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Abstract Selection

Second malignant neoplasms in patients with head and neck squamous cell carcinomas. Boysen, M., Loven, J. O. Department of Otolaryngology, National Hospital, University of Oslo, Norway. *Acta Oncologica* (1993), Vol. 32 (3), pp. 283–8.
The incidence of second malignant neoplasms (SMN) was analyzed in 714 patients with squamous cell carcinomas of the oral cavity, oropharynx, hypopharynx and larynx. With a minimum follow-up of 3.5 years and 2,540 person-years at risk 84 SMN (10 synchronous and 74 metachronous) developed in 81 patients. The relative risk of SMN was 2.4. The actuarial method showed an annual incidence of SMN of 3.5 per cent. For oral cavity and oropharyngeal tumours the annual incidence of SMN was 4.0 and 3.8 per cent respectively, compared to 2.1 per cent for laryngeal cancer ($p<0.013$ and 0.017 respectively). Sex, age or stage of the index tumour did not significantly influence the annual incidence of SMN. After three years of follow-up, SMN became more a cause of concern than loco-regional relapse. Author.

Prognostic significance of tissue polypeptide antigen (TPA) in head and neck carcinomas. Becciolini, A., Porciani, S., Lanini, A., Tommasi, M., Olmi, P., Chiavacci, A. Department of Clinical Physiopathology, The University, Florence, Italy. *Acta Oncologica* (1993), Vol. 32 (3), pp. 295–9.
The serum tissue polypeptide antigen (TPA) was determined before and at the end of radiotherapy in a group of patients with head and neck epidermoid carcinoma. The baseline values were significantly higher than those in healthy control subjects. They did not depend on the site of the neoplasia but increased with clinical stage. A cut-off value of 85 U/l discriminated two groups of patients according to survival: patients whose values were lower than the cut-off had a disease-free six-year survival rate of 61 per cent compared to only 22 per cent in patients with higher TPA levels. Until the second year of follow-up, patients with complete response had baseline values significantly lower than relapsed patients. However, at five years the pretreatment values were similar for patients being disease-free, patients with recurrence and patients deceased within the two to five year period. Author.

Effects of H1-receptor antagonists on nasal obstruction in atopic patients. Horak, F., Toth, J., Jager, S., Berger, U. 1st ENT University Clinic, Vienna, Austria. *Allergy* (1993) May, Vol. 48 (4), pp. 226–9.
The aim of this study is to investigate whether H1-receptor antagonists, besides their effect on nasal itching and sneezing, also have a measurable effect on nasal obstruction caused by allergen challenge. The antihistamine used was astemizole (10 mg) versus placebo, in a double-blind, cross-over, randomized study of two groups. Between the two sessions there was a wash-out period of at least four weeks. Seven patients of both sexes, with proven allergy to grass pollen, underwent a specific long-term provocation with grass pollen in the Vienna challenge chamber. Using a physiological method of challenge and a sensitive method for evaluating nasal function, we were able to prove H1-receptor antagonist influence on nasal airway obstruction. The main parameters obtained are nasal flow and nasal resistance at 75, 150 and 300 Pa, evaluated by active anterior rhinomanometry. We also investigated subjective symptom scores (0–3) of nasal, eye, and lung symptoms. It can be shown that the nasal flow under astemizole treatment is statistically significantly higher than the nasal flow under placebo treatment ($p = 0.034$). This is in accordance with the findings in subjective nasal itching and sneezing. Author.

Attention deficits in children and adolescents with hearing loss. A survey. Kelly, D. P., Kelly, B. J., Jones, M. L., Moulton, N. J., Verhulst, S. J., Bell, S. A. Department of Pediatrics, Southern Illinois University, Springfield, 62794–9230. *American Journal of Diseases of Children* (1993) July, Vol. 147 (7), pp. 737–41.
OBJECTIVES: To determine the prevalence of reported attention deficits in a sample of children who are deaf or hard of hearing and to examine associated variables. DESIGN: Cross-sectional survey. SETTING: Residential school for the deaf. PARTICIPANTS: All students attending the school ($n = 238$; median age, 16.0 years; range, 4 to 21 years). Subjects were subgrouped by cause of deafness for further analyses. INTERVENTION: None. MEASUREMENTS/MAIN RESULTS: School personnel completed questionnaires that are commonly used in the assessment of attention problems. Teachers completed the Attention Deficit Disorder with Hyperactivity (ADD-H) Comprehensive Teacher Rating Scale (ACTeRS) and an abbreviated version of the Attention-Activity section of the ANSER (Aggregate Neurobehavioural Student Health and Education Review) System Questionnaires. Dormitory supervisors rated students on the Conners' Parent Rating Scale and the ANSER System Questionnaires. The mean factor scores for the total sample of deaf and hard-of-hearing students on the Attention and Hyperactivity scales of the ACTeRS and Conners' questionnaires did not differ from the normative data. The 64 students with hereditary deafness received significantly better ratings than the 75 with an acquired cause of deafness such as bacterial meningitis or congenital rubella. Raw scores on the ACTeRS were converted to percentile equivalents based on the normative sample. On the Attention Scale, 38.7 per cent of those with acquired deafness were rated below the 20th percentile (indicative of problems); only 14.1 per cent of the students with hereditary deafness were in this range ($p = 0.002$). CONCLUSIONS: Ratings of attention for students with hearing loss, attending a residential school, did not differ from the normative data. However, the subgroup of children with acquired sensorineural deafness appear to be at increased risk for attention problems. Author.

Genetic epidemiological studies of early-onset deafness in the U.S. school-age population. Marazita, M. L., Ploughman, L. M., Rawlings, B., Remington, E., Arnos, K. S., Nance, W. E. Department of Human Genetics, Medical College of Virginia, Virginia Commonwealth University, Richmond 23298-0003. *American Journal of Medical Genetics* (1993) June 15, Vol. 46 (5), pp. 486–91.
Profound, early-onset deafness is present in 4–11 per 10,000 children, and is attributable to genetic causes in at least 50 per cent of cases. Family history questionnaires were sent to 26,152 families of children with profound, early-onset deafness not known to be related to an environmental cause. The probands were ascertained through the 1988–89 Gallaudet University Annual Survey of Hearing Impaired Children and Youth. The analysis is based on the responses that were received from 8,756 families. Classical segregation analysis was used to analyze the family data, and to estimate the proportions of sporadic, recessive and dominant causes of deafness in the families.

These data were consistent with 37.2 per cent of the cases due to sporadic causes, and 62.8 per cent due to genetic causes (47.1 per cent recessive, and 15.7 per cent dominant). An earlier study using the 1969–70 Annual Survey found 49.3 per cent sporadic cases and 50.6 per cent genetic, demonstrating that the proportion of sporadic cases of early-onset deafness has significantly decreased since 1970. Author.

Pediatric internal derangements of the temporomandibular joint: effect on facial development. Schellhas, K. P., Pollei, S. R., Wilkes, C. H. *American Journal Orthodontics and Dento-Facial Orthopedics* (1993) July, Vol. 104 (1), pp. 51–9.
To evaluate the relationship between internal derangement(s) of the temporomandibular joint(s) (TMJ) and disturbed facial skeleton growth (dysmorphogenesis), 128 consecutive children (103 girls, 25 boys), who were 14 years of age or younger and had undergone com-

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bined radiographic and magnetic resonance (MR) imaging studies of both TMJs, were retrospectively analyzed. Imaging studies had been performed to investigate suspected TMJ derangement because of symptoms that included, either individually or in various combinations, pain, mechanical TMJ dysfunction, and facial skeleton abnormalities, such as mandibular deficiency (particularly retrognathia) and lower facial (mandibular) asymmetry, manifested by chin deviation from the midline. Of these patients, 112 were found to have at least one internally deranged TMJ on imaging studies; in 85 patients, both TMJs were abnormal. Of the 60 retrognathic patients 56 were found to have TMJ derangement, generally bilateral and often of advanced stage. In cases of lower facial asymmetry, the chin was uniformly deviated toward the smaller or more degenerated TMJ. Both TMJs were normal in 16 patients, most of whom had normal facial structure. We conclude that TMJ derangements are both common in children and may contribute to the development of retrognathia, with or without asymmetry, in many cases. Author.

Mandible enclosure of upper airway and weight in obstructive sleep apnea. Shelton, K. E., Gay, S. B., Hollowell, D. E., Woodson, H., Suratt, P. M. Department of Internal Medicine, University of Virginia Health Science Centre, Charlottesville 22908. *American Review of Respiratory Diseases* (1993) July, Vol. 148 (1), pp. 195–200.
Although anatomic lesions and obesity can produce obstructive sleep apnea (OSA), most subjects with OSA have no recognizable anatomic lesion. We hypothesized that the occurrence of OSA is related to the size of the region enclosed by the mandible and the degree of obesity. We studied 30 subjects with a range of OSA and obesity with magnetic resonance imaging (MRI). MRI was performed with T-1 weighted sequences. Nocturnal polysomnography was performed in all subjects. Univariate regression analysis indicated there was a significant correlation between the number of apneas and hypopneas per hour of sleep (AH/h) and (1) the area enclosed by the mandible ramus (AMR1) ($r = 0.48, p<0.01$) and (2) the distance from the teeth to the posterior mandible ramus ($r = 0.39, p<0.05$). Stepwise multiple regression analysis indicated that weight, AMR1, and height explained 69 per cent of the variance of AH/h (r2 = 0.69). We conclude that the occurrence of OSA in these subjects is related to the size of the region enclosed by the mandible as well as to their weight. Author.

Bronchial reactivity, atopy, and airway response to cotton dust. Jacobs, R. R., Boehlecke, B., van-Hage-Hamsten, M., Rylander, R. School of Public Health, University of Alabama, Birmingham 35294. *American Review of Respiratory Diseases* (1993) July, Vol. 148 (1), pp. 19–24.
Studies of cotton textile workers have found an association between atopy and drop in FEV1 over a workshift. We studied the response of previously nonexposed volunteers with and without a history of mild atopy to a 5-h exposure to 1 mg/m^3 of respirable cotton dust in a model cardroom. All participants were nonsmokers, had no history of asthma, and had normal spirometry. Twenty atopic subjects gave a personal history of mild respiratory allergy to pollen, dusts, or animals that had been confirmed by a physician. Thirty-two nonatopic subjects had no history of allergy. Spirometry and a methacholine challenge test were performed one to two days prior to exposure. Spirometry was repeated immediately before exposure to cotton dust; spirometry and a methacholine challenge were performed immediately after exposure. Atopic subjects showed a significantly higher mean serum IgE level to Phadiatop, a screening test to common inhalant allergens, than did nonatopic subjects (mean percent binding, 32.1 versus 1.5; $p<0.001$). Atopic subjects had a significantly greater mean fall in FEV1 during exposure (8.3 per cent versus 4.9 per cent, $p<0.05$). The difference in FEV1 decline between atopic and nonatopic subjects was similar in magnitude to that reported for workshift FEV1 declines between textile workers with and without mild atopy. Atopic subjects had significantly higher baseline methacholine responsiveness than did nonatopic subjects (26 per cent versus 0 per cent reaching a PD20, $p<0.0005$). After cotton dust exposure, there was a significant increase in airway reactivity in both groups (68 versus 20 per cent reaching a PD20, $p<0.0005$). For all subjects combined baseline responsiveness was significantly related to the change in FEV1 after exposure. Author.

Idiopathic laryngotracheal stenosis and its management. Grillo, H. C., Mark, E. J., Mathisen, D. J., Wain, J. C. General Thoracic Surgical Unit, Massachusetts General Hospital, Boston 02114. *Annals of Thoracic Surgery* (1993) July, Vol. 56 (1), pp. 80–7.
We describe idiopathic laryngotracheal and upper tracheal stenosis in 49 patients with no other cause for their stenosis. Traumatic, iatrogenic, infectious, and specific inflammatory processes were excluded. Histopathologically dense fibrosis of keloidal type thickened the lamina propria and choked the ducts of mucous glands, but did not destroy cartilage. Thirty-five patients were treated by single-stage resection and reconstruction: 29 by laryngotracheal resection with laryngotracheoplasty and six by cricotracheal segmental resection. Thirty-two patients achieved good or excellent results in respiration and voice, two needed annual dilations, and one required permanent tracheostomy. Author.

Invasive sinusitis with intracranial extension caused by Curvularia lunata. Ismail, Y., Johnson, R. H., Wells, M. V., Pusavat, J., Douglas, K., Arsura, E. L. Department of Medicine, Kern Medical Center, UCLA School of Medicine, Bakersfield. *Archives of Internal Medicine* (1993) July 12, Vol. 153 (13), pp. 1604–6.
Curvularia lunata has previously been linked to localized sinus infection in immunocompetent hosts. We treated a case of pansinusitis with extensive bone destruction and intracranial extension caused by C lunata. Curvularia lunata was identified when typical fungal macroconidia appeared on culture. Numerous surgical procedures, in addition to a 12-month course of antifungal therapy consisting of 4 g of intravenous amphotericin B and an eight-month course of 400 mg of oral ketoconazole daily, were required to control the infection. This unusual case of invasive sinusitis caused by C lunata alerts the treating physician to the presence of this mold and gives an overview of diagnostic method as well as the management. Author.

Parapharyngeal extension of a meningioma. Fabrikant, H. Radiology Department, Royal Melbourne Hospital, Parkville, Victoria, Australia. *Australasian Radiology* (1993) Feb., Vol. 37 (1), pp. 102–4.
A case of posterior fossa meningioma with parapharyngeal extension is described. The tumour lacked contrast enhancement at both CT and MRI, and showed no vascularity at angiography. These negative features restricted us to a differential diagnosis alone. The postulated mechanisms for an extracranial position of a meningioma, mainly from Hoye *et al.*, are re-presented. Author.

Pacemaker function during irradiation: *in vivo* and *in vitro* effect. Ngu, S. L., O'Meley, P., Johnson, N., Collins. C. Pathology Department, Woden Valley Hospital, ACT. *Australasian Radiology* (1993) Feb., Vol. 37 (1), pp. 105–7.
With an ageing population in Australia, one would expect the probability of treating cancer patients who have a cardiac pacemaker to increase. In this paper the effect of ionizing radiation and electromagnetic interference on pacemaker function is discussed. A case of a cancer patient, with pacemaker, treated with radiotherapy without ill effect, is described. Concurrently, four pacemakers were tested *in vitro* with gamma radiation from a 60 Cobalt machine and no adverse effect was found. A list of precautions is recommended. Author.

Gene mutations and increased levels of p53 protein in human squamous cell carcinomas and their cell lines. Burns, J. E., Baird, M. C., Clark, L. J., Burns, P. A., Edington, K., Chapman, C., Mitchell, R., Robertson, G., Soutar, D., Parkinson, E. K. Cancer Research Campaign, Beatson Institute for Cancer Research, Garscube Estate, Bearsden, Glasgow, UK. *British Journal of Cancer* (1993) June, Vol. 67 (6), pp. 1274–84.
Using immunocytochemical and Western blotting techniques we have demonstrated the presence of abnormally high levels of p53 protein in 8/24 (33 per cent) of human squamous cell carcinomas (SCC) and 9/18 (50 per cent) of SCC cell lines. There was a correlation between the immunocytochemical results obtained with eight SCC samples and their corresponding cell lines. Direct sequencing of PCR-amplified, reverse transcribed, p53 mRNA confirmed the expression of point mutations in six of the positive cell lines and detected in-frame deletions in two others. We also detected two stop mutations and three out-of-frame deletions in five lines which did not express elevated levels of p53 protein. Several of the mutations found in SCC of the tongue (3/7) were in a region (codons 144–166) previously identified as being a p53 mutational hot spot in non-small cell lung tumours (Mitsudomi *et al.*, 1992). In 11/13 cases only the mutant alleles were expressed suggesting loss or reduced expression of the wild type alleles in these cases. Six of the mutations were also detected in the SCCs from which the lines were derived, strongly

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suggesting that the mutations occurred, and were selected, in vivo. The 12th mutation GTG → GGG (valine → glycine) at codon 216 was expressed in line SCC-12 clone B along with an apparently normal p53 allele and is to our knowledge a novel mutation. Line BICR-19 also expressed a normal p53 allele in addition to one where exon 10 was deleted. Additionally 15 of the SCC lines (including all of those which did not show elevated p53 protein levels) were screened for the presence of human papillomavirus types 16 and 18 and were found to be negative. These results are discussed in relation to the pathogenesis of SCC and the immortalization of human keratinocytes in vitro. Author.

Head and neck sarcomas: prognostic factors and implications for treatment. Eeles, R. A., Fisher, C., Ahern, R. P., Robinson, M., Rhys-Evans, P., Henk, J. M., Archer, D. Harmer, C. L. Head and Neck Unit, Royal Marsden Hospital, London, UK. *British Journal of Cancer* (1993) July, Vol. 68 (1), pp. 201–7.
One hundred and thirty patients with soft tissue sarcoma of the head and neck were treated at the Royal Marsden Hospital between 1944 and 1988. Pathological review was possible in 103 of these cases; only pathologically reviewed cases have been analyzed. The median age at presentation was 36 years, and 53 per cent were male. Four had neurofibromatosis type I, and one previous bilateral retinoblastoma. Six had undergone previous radiotherapy, 12 to 45 years prior to developing sarcoma. The tumours were < or = 5 cm in 78 per cent of cases and high grade in 48 per cent. Only one patient presented with lymph node metastases and only one with distant metastases (to lung). Malignant fibrous histiocytoma was the commonest histological type, occurring in 30 cases. The overall five year survival was 50 per cent (95 per cent CI 39–60). Local tumour was the cause of death in 63 per cent of cases and five year local control was only 47 per cent (95 per cent CI 36–58) with local recurrence occurring as late as 15 years after treatment. The only favourable independent prognostic factor for survival was the ability to perform surgery (other than biospy) with or without radiotherapy, as opposed to ratiotherapy alone (hazard ratio 0.39; $p = 0.003$). Only one patient had a biopsy with no further treatment. Favourable independent prognostic factors for local control at five years were site (tumours of the head as opposed to the neck, hazard ratio 0.42; $p = 0.02$) and modality of treatment (combined surgery and radiotherapy compared to either alone, hazard ratio 0.31; $p = 0.002$). Patients in the combined modality and single treatment modality groups were well balanced for T stage, grade and tumour site. The patients in the combined treatment group had less extensive surgery, yet their local recurrence-free survival was longer. Unlike soft tissue sarcomas at other sites, those in the head and neck region more often cause death by local recurrence. The addition of radiotherapy to surgery may result in longer recurrence-free survival. Author.

Comparison of arthrotomographic and magnetic resonance images of 50 temporomandibular joints with operative findings. Watt-Smith, S., Sadler, A., Baddeley, H., Renton, P. John Radcliffe Hospital, Oxford. *British Journal of Oral and Maxillofacial Surgery* (1993) June, Vol. 31 (3), pp. 139–43.
Arthrotomography and magnetic resonance imaging (MRI) were carried out on 50 temporomandibular joints (TMJs) in 48 patients who were being considered for surgery for clinically diagnosed internal derangement. The patients presented over a four-year period with pain and dysfunction which had failed to respond to conservative management. Open surgery was carried out on all TMJs and operative findings compared with the results of imaging. The clinical diagnosis of internal derangement was confirmed in every case by imaging and at surgery. Arthrotomography over-diagnosed non-reducibility of an anteriorly displaced meniscus and perforation. MRI over-diagnosed non-reducibility to a lesser extent and under-diagnosed perforation. MRI demonstrated neither bony changes nor adhesions. Dynamic arthrotomography produced the best images of meniscal derangement in function and the pre-arthrogram tomograms were the best indicator of osseous abnormality. Arthromography was the preferred imaging technique. Author.

Tonsillar carcinoma in a renal graft recipient treated with cyclosporine A. Swoboda, A., Fabrizii, Y. First Department of Otorhinolaryngology, University of Vienna, Austria. *Clinical Nephrology* (1993) May, Vol. 39 (5), pp. 272–4.
We report a right-sided tonsillar carcinoma in a 33-year-old renal graft recipient on cyclosporine A plus low dose prednisolone treatment. The patient had been a life-long non-smoker and alcohol abstainer. The undifferentiated rapidly growing tumour became manifest in the fifth year after transplantation. The clue to the early recognition of this aggressive tumour (T2N0M0G3) resulting in a hitherto favourable outcome after excision and irradiation above all lied in the alertness of the patient himself. Author.

Soft tissue neck radiography for displaced dental prostheses. Mucci, B., Eyre, T. Department of Diagnostic Radiology, West Cumberland Hospital, Hensingham, Whitehaven, Cumbria. *Clinical Radiology* (1993) June, Vol. 47 (6), pp. 424–5.
Modern dental prostheses continue to be made of acrylic resins which can be difficult or impossible to recognize by conventional radiography. We discuss the difficulties that can arise and the recognition of such objects in the neck using three illustrative cases. Author.

Association of spontaneous anterior fossa CSF rhinorrhea and congenital perilymphatic fistula in a patient with recurrent meningitis. Claros, P., Guirado, C., Claros, A., Claros, A. Jr., Claveria, A., Wienberg, P. Clinica Claros, Los Vergos, Barcelona, Spain. *International Journal of Pediatric Otorhinolaryngology* (1993) May, Vol. 27 (1), pp. 65–71.
A case of recurrent meningitis associated with spontaneous cerebrospinal fluid (CSF) rhinorrhea and left sensorineural hearing loss in a four-year-old boy was found to be due to simultaneous congenital defects. High resolution CT examination clearly showed an anterior fossa defect and an inner ear malformation, including demineralization in the region of the footplate of the stapes, and thus provided clear guidance for the surgeon. Author.

An analysis of the inferior based tracheal flap for pediatric tracheotomy. Waki, E. Y., Madgy, D. N., Zablocki, H., Belenky, W. M., Hotaling, A. J. Department of Pediatric Otolaryngology, Children's Hospital of Michigan, Detroit 48201. *International Journal of Pediatric Otorhinolaryngology* (1993) May, Vol. 27 (1), pp. 47–54.
In the past, various tracheotomy incisions have been used at the Children's Hospital of Michigan with the occurrence of complications related to accidental decannulation and immediate recannulation. Since that time the inferior based tracheal cartilage flap has been used to minimize early complications. A retrospective study of 126 pediatric tracheotomies performed at the Children's Hospital of Michigan from June 1986 to January 1991 was reviewed. Only tracheotomies performed by a staff otolaryngologist utilizing the inferior based tracheal cartilage flaps were reviewed. This study includes patients with a six month to five year follow up. The early complication rate was 4 per cent, while the late was 50 per cent. Stomal granulation tissue was comparatively increased in this series of patients but did not hinder decannulation. We consider the use of the inferior based tracheal cartilage flap in the pediatric population a safe and effective technique without increasing the morbidity of long-term tracheotomy. Author.

Colonization of the respiratory tract with Legionella species. Finkelstein, R., Palutke, W. A., Wentworth, B. B., Geiger, J. G., Bostic, G. D. Division of Infectious Diseases, Wayne State University School of Medicine, Detroit, Michigan. *Israel Journal of Medical Sciences* (1993) May, Vol. 29 (5), pp. 277–9.
Pneumonia is the most important manifestation of disease caused by Legionella species. However, it is still not known for certain how these organisms actually enter the lungs. During the five-month period 318 hospitalized patients without clinical or radiologic features of pneumonia were enrolled in a survey of sputum colonization with Legionella. Diagnostic tests included cultures, direct fluorescent antibody test (DFA) and DNA probe assay of sputum. Colonization was considered to occur when at least one of these tests was positive. According to our definitions, 1.2–10 per cent of these patients could have been colonized by Legionella spp. However, all cultures were negative and in all but one of these patients the DFA was the only positive test. A case-control study comparing test-positive and test-negative patients failed to identify any different features of disease or epidemiologic characteristics. These findings suggest that a high rate of false-positive DFA results occurred in our study rather than any new evidence of colonization of the respiratory tract with Legionella. Author.

Quantifying ear-canal geometry with multiple computer-assisted tomographic scans. Egolf, D. P., Nelson, D. K., Howell, H. C., Larson, V. D. Auditory and Electroacoustics Research Group, Palatine, Illinois. *Journal of the Acoustical Society of America* (1993) May, Vol. 93 (5), pp. 2809–19.

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Several audiological tests require knowledge of the sound-pressure spectrum at the eardrum. However, microphone readings are typically made at another, more-accessible position in the auditory canal. Recordings are then 'adjusted' to the plane of the eardrum via mathematical models of the ear canal and eardrum. As bandwidths of audiological instruments have increased, ear-canal models have, by necessity, become more precise geometrically. Reported herein is a noninvasive procedure for acquiring geometry of the ear canal in fine detail. The method employs a computer-assisted tomographic (CAT) scanner in two steps to make radiographic images of parasagittal cross sections at uniform intervals along the lateral length of the canal. Accuracy was evaluated by comparing areas of cross sections appearing in radiographic images of a cadaver ear canal to cross sectional areas of corresponding michrotome slices of an injection mold of the same canal. Percent differences between these two areas had a mean value of 9.65 per cent for 26 different cross sections of the one ear canal studied. Ear canal volume estimated from the CAT images was 6.12 per cent different from the estimated volume of the injection mold: an improvement over the reported 39 per cent maximum error of conventional acoustic volume measurements. Author.

Dynamic imaging of the upper airway during respiration in normal subjects. Schwab, R. J., Gefter, W. B., Pack, A. I., Hoffman, E. A. Department of Radiology, University of Pennsylvania, Philadelphia 19104-4283. *Journal of Applied Physiology* (1993) April, Vol. 74 (4), pp. 1504–14.
The present study was conducted to determine the effects of quiet respiration on upper airway caliber in 15 normal subjects by using cine computed tomography. The cine computed tomography (Imatron) scanner was programmed to obtain 8 mm-thick axial slices every 0.4 s during inspiration and expiration at four anatomic levels, from the nasopharynx to the retroglossal region. Airflow (pneumotachograph) was measured, and tidal volume was obtained by integration. Upper airway area, determined by an objective edge detection algorithm, was plotted as a function of tidal volume to generate a loop describing upper airway area changes at each level during a respiratory cycle. The results demonstrate a 17 per cent change in airway size across all anatomic levels during respiration. The maximum upper airway cross-sectional area at all four anatomic levels was significantly greater during expiration than during inspiration. Other major findings include 1) upper airway cross-sectional area decreases slightly during early inspiration, enlarges toward end inspiration, and is larger at end inspiration than at the beginning of inspiration; 2) upper airway cross-sectional area enlarges from end inspiration to the first point in expiration; the airway enlarges further, reaching its maximum early in expiration, and then narrows toward end expiration; and 3) the changes in upper airway dimensions during resting tidal breathing are greater in the lateral than in the anteroposterior direction. The data suggest that during inspiration, the action of negative intraluminal pressure may be largely balanced by the action of the upper airway dilator muscles, whereas during expiration, positive intraluminal pressure produces expansion of the upper airway. Author.

Cognitive performance and event-related brain potentials under simulated high altitudes. Kida, M., Imai, A. Department of Autonomic and Behavioral Neurosciences, Nagoya University, Japan. *Journal of Applied Physiology* (1993) April, Vol. 74 (4), pp. 1735–41.
The effects of hypobaric hypoxia on cognitive processing in humans were studied by recording event-related potentials (ERPs) from the scalp in a go/no-go reaction time (RT) paradigm under various simulated high altitudes. Most subjects indicated abrupt impairment of RT at high altitudes. RTs lengthened in association with changes in latency and amplitude of the N2-P3 components, reflecting sensory discrimination and evaluation processes. Some subjects did not suffer any changes in RT up to an extremely high altitude of 6,000 m. In the latter case, although the N2-P3 components did not undergo any changes, the P3 component was followed by a sequence of negative ongoing (frontal maximum) and positive on-going (parietal maximum) slow waves. The amplitudes of these slow waves increased as altitude increased. Although these same waves appeared in the ERPs of subjects who demonstrated the increase in RTs at high altitudes, when the subjects failed in the RT task, both of the slow waves either disappeared or diminished. Such slow waves may be associated with attempts to maintain RTs against the deteriorative effects of hypobaric hypoxia. Author.

Coryneform bacteria isolated from middle ear fluid. Simonet, M., De Briel, D., Boucot, I., Minck, R., Veron, M. Laboratoire de Microbiologie, Faculte de Medecine Necker-Enfants Malades, Paris, France. *Journal of Clinical Microbiology* (1993) June, Vol. 31 (6), pp. 1667–8.
Nineteen strains of facultatively anaerobic gram-positive rods isolated in pure culture from middle ear fluids were identified. All effusions were collected by tympanocentesis in children with acute otitis media. Identification of microorganisms to the genus level was done by studying the cell wall composition. Sixteen strains contain mesodiaminopimelic acid and arabinogalactin polymer but lack mycolic acids; therefore, these strains do not belong to a previously described taxon. Because of similarities with Corynebacterium afermentans (Centers for Disease Control group ANF-1), we temporarily classified these mycolateless strains ANF-1 like. Isolation of these microorganisms in pure culture from middle ear fluids collected by tympanocentesis is a strong argument for their involvement in acute otitis media. Author.

Hearing loss in children with Down syndrome. Roizen, N. J., Wolters, C., Nicol, T., Blondis, T. A. Department of Pediatrics, University of Chicago Pritzker School of Medicine, Illinois. *Journal of Pediatrics* (1993) July, Vol. 123 (1), pp. S9–12.
Conventional behavioural testing of hearing shows that children with Down syndrome have a high prevalence of hearing deficits. However, most young (<3.5 years of age) children with Down syndrome are unable to cooperate in this type of testing. We evaluated auditory brain-stem responses of 47 unselected patients two months to three and a half years of age. Thirty four per cent had normal hearing, 28 per cent had unilateral loss, and 38 per cent had bilateral loss. Type of loss was conductive in 19 ears, mixed in 14, and sensorineural in 16. Degree of loss was mild in 33 ears, moderate in 13, and severe to profound in three. Language quotients and degree of hearing loss were compared and an association was not found. Because of the high prevalence of hearing loss in children with Down syndrome, we recommend evaluation of auditory brain-stem responses in the first six months of life. Author.

Persistence of human papillomavirus type 6e in adult multiple laryngeal papilloma and the counterpart false cord of an interferon-treated patient. Ogura, H., Watanabe, S., Fukushima, K., Baba, Y., Masuda, Y., Fujiwara, T., Yabe, Y. Department of Molecular Virology, Institute of Molecular and Cellular Biology, Okayama. *Japanese Journal of Clinical Oncology* (1993) April, Vol. 23 (2), pp. 130–3.
Human papillomavirus (HPV) type 6e DNA was detected in a laryngeal papilloma, in a papilloma recurring after an interval of six years and in the counterpart clinically-normal false cord of the same patient. No detectable subgroup change of HPV DNA occurred during the clinical course, which included therapy by CO2 laser followed by intramuscular alpha-interferon injection. The data demonstrated a single subtype of HPV to have persisted, and the prevention of a recurrence of laryngeal papilloma during our patient's long clinical course to have failed, in spite of the interferon treatment. Author.

Characterization of seven newly established nasopharyngeal carcinoma cell lines. Lin, C. T., Chan, W. Y., Chen, W., Huang, H. M., Wu, H. C., Hsu, M. M., Chuang, S. M., Wang, C. C. Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan, Republic of China. *Laboratory Investigation* (1993) June, Vol. 68 (6), pp. 716–27.
BACKGROUND: Nasopharyngeal carcinoma (NPC) has a relatively high incidence in Chinese living in Taiwan, Hong Kong, Singapore, and South China. To better understand this cancer, we have established several new NPC cell lines. EXPERIMENTAL DESIGN: We collected biopsy specimens from suspected NPC patients and divided each specimen into two parts: the first part was fixed for routine histopathologic examination, and the other part was put into culture medium for primary culture. Once the cell lines were established, they were extensively characterized. RESULTS: Seven NPC cell lines were established, and all have been passaged more than 100 times. Two lines were derived from keratinizing carcinomas and five from undifferentiated carcinomas. Electron microscopic examination revealed that both dark and light tumour cells contained intermediate filaments with clear desmosome formation. The average doubling time ranged from 10.7 to 16.3 hours. Karyotypic analysis showed multiple chromosome abnormalities with the average chromosome number between 84 and 95. Colony forming efficiency in soft agar was 18 to 42 per cent. All cell lines could

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induce solid tumour mass formation when transplanted into nude mice, and the histopathological findings showed two keratinizing and five nonkeratinizing carcinomas. All cell lines, contained less acidic keratin polypeptides than basic keratin polypeptides. Strong expression of vimentin in each single cell of all cell lines was also observed. The oncosuppressor retinoblastoma gene in each cell line showed no remarkable abnormality, but retinoblastoma protein was abnormally expressed in some interphase cells. The oncogenes, erbB and c-fgr, were both normally expressed. While the c-myc oncogene in all cell lines was overexpressed when compared with the Burkitt's lyphoma Raji Cell line, the c-myc DNA sequence in each cell line showed neither amplification nor rearrangement. CONCLUSIONS: The newly established seven NPC cell lines have been well characterized, and all showed overexpression of c-myc oncogene. The oncosuppressor retinoblastoma gene revealed no remarkable rearrangement, but its protein product was abnormal in certain interphase cells of each cell line. Author.

Mucoceles of the paranasal sinsuses with intracranial and intraorbital extension: report of 28 cases. Delfini, R., Missori, P., Iannetti, G., Ciappetta, P., Cantore, G. Department of Neurological Sciences, La Sapienza University, Rome, Italy. *Neurosurgery* (1993) June, Vol. 32 (6), pp. 901–6; discussion 906.
Twenty-eight patients received surgical treatment for a paranasal sinus mucocele with intracranial and/or intraorbital extension. The lesions were classified by site and extension: anterior without intracranial extension (Type 1), seven patients; anterior with intracranial extension (Type 2), 11 patients; posterior midline without intracranial extention (Type 3), five patients; and posterior with intracranial extension (Type 4), five patients. The surgical approaches were: transnaso-orbital, transfrontonaso-orbital, transsphenoidal, transmaxillosphenoidal, and subfrontal transbasal; the choice depended on the site and extension of the lesion, with the aim of securing maximum exposure to ensure total removal of the lesion with its capsule. A transcranial approach was reserved for mucoceles possessing an intracranial extension or causing distension of the bone structures with optic pathway neurological symptoms. With a coronal or transfacial skin incision along the lines of the forehead, nose, and orbital muscles of expression and careful reconstruction, the patients' natural cast of features was spared or restored in a single operation. Author.

Oral pilocarpine for post-irradiation xerostomia in patients with head and neck cancer. Johnson, J. T., Ferretti, G. A., Nethery, W. J., Valdez, I. H., Fox, P. C., Ng, D., Muscoplat, C. C., Gallagher, S. C. Department of Otolaryngology, University of Pittsburgh, PA. *New England Journal of Medicine* (1993) August 5, Vol. 329 (6), pp. 390–5.
BACKGROUND AND METHODS. We evaluated pilocarpine hydrochloride for the treatment of radiation-induced xerostomia, a common complication of irradiation of the head and neck. A prospective, randomized, double-blind, placebo-controlled trial was undertaken to test the safety and efficacy of pilocarpine, particularly in reversing the decrease in the production of saliva and other manifestations of xerostomia. Patients received either placebo or pilocarpine (5 mg or 10 mg orally three times a day) for 12 weeks and were elevated at base line and every four weeks. RESULTS. We studied 207 patients who had each received > or = 4000 cGy of radiation to the head and neck. In the patients receiving the 5 mg dose of pilocarpine, oral dryness improved in 44 per cent, as compared with 25 per cent of the patients receiving placebo ($p = 0.027$). There was overall improvement in 54 per cent of the 5 mg group as compared with 25 per cent of the placebo group ($p = 0.003$), and 31 per cent of the 5 mg group had improved comfort of the mouth and tongue, as compared with 10 per cent of the placebo group ($p = 0.002$). Speaking ability improved in 33 per cent of the 5 mg group as compared with 18 per cent of the placebo group ($p = 0.037$). Saliva production was improved, but it did not correlate with symptomatic relief. There were comparable improvements in the group receiving the 10 mg dose. The primary adverse effect was sweating, in addition to other minor cholinergic effects. Six and 29 per cent of the patients in the 5 mg and 10 mg groups, respectively, withdrew from the study because of adverse effects. There were no serious adverse effects related to pilocarpine. CONCLUSIONS. Pilocarpine improved saliva production and relieved symptoms of xerostomia after irradiation for cancer of the head and neck, with minor side effects that were predominantly limited to sweating. Author.

Outcomes of bacterial meningitis in children: a meta-analysis. Baraff, L. J., Lee, S. I., Schriger, D. L. UCLA Emergency Medicine Center 90024. *Pediatric Infectious Diseases Journal* (1993) May, Vol. 12 (5), pp. 389–94.
We abstracted the results of all English language reports of the outcomes of bacterial meningitis published after 1955. We used hierarchical Bayesian meta-analysis to determine the overall and organism-specific frequencies of death and persistent neurologic sequelae in children two months to 19 years of age. A total of 4920 children with acute bacterial meningitis were included in 45 reports that met the inclusion criteria. Children described in the 19 reports of prospectively enrolled cohorts from developed countries had lower mortality (4.8 per cent vs. 8.1 per cent) and were more likely to have no sequelae (82.5 per cent vs. 73. 9 per cent). In these 19 studies 1602 children were evaluated for at least one sequela after hospital discharge. The mean probabilities of these sequelae were: deafness, 10.5 per cent; bilateral severe or profound deafness, 5.1 per cent; mental retardation, 4.2 per cent; spasticity and/or paresis, 3.5 per cent; seizure disorder, 4.2 per cent; and no detectable sequelae, 83.6 per cent. Mean probabilities of outcomes varied significantly by etiologic bacteria, e.g. mortality: Haemophilus influenzae, 3.8 per cent; Neisseria meningitis, 7.5 per cent; Streptococcus pneumoniae, 15.3 per cent. Author.

Effects of caffeine and diphenhydramine on auditory evoked cortical potentials. Tharion, W. J., Kobrick, J. L., Lieberman, H. R., Fine, B. J. Military Performance and Neuroscience Division, U.S. Army Research Institute of Environmental Medicine, Natick, MA 01760-5007. *Perceptual and Motor Skills* (1993) June, Vol. 76 (3 Pt 1), pp. 707–15.
Caffeine and diphenhydramine are known to affect cognitive functioning in vigilance tasks. In this study, long-latency auditory evoked potentials (AEPs) obtained during concomitant performance of a visual vigilance task were examined for changes in response to administration of caffeine (200 mg) and diphenhydramine (25 mg). The AEPs were also analyzed for changes over time for up to two hours postdrug administration. Significant increases in N1 and P2 latencies and decreases in amplitude voltage were exhibited over time. The P2-N2 amplitude was significantly lower throughout testing after taking caffeine. A significant increase was seen in the P2-N2 amplitude 40 min after diphenhydramine ingestion. These changes in amplitude may be the result of the auditory stimulus acting as a diversion to the participants while performing the visual vigilance task. Diphenhydramine was more likely to impair participants' vigilance, resulting in greater attention paid toward the auditory stimulus, whereas caffeine seemed to help participants maintain their focus of attention on the visual vigilance task. Author.

Angina and myocardial infarction presenting with pain confined to the ear. Rothwell, P. M. Department of Medicine, Falkirk and District Royal Infirmary, UK. *Postgraduate Medical Journal* (1993) April, Vol. 69 (810), pp. 300–1.
Two cases are described in which cardiac ischemia presented with pain confined to the ear. In both cases the correct diagnosis was missed and treatment delayed. Angina and myocardial infarction may present with pain in the ear due to referral via the vagus nerve. Author.

Effect of upper airway muscle contraction on supraglottic resistance and stability. Odeh, M., Schnall, R., Gavriely, N., Oliven, A. Department of Medicine B, Bnai-Zion Medical Centre, Haifa, Israel. *Respiratory Physiology* (1993) May, Vol. 92 (2), pp. 139–50.
The activation of upper airway (UAW) muscles is believed to increase UAW patency to air flow. To evaluate the mechanisms by which UAW muscles act to prevent UAW collapse, pressure-flow relationships of the isolated UAW as well as the negative pressure required to cause UAW collapse (Pcrit) were assessed before and during electrical stimulation of four UAW muscle pairs in anesthetized dogs. Stimulation of each of the muscles shifted the pressure-flow curve toward lower pressures for any given flow rate, indicating UAW dilatation. UAW resistance decreased from 7.9 ± 0.6 to 0.4 ± 0.1, 2.7 ± 0.6, 2.3 ± 0.8 and to 4.8 ± 1.5 cmH20.L-1 sec during genioglossus, geniohyoid, sternothyroid and sternohyoid stimulation respectively ($p<0.01$ in all cases). However, only genioglossus stimulation significantly increased Pcrit (from −3.4 ± 0.6 to −12.0 ± 1.8 cmH20, $p<0.001$). Relaxation of the genioglossus thus appears to produce the main impediment to air flow through the UAW, and contraction of this muscle improves UAW patency both by dilating the supraglottic airway and by stiffening its walls. Author.

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Epidemiology of hearing disorders. Some factors affecting hearing. The Copenhagen Male Study. Parving, A., Hein, H. O., Suadicani, P., Ostri, B., Gyntelberg, F. Department of Audiology, Bispebjerg Hospital, Copenhagen, Denmark. *Scandinavian Audiology* (1993), Vol. 22 (2), pp. 101–7.
This epidemiological investigation reports on the results from a 10-year follow-up examination concerning hearing and factors known to cause hearing problems. In addition, an evaluation concerning the possible association between hearing impairment and factors affecting the state of health is reported. The original sample comprised 5,050 subjects, and at the present examination 3,387 (67 per cent) males at a median age of 63 years (range 53–75) participated. An increasing prevalence of 30–40 per cent of hearing problems was demonstrated with increasing age. A prevalence of 17 per cent of tinnitus of more than 5 min duration was found; three per cent indicated that their tinnitus was so annoying that it interfered with sleep, reading and/or concentration. The prevalence of tinnitus increased up to the age of 70, and seemed to remain constant thereafter. A significant correlation between experienced hearing problems and environmental factors causing damage to the hearing organ was found. Furthermore, a correlation between hearing problems and C3-S complement was found, but no correlations could be established between hearing problems and other blood groups. No correlation was found between cardiovascular disease and hearing problems except for minor circulatory problems, nor between hearing problems and hormonal diseases. It is concluded that the present study supports previous epidemiological investigations concerning the prevalence of hearing problems and factors affecting hearing. The association between hearing problems and C3-S complement, which to the authors' knowledge has not previously been reported, should be further evaluated. No association was found between hearing problems and other blood groups. Author.

Longitudinal changes in hearing ability among Swedish conscripts. Persson, B. O., Svedberg, A., Gothe, C. J. National Board of Occupational Safety and Health, Stockholm, Sweden. *Scandinavian Audiology* (1993), Vol. 22 (2), pp. 141–3.
An analysis of a military database of about 36,000 tone audiograms from male Swedish conscripts aged 18 to 19 and recorded from 1969 to 1977 demonstrates a successively decreasing prevalence of hearing loss during this period. This might reflect improved therapy during the 1950s and 1960s of ear disorders causing hearing loss in small children. If observations in other studies on a reverse trend during the 1980s are confirmed, they indicate, together with the present study, that around 1980 young people began to be harmfully exposed to an environmental factor causing hearing loss. If this is the case, the causative factor would probably be non-occupational exposure to electronically amplified sounds from loudspeakers and headphones. Author.

Abnormalities of the auditory brainstem response in vitiligo. Nikiforidis, G. C., Tsambaos, D. G., Karamitsos, D. S., Koutsojannis, C. C., Georgiou, S. V. Department of Medical Physics, University of Patras, Greece. *Scandinavian Audiology* (1993), Vol. 22 (2), pp. 97–100.
Accumulating evidence suggests that vitiligo is a systemic disease affecting the entire pigmentary system and possibly the melanin-containing cellular elements of the nervous system. In the present paper we comparatively study the auditory brainstem response (ABR) of 30 patients with active vitiligo and 50 healthy human subjects in order to detect possible subclinical abnormalities of the auditory system in this disorder. Our findings reveal a statistically significant ($p<0.01$) decrease of the I peak latency and a statistically significant ($p<0.01$) increase of the I–III interpeak latency in the patients as compared to the controls. The decrease of the first peak latency may be due to a numerical decrease of active melanocytes in the inner ear which results in an impairment of the ion exchange between the endolymph and perilymph. The increase of the I–III interpeak latency may be explained in terms of an abnormal synaptic activity and transmission of the action potential from the auditory nerve to the superior olive. Author.

Short-term and long-term failures of anterior polymethylmethacrylate construct with esophageal perforation. Halligan, M., Hubschmann, O. R. Department of Surgery, University of Medicine and Dentistry of New Jersey. *Spine* (1993) May, Vol. 18 (6), pp. 759–61.
Three patients with a history of anterior spinal surgery treated with a polymethylmethacrylate construct had extrusion of their constructs. In two instances, there were life threatening esophageal fistulas, mediastinitis, and sepsis three months to 10 years after the original surgery. Surgical treatment required removal of the construct, treatment of the esophageal injury, and use of new spinal stabilization. Based on their experience and a review of the literature, the authors strongly recommend against the use of polymethylmethacrylate alone in anterior procedures involving the cervical spine except to treat malignancies in patients with a short life expectancy. Author.

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