anterior scalp should be considered for parotidectomy. The use of selective limited neck dissection for elective regional lymphadenectomy appears justified based on the location of the primary site. In patients undergoing therapeutic neck dissection, a complete neck dissection should be performed due to the unpredictable distribution of lymph node metastases to the cervical lymph nodes. Author.

Partial laryngectomy for glottic cancer after high-dose radiotherapy. Lavey, R. S., Calcaterra, T. C. Department of Radiation Oncology, University of California, Los Angeles. *American Journal of Surgery* (1991) Oct, Vol. 162 (4), pp. 341–4.

A vertical partial laryngectomy (VPL) for salvage was performed on 25 patients with locally persistent or recurrent squamous cell carcinoma of the vocal cord(s) after high-dose radiotherapy at the UCLA Medical Center between 1969 and 1988. Patients were followed for a minimum of two years and a median of 4.4 years after

VPL. Ninety-six per cent of patients remained free of disease. Tumor was controlled in patients with impaired vocal cord mobility and involvement of the contralateral cord or false cord. The actuarial survival rate was 80 per cent at five years. There were no serious wound healing problems. A permanent tracheostomy was required in one patient due to recurrent aspiration pneumonia. Swallowing and voice function were satisfactory in all other patients. These results indicate that the selection criteria for initial VPL can be applied to the salvage situation with similar success. Author.

Clinical and genetic aspects in autosomal dominant inherited osteogenesis imperfecta type I. Garretsen, T. J., Cremers, C. W. Institute of Otorhinolaryngology, University Hospital Nijmegen, The Netherlands. *Annals of the New York Academy of Sciences* (1991). Vol. 630, pp. 240–8.

In 30 fully investigated family pedigrees in which there were at least two generations of people suffering from osteogenesis imperfecta type I (McKusick no. 16620), the data on 144 random offspring could be used for segregation analysis. The major characteristics, blue sclerae, fractures, and hearing loss, were present in every pedigree. Their penetrance was also calculated. Precise definitions were used in the study. The segregation ratio or observed: expected ratio was 70:72. The incidence of blue sclerae was 70:70 (100 per cent), for fractures 61:70 (87 per cent), and for hearing loss 30:70 (43 per cent). There was a very clear relationship between age and the progression of the hearing loss. Dividing the offspring into two groups depending on whether or not male-to-male inheritance was present and performing segregation and penetrance calculation on these data did not produce any indications that there are two genetically distinguishable subtypes of osteogenesis imperfecta type I. In a smaller group of 107 offspring, calculations could be made on several separate generations. Author.

Hearing impairment in mice with the cmd/cmd (cartilage matrix deficiency) mutant gene. Yoo, T. J., Cho, H., Yamada, Y. Department of Medicine, Microbiology and Immunology, University of Tennessee, Memphis, 38163. *Annals of New York Academy of Sciences* (1991). Vol. 630, pp. 265–7.

Mice homozygous for the autosomal recessive gene cartilage matrix deficiency (cmd) are afflicted with lesions involving cartilaginous tissue which give rise to, among other things, marked hearing loss as evidenced by auditory evoked potentials. Ultrastructural studies of the inner ear reveal that while inner hair cells are normal in shape and content, the outer hair cells have disappeared and there is some debris in Nuel's space. The pillar cells are normal as are the stria vascularis, basilar membrane, and tectorial membrane. We conclude that the cmd gene, thought to be vital in the regulation of proteoglycan synthesis, is responsible for the hearing impairment and structural anomalies of the cochlea seen in these mutant, homozygous mice. Author.

Reverse genetics in the mouse and its application to the study of deafness. Rinchik, E. M., Johnson, D. K., Margolis, F. L., Jackson, I. J., Russell, L. B., Carpenter, D. A. Biology Division, Oak Ridge National Laboratory, Tennessee 37831-8077. *Annals of New York Academy of Sciences* (1991). Vol. 630, pp. 80–92.

Genetic variants of the laboratory mouse can serve as useful models for hereditary deafness syndromes in humans. Recessive mutations at the shaker-1 (sh-1) and whirler (wi) loci, in chromosomes 7 and 4, respectively, both result in circling behaviour and a deafness syndrome. In sh-1 homozygotes this deafness is associated with neurophysiological abnormalities that may be accompanied by structural abnormalities of the inner ear. Radiation-induced deletion mutations are being used in a strategy of reverse genetics to identify the genes defined by these mutations. Genetic analyses have refined the position of sh-1 to a chromosomal interval between break points of deletions involving the closely linked albino (c) locus. A cDNA encoding olfactory marker protein (OMP) and the anonymous locus D70R1 have also been mapped to this interval. These clones contribute to the physical map of the sh-1 region and could be important for accessing the sh-1 gene itself. Similarly, we have identified a radiation-induced deletion of the brown (b) locus that covers the wi locus and two that do not. Thus, the wi locus has been located within a chromosome 4 interval defined by structural rearrangements, which should likewise aid in identifying closely linked molecular clones. Author.

Perforation of the hard palate associated with cocaine abuse. Mattson-Gates, G., Jabs, A.D., Hugo, N. E. Department of Surgery,

Columbia-Presbyterian Medical Center, New York, NY 10032. *Annals of Plastic Surgery* (1991) May, Vol. 26 (5), pp. 466–8.

Cocaine abuse is associated with serious systemic complications. Snorting cocaine can also cause complications of the nasopharyngeal structures. Repeated episodes of vasoconstriction and subsequent ischemia may cause this destruction. We present a patient with perforation of the nasal septum and palate and collapse of the nasal dorsum. The destroyed anatomy was reconstructed by using standard surgical techniques. Palatal destruction is a rare entity and, to our knowledge, this patient is the first reported patient with palatal destruction due to cocaine insufflation. Author.

Cogan's syndrome with aortitis, aortic regurgitation, and aortic arch vessel stenoses. Cochrane, A. D., Tatoulis, J. Royal Melbourne Hospital, Victoria. *Annals of Thoracic Surgery* (1991) Nov, Vol. 52 (5), pp. 1166–7.

Cogan's syndrome of interstitial keratitis and vestibuloauditory dysfunction is rare. Systemic vasculitic manifestations occur, and 10 per cent of patients with this syndrome have aortic valvular disease. A patient with Cogan's syndrome is presented who had aortitis of the ascending thoracic aorta, severe aortic valve regurgitation, orificial stenosis of the right coronary artery, and orificial stenoses of all three aortic arch vessels. Histopathology confirmed aortitis. Aortic valve replacement combined with coronary and aortic arch vessel reconstruction was required for correction. Author.

Lead and minor hearing impairment. Schwartz, J., Otto, D. Office of Policy Analysis, U.S. Environmental Protection Agency, Washington, D.C. *Archives of Environmental Health* (1991) Sep–Oct, Vol. 46 (5), pp. 300–5.

We examined data recorded for 3,545 subjects aged 6–19 years who participated in the Hispanic Health and Nutrition Survey. We sought to confirm a relationship between blood lead levels and elevated hearing thresholds that we previously reported in a similar study in which data from the Second National Health and Nutrition Examination Survey was used. Lead was associated with an increased risk of hearing thresholds that were elevated above the standard reference level at all four frequencies (i.e. 500 Hz, 1,000 Hz, 2,000 Hz and 4,000 Hz). Lead was also associated with hearing thresholds when they were treated as a continuous outcome. The relationships appeared to continue at blood lead levels less than 10 micrograms/dl. An increase in blood lead, from 6 micrograms/dl to 18 micrograms/dl, was associated with a 2 dB loss in hearing at all frequencies, and an additional 15 per cent of children had hearing thresholds that were below the standard at 2,000 Hz. Author.

Anatomy and physiology of binaural hearing. Moore, D. R. University Laboratory of Physiology, Oxford, U.K. *Audiology* (1991), Vol. 30 (3), pp. 125–34.

Binaural hearing improves performance in most auditory tasks and is essential for some. This paper introduces the brain stem pathways and nuclei involved in binaural interaction and outlines some recent approaches to understanding binaural mechanisms. It also provides examples of basic science approaches to the effects of infant hearing loss on those pathways and mechanisms. Binaural interaction occurs primarily and almost simultaneously at three levels of the brain: the superior olivary complex (SOC), the nuclei of the lateral lemniscus (NLL) and the inferior colliculus (IC). The SOC derives its input from the anterior ventral cochlear nucleus (CN) through branching axons that innervate several SOC subdivisions on both sides of the brain. At least some of these anteroventral CN axons project on up the contralateral NLL and IC. The IC and NLL also receive direct, major projections from the contralateral CN, via the dorsal and intermediate acoustic striae, and from the SOC bilaterally. The IC receives additional input from the NLL bilaterally, and is thus innervated by every nuclear group within the auditory brain stem. There is little evidence for strict, functional segregation in these binaural pathways, although subdivisions of the SOC appear to be predominantly involved in analysing either interaural time or level differences (ITD, ILD). ITD- and ILD-sensitive neurones are also found in abundance in the central IC. There is emerging evidence that binaural information is coupled with spectral cues derived from the outer ear in several auditory mid-brain regions (the NLL, the external IC and the superior colliculus (SC)) to produce topographic representations of auditory space. Throughout the higher auditory system the response of neurones to stimulation of each ear is either excitatory or inhibitory, and there is a spatial segregation of neurones receiving predominantly excitatory or inhibitory input from the ipsilateral ear in both the medial geniculate body of the thalamus and the

auditory cortex. Neonatal, unilateral hearing loss leads to a rearrangement of binaural connections in the auditory brain stem, to changes in the physiology of IC neurones in response to stimulation of the normal ear and to compensatory alterations in the auditory space map in the SC. The same hearing losses in adulthood do not produce these changes. The evidence from this and other work suggests that binaural mechanisms are more sensitive to hearing loss, over a longer developmental period, than mechanisms subserving monaural processing. Author.

Compound action potentials recorded from the intracranial portion of the auditory nerve in man: effects of stimulus intensity and polarity. Moller, A. R., Jho, H. D. Department of Neurological Surgery, University of Pittsburgh School of Medicine, Pa. *Audiology* (1991) Vol. 30 (3), pp. 142–63.

Compound action potentials (CAP) were recorded from the intracranial portion of the VIIIth nerve in patients with normal hearing who were undergoing neurosurgical operations for cranial nerve disorders (trigeminal neuralgia and hemifacial spasm). Brain-stem auditory-evoked potentials were recorded intraoperatively to ensure that no noticeable changes occurred in conduction in the auditory nerve as a result of surgical dissections. The CAP recorded from the middle portion of the exposed intracranial portion of the VIIIth nerve in response to clicks of high intensity (100–110 dB peak equivalent SPL, or pe SPL) had a triphasic shape, as is commonly seen in monopolar recordings from long nerves. A second negative peak (N2) could be identified in some patients. There was little difference in the waveform of the CAP in response to condensation and rarefaction clicks, and in some patients the waveform of the CAP remained the same over a range of stimulus intensities (from 105 to 75 dB pe SPL), whereas in others the negative peak of the CAP became much broader in response to stimuli with intensities of less than 85 dB. In some patients the N2 peak became dominant as the stimulus intensity was decreased. At low stimulus intensities, the response consisted of a single, broad negativity. The latency-intensity curves for the N1 peak had different slopes in different patients. In those individuals in whom there was a noticeable difference between the latency of the N1 peak in response to clicks of opposite polarity, the latency-intensity curves of the responses to rarefaction clicks were steeper than those of the responses to condensation clicks, and the latency of the N1 peak to condensation clicks became shorter than that of rarefaction clicks at intensities below 85–90 dB pe SPL. The latency-intensity curves for the N2 peak were usually less steep than those of the N1 peak, but in some patients the curves for these two peaks had similar slopes. The amplitude of the N1 peaks showed a steep increase in click intensities at 95 and 105 dB, and a much less steep course for intensities below 95 dB. The amplitudes of the N2 peak reached a plateau in the range 95–105 dB, and decreased more rapidly than the N1 peak below 95 dB. Author.

Correction of cryptotia using a subcutaneous pedicled flap. Nakajima, T., Yoneda, K., Yoshimura, Y. Department of Plastic and Reconstructive Surgery, Fujita Health University Hospital, Aichi, Japan. *British Journal of Plastic Surgery* (1991) Aug–Sep. Vol. 44 (6), pp. 406–9.

Cryptotia is a relatively common deformity of the ear among orientals. Although many methods for correcting this deformity have been reported, there is no one perfect method. We have developed a method using a subcutaneous pedicle flap raised from the retroauricular region, where relative abundance of skin exists. We have treated nine ears of seven patients by the method reported herein. Results are satisfactory in all cases. Author.

Routine examination of the vocal cords before and after thyroid and parathyroid surgery. Jarhult, J., Lindestad, P. A., Nordstrom, J., Perbeck, L. Department of Surgery, Eksjo Hospital, Sweden. *British Journal of Surgery* (1991) Sep. Vol. 78 (9), pp. 1116–7.

A prospective study of the value of routine examination of the vocal cords in 239 patients before and after thyroid or parathyroid surgery is presented. From the patient's history and voice the surgeon assessed before and after operation whether vocal cord examination was necessary or not. The surgeon's judgement was compared with the phoniatician's report. All except one of the documented recurrent laryngeal nerve palsies were suspected by the surgeon. No additional important clinical information was gained by the laryngologist's examinations. Routine vocal cord examination in connection with thyroid and parathyroid surgery is probably not necessary. Author.

Functional laryngeal obstruction relieved by panting. Pitchenik, A. E. Pulmonary Division, University of Miami Medical Center. *Chest* (1991) Nov, Vol. 100 (5), pp. 1465–7.

A 49-year-old man presented with a two-day history of severe recurrent dyspnea and inspiratory stridor. A chest roentgenogram, computed tomographic scan of the neck, direct laryngoscopy, and bronchoscopy excluded organic upper airway obstruction. Laryngospasm occurred during the bronchoscopy. Although flow volume loops revealed severe upper airway obstruction (inspiratory and expiratory), airway resistance measured plethysmographically (during panting) was normal. Because of this observation, panting was recommended for relief of the patient's recurrent attacks of functional laryngeal obstruction. The panting manoeuvre immediately and completely relieved all 25 to 30 subsequent attacks. After the patient recovered clinically, a flow volume loop was repeated and was found to be normal. The marked discrepancy between severe flow limitation (as detected by flow volume loops) and normal airway resistance (measured plethysmographically) may be a diagnostic test for functional laryngeal obstruction, and panting may be an effective emergency measure for its relief. Relief by panting may also suggest the diagnosis. A second patient with an almost identical symptom complex is described, in whom the panting manoeuvre was also dramatically successful in promptly aborting recurrent severe attacks of airway obstruction and stridor. Author.

Anterior operations in cervicarthrosis and vertebral artery compression. Kiwerski, J. Rehabilitation Clinic, Warsaw Medical Academy, Konstancin, Poland. *Clinical Orthopaedics and Related Research* (1991) Nov. (272) pp. 95–9.

Pain in the cervical spine in the course of degenerative changes is a frequent complaint reported by patients seeking the help of various specialists. Depending on the location of pathologic changes, the pain in the spine may be accompanied by a whole array of signs and symptoms, which are sometimes more troublesome for the patient than the back pain itself. The symptoms are sometimes so persistent and difficult to treat that they lead the patient to apathy and depression, even to the point of suicidal attempts. Should serious aggravation of symptoms develop despite all efforts at successful conservative therapy, surgical treatment is employed to remove the osteophytes protruding into the lumen of the vertebral canal and compressing the spinal roots. An analysis from 1969 to 1988 of treatment in 237 patients with neurologic disorders and concomitant or dominant disturbances of blood flow in vertebral arteries showed that there are specific indications for surgical decompression of the arteries, i.e. when lumen is constricted by the osteophytes at the level of uncovertebral joints. In a series of 47 patients, 42 cases were found to be pain free. Author.

Serial multimodality-evoked potentials in severely head-injured patients: diagnostic and prognostic implications (see comments). Barelli, A., Valente, M. R., Clemente, A., Bozza, P., Proietti, R., Della-Corte, F. Department of Anesthesiology and Intensive Care, Catholic University School of Medicine Hospital, Rome, Italy. *Critical Care Medicine* (1991) Nov, Vol. 19 (11), pp. 1374–81. Comment in: *Critical Care Medicine* (1991) Nov, Vol 19 (11), p. 1337.

OBJECTIVES: To assess the prognostic reliability of multimodality-evoked potentials and to evaluate the diagnostic implications and define the limits of these evoked potentials. **SETTING:** An ICU in a university hospital. **DESIGN:** Prospective clinical study. **PATIENTS:** 73 severely head-injured patients aged 10 to 75 years. **METHODS:** Serial recording of brainstem auditory-evoked potentials and somatosensory-evoked potentials between days 1 and 21 after trauma. Comparison between evoked potential findings and prognosis, along with clinical data. **RESULTS:** Considering the single recordings of both brainstem auditory-evoked potentials and somatosensory-evoked potentials, the accuracy of prognostication in predicting a bad outcome was good only for severely abnormal brainstem auditory-evoked potentials. Serial brainstem auditory-evoked potential recordings and simultaneous recordings of brainstem auditory-evoked potentials and somatosensory-evoked potentials proved to be good prognostic indices in predicting a favourable outcome. Brainstem auditory-evoked potentials correlated well with brainstem reflexes and with pupil asymmetries but did not correlate with Glasgow Coma scale scores. **CONCLUSIONS:** Serial recording and the use of a multimodality approach provided the best prognostic capabilities. The main diagnostic implications were: a) the possibility of detecting brainstem compression by means of brainstem auditory-evoked potentials before the appearance of pupil

abnormalities; b) the usefulness of brainstem auditory-evoked potentials in monitoring brainstem function in patients undergoing high-dose barbiturate therapy. The main limitations of evoked potentials were the occurrence of peripheral acoustic damage, the electromagnetic sources of artifacts in the ICU, and the administration of ototoxic drugs. Author.

Neonatal sensorineural hearing loss associated with furosemide: a case-control study. Brown, D. R., Watchko, J. F., Sabo, D. Department of Pediatrics, University of Pittsburgh Medical School, PA. *Developmental Medicine & Child Neurology* (1991) Sep, Vol. 33 (9), pp. 816–23.

Thirty-five neonates with sensorineural hearing loss (SNHL), identified by brainstem auditory evoked responses (BAER), and 70 matched controls with normal BAERs were studied. All infants had had BAERs before discharge from hospital as part of a screening programme for high-risk neonates. Infants with SNHL showed no response to a 60 dBnHL click stimulus and all had these results confirmed on at least one occasion after hospital discharge. Based on the screening programme results, over-all prevalence of non-hereditary hearing loss was estimated to be 0.93 per 1000 livebirths, and in neonates weighing less than 2000 g at birth to be 15.54 per 1000 livebirths. Several factors, including seizures, exposure to anticonvulsant drugs, furosemide and kanamycin were associated with SNHL, but after multivariate analysis, only exposure to furosemide remained significant. Peak serum bilirubin concentration and benzyl alcohol exposure did not appear to be related to hearing loss. Author.

Use of the electroglottograph for measurement of temporal aspects of the swallow: preliminary observations. Perlman, A. L., Grayhack, J. P. Audiology/Speech Pathology Service, VA Medical Center, Iowa City, Iowa 52246. *Dysphagia* (1991) Vol. 6 (2), pp. 88–93.

The electroglottograph (EGG) is a non-invasive, electrical impedance device that was developed for observing vocal fold contract during phonation. After a thorough study of the frequency response characteristics of the EGG, we found that the EGG output can be used to identify maximum laryngeal displacement and the duration of laryngeal movement during swallowing. With a small intranasal pressure transducer placed beneath the velum and the EGG electrodes placed externally on the thyroid cartilage, additional information on the temporal aspects of the swallow can be measured. The EGG has direct clinical application when teaching such techniques as the safe swallow and Mendelsohn manoeuvre and it is useful as a research technique when using repeated measures designed to study the swallow reflex. Author.

Optic nerve involvement in nasopharyngeal carcinoma. Prasad, U., Doraisamy, S. Department of Otorhinolaryngology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia. *European Journal of Surgical Oncology* (1991) Oct, Vol. 17 (5), pp. 536–40.

Five rare cases of nasopharyngeal carcinoma with optic nerve involvement are reported. Computerized Tomographic Scan (CT scan) studies were performed in four of them. Evidence of intracranial spread of the tumour, from the roof of the fossa of Rosenmuller to the apex of the orbit through the cavernous sinus, was noted in three patients. In one of them there was extracranial extension of the tumour, to the orbit through the posterior ethmoid. Author.

Fatal haemoperitoneum as a result of liver metastases from nasopharyngeal cancer. Dewar, G. A., Griffin, S. M., Van Hasselt, C. A., Lam, W. Y., Li, A. K. Department of Surgery, Prince of Wales Hospital, Chinese University of Hong Kong, Shatin, New Territories. *European Journal of Surgical Oncology* (1991) Oct, Vol. 17 (5), pp. 551–4.

Spontaneous rupture of hepatic metastases is rare, there being only 22 cases documented in the literature. We report here the first such case owing to nasopharyngeal carcinomatous metastases. This is of interest because in South East Asia ruptured hepatocellular carcinoma is the usual cause of fatal haemoperitoneum. Author.

In vivo effects of endotoxin on nasal epithelial mucosubstances: quantitative histochemistry. Harkema, J. R., Hotchkiss, J. A. Inhalation Toxicology Research Institute, Albuquerque, New Mexico 87185. *Experimental Lung Research* (1991) Jul–Aug, Vol. 17 (4), pp. 743–61.

Airway inflammation induced by gram-negative bacteria is often characterized by an influx of neutrophils and hypersecretion of mucus. The purpose of this study was to determine how endotoxin, a component of gram-negative bacteria and a chemotaxinogen for neutrophils, affects the amount of stored intraepithelial mucosubstances in the rat nasal airway. Rats were intranasally instilled, once a day for three days, with endotoxin or saline (controls). Before the first and third instillation, half of the animals were depleted of circulating blood neutrophils by administering a rabbit anti-rat neutrophil antiserum. Rats were sacrificed 6 or 24 h after the last instillation. Nasal tissues were processed for light microscopy and histochemical detection of stored intraepithelial mucosubstances. The numbers of nasal epithelial cells and intraepithelial neutrophils per millimeter of basal lamina in the anterior nasal septum and the amounts of intraepithelial mucosubstances in the same nasal tissue were determined by image analysis. We did not observe a neutrophil influx in the nasal tissues of neutrophil-depleted rats at 6 or 24 h after the last endotoxin instillation; however, we did observe a significant increase in intraepithelial mucosubstances, compared to saline-instilled controls. In contrast, non-neutrophil-depleted animals had a marked neutrophilic influx and a concomitant decrease in stored mucosubstances, compared to saline-instilled controls. There was no significant difference in the number of nasal epithelial cells per millimeter of basal lamina among any of the experimental groups. These results indicate (1) that endotoxin induces an increase in the amount of intraepithelial mucosubstances only when intraepithelial neutrophils are absent, and (2) that the endotoxin-induced, neutrophil influx probably triggers mucous hypersecretion. Author.

The effect of laryngeal irradiation on pharyngoesophageal motility. Gaze, M. N., Wilson, J. A., Gilmour, H. M., MacDougall, R. H., Maran, A. G. Department of Clinical Oncology, University of Edinburgh, Scotland. *International Journal of Radiation, Oncology, Biology and Physics* (1991) Oct, Vol. 21 (5), pp. 1315–20.

The upper esophageal sphincter (UES) receives the full radiation dose during external beam radiotherapy to the adjacent larynx. The aim of the study was to assess the effects, if any, of radical laryngeal radiotherapy on motility patterns in the pharyngoesophageal segment. A strain gauge assembly and a digital manometric recorder were used to assess 19 patients 13 to 71 months after irradiation of T1 and T3 glottic cancer to a central dose of 52.5 to 55.7 Gy in 20 daily fractions. Results were compared with those of 23 healthy controls. Tonic lower esophageal sphincter (LES) pressure, distal peristaltic contraction, tonic UES pressure, and eight parameters of pharyngoesophageal dynamics during water and bread swallows were studied. No difference was found between the two groups in tonic LES pressure, peristaltic amplitude, or tonic UES pressure. Water swallow pharyngoesophageal wave velocity was significantly lower in patients than in controls, and the irradiated group also showed a trend toward increased duration of the distal esophageal peristaltic wave. The reduction in upper esophageal wave velocity was associated with the interval following irradiation. The post-treatment interval was also inversely related to the amplitude of UES after-contraction, and associated with an increase in wave duration throughout the pharyngoesophageal segment. A study of 23 laryngectomy specimens, five of which had been removed following radiotherapy, failed to identify pathological features in nerves or muscle which characterized previous laryngopharyngeal irradiation. We conclude that laryngeal irradiation has no effect on upper or lower esophageal sphincter tone but causes an increase in wave duration and a reduction in wave velocity in the pharyngoesophageal segment. These changes are independent of age and sex and are not associated with pathological features like the neural degeneration described in the myenteric plexus of irradiated rectum. Author.

Analysis of vocal tract shape and dimensions using magnetic resonance imaging: vowels. Baer, T., Gore, J. C., Gracco, L. C., Nye, P. W. Department of Experimental Psychology, University of Cambridge, United Kingdom. *Journal of Acoustical Society of America* (1991) Aug, Vol. 90 (2 (Pt 1)), pp. 799–828.

Magnetic resonance imaging (MRI) techniques were used to gather basic data to apply in computational models of speech articulation. Two experiments were performed. In experiment 1, voice recordings from two male subjects were obtained simultaneously with axial, coronal, or midsagittal MR images of their vocal tracts while they produced the four point vowels. Area functions describing the individual tract shapes were obtained by measurements performed on the MR images. Digital filters derived from these functions were then used to resynthesize the vowel sounds which were compared,

both perceptually and acoustically, with the subjects' original recordings. In experiment 2, axial images of the pharyngeal cavity were collected during the production of an ensemble of nine vowels. Plots of cross-sectional area versus the midsagittal width of the tract at different locations within the pharynx and for different vowel productions were used to derive a functional relationship between the two variables. Data from experiment 1 relating midsagittal width to cross-sectional area within the oral cavity were also examined. Author.

Elastic models of vocal fold tissues. Alipour-Haghighi, F., Titze, I. R. Department of Speech Pathology and Audiology, University of Iowa, Iowa City 52242. *Journal of Acoustical Society of America* (1991) Sep. Vol. 90 (3), pp. 1326–31.

Elastic properties of canine vocal fold tissue (muscle and mucosa) were obtained through a series of experiments conducted *in vitro* and were modelled mathematically. The elastic properties play a significant role in quantitative analysis of vocal fold vibrations and theory of pitch control. Samples of vocalis muscle and mucosa were dissected and prepared from dog larynges a few minutes pre-mortem and kept in a Krebs solution at a temperature of $37 \pm 1^\circ\text{C}$ and a pH of 7.4 ± 0.05 . Samples of muscle tissue and mucosa were stretched and released in a slow, sinusoidal fashion. Force and displacement of the samples were measured with a dual-servo system (ergometer). After digitization, stress-strain data for samples of muscle tissue and cover tissue were averaged. The stress-strain data were then fitted numerically by polynomial and exponential models. Author.

Salvage of ear cartilage in patients with acute full-thickness burns. Achauer, B. M., Witt, P. D., Lamb, R. Division of Plastic surgery, University of California, Irvine. *Journal of Burn Care and Rehabilitation* (1991) Jul–Aug. Vol. 12 (4), pp. 339–43.

Three cases in which the temporoparietal fascial flap was used to salvage denuded ear cartilage during the acute period after burn injury are reported. Patients' burns ranged from 30 to 75 per cent total body surface area. The full-thickness burn was acutely excised, exposing the auricular cartilage. The temporoparietal facial flap was elevated and wrapped around the cartilage. The flap was then covered with a split-thickness skin graft. All flaps and skin grafts survived. Additional reconstructive procedures have been performed on two of the patients and are planned for the third. Author.

Measurement standards for the prevertebral region in the lateral soft-tissue radiograph of the neck. Haug, R. H., Wible, R. T., Lieberman, J. Oral and Maxillofacial Surgery, Cleveland Metro-Health Medical Center, OH 44109. *Journal of Oral & Maxillofacial Surgery* (1991) Nov. Vol. 49 (11), pp. 1149–51.

One hundred and thirty-one lateral soft-tissue radiographs of the neck, taken over a six month period, were reviewed. Eighty-six radiographs were normal. The mean prevertebral soft-tissue thickness in the posterior-anterior dimension for each normal radiograph was measured. The mean thickness in the retropharyngeal region ranged from 6.2 mm in the infant to 3.7 mm in the adult, while the mean thickness in the retrotracheal region ranged from 9.2 mm in the preschool group to 12.1 mm in the adult. Author.

Osseointegrated implant-supported and magnetically retained ear prosthesis: a clinical report. McCartney, J. W. Tripler Army

Medical Center, Honolulu, Hawaii. *Journal of Prosthetic Dentistry* (1991) Jul. Vol. 66 (1), pp. 6–9.

Osseointegrated implants were placed in the temporal bone and were used to retain attachments for an ear prosthesis. A screw-retained magnetic alloy casting was used to retain an acrylic resin magnet keeper, to which a silicone ear prosthesis was attached. The keeper provided vertical support for the prosthesis and facilitated orientation for prosthesis insertion. Stability and retention were provided without the use of adhesives. Author.

Otitis media in adult trauma patients: incidence and clinical significance. Christensen, L., Schaffer, S., Ross, S.E. Division of Trauma, UMDNJ/Robert Wood Johnson Medical School, Camden, New Jersey. *Journal of Trauma* (1991) Nov. Vol. 31 (11), pp. 1543–5.

To determine the incidence and clinical significance of otitis media in traumatized adults requiring intubation, 67 adult trauma patients admitted to a level-I trauma centre over a six month period who required three or more days of intubation were examined otoscopically for the presence of otitis media. Eleven of these intubated brain-injured patients had otitis and upon examination all were found to have purulent paranasal sinusitis as well. In conclusion, all intubated patients with severe head injuries should be evaluated otoscopically for the presence of otitis and those patients with otitis should be examined for the presence of sinusitis. Author.

Upper airway obstruction during nasal intermittent positive-pressure hyperventilation in sleep. Delguste, P., Aubert-Tulkens, G., Rodenstein, D. O. Rehabilitation Unit, Cliniques Universitaires Saint Luc, Université Catholique de Louvain, Brussels, Belgium. *Lancet* (1991) Nov. 23, Vol. 338 (8778), pp. 1295–7.

Episodes of apnoea for up to one minute were observed in association with hypocapnia caused by passive nasal intermittent positive-pressure mechanical hyperventilation in three of four patients during sleep. Apnoea seemed to be caused by complete upper airways obstruction; we suggest that this finding was caused by active glottic closure. Avoidance of excessive hypocapnia during positive-pressure ventilation might help to avoid central-nervous system mediated apnoeic episodes. Author.

The role of torsion in cervical spine trauma. Myers, B. S., McElhane, J. H., Doherty, B. J., Paver, J. G., Gray, L. Biomedical engineering Department, Duke University, Durham, North Carolina. *Spine* (1991) Aug. Vol. 16 (8), pp. 870–4.

A dynamic servocontrolled torsion machine has been used to characterize cervical injury due to pure rotation of the head. Resultant force moment, torque, and applied rotation have been measured. Torque applied to the base of the skull resulted in injury to the atlantoaxial joint. No evidence of lower cervical injury was observed by computed tomography, magnetic resonance imaging, *in situ* fluoroscopy, or visual inspection. Torque applied directly to the lower cervical spine induced ligamentous injury and unilateral facet dislocation; however, the torque to injure the lower cervical spine was significantly greater than the torque to injure the atlantoaxial joint. It was concluded that pure rotation of the head does not mediate lower cervical ligamentous injury because of the comparative weakness of the atlantoaxial joint. Author.