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# Abstract Selection

**Vestibular syndromes in the roll plane: topographic diagnosis from brainstem to cortex.** Brandt, T., Dieterich, M. Department of Neurology, Klinikum Grosshadern, University of Munich, Germany. *Annals of Neurology* (1994) September, Vol. 36 (3), pp. 337–47.
Central vestibular syndromes may be classified according to the three major planes of action of the vestibuloocular reflex, secondary to a lesional tone imbalance in either the horizontal yaw plane or the vertical pitch or roll plane. The clinical signs, both perceptual and motor, of a vestibular tone imbalance in the roll plane are ocular tilt reaction (OTR), ocular torsion, skew deviation and tilts of the perceived visual vertical (SVV). Either complete OTR or skew torsion without head tilt indicates a unilateral peripheral deficit of otolith input or a unilateral lesion of graviceptive brainstem pathways from the vestibular nuclei (crossing midline at the pontine level) to the interstitial nucleus of Cajal (INC) in the rostral midbrain. SVV tilts are the most sensitive sign of a vestibular tone imbalance in roll and occur with peripheral or central vestibular lesions from the labyrinth to the vestibular cortex. All tilt effects, perceptual, ocular motor and postural, are ipsiversive (ipsilateral eye undermost) with unilateral peripheral or pontomedullary lesions below the crossing of the graviceptive pathways. All tilt effects are contraversive (contralateral eye undermost) with unilateral pontomesencephalic brainstem lesions and indicate involvement of the medial longitudinal fasciculus or the rostral midbrain (INC). Unilateral lesions of vestibular structures rostral to the INC typically manifest with deviations of perceived vertical without concurrent eye-head tilt. OTR in unilateral paramedian thalamic infarctions indicates simultaneous ischemia of the paramedian rostral midbrain including the INC. Unilateral lesions of the posterolateral thalamus can cause thalamic astasia and moderate ipsiversive or contraversive SVV tilts, thereby indicating involvement of the vestibular thalamic subnuclei. Unilateral lesions of the parietoinsular vestibular cortex cause moderate, mostly contraversive SVV tilts. An SVV tilt found with monocular but not with binocular viewing is typical for a trochlear or oculomotor palsy rather than a supranuclear graviceptive brainstem lesion. Author.

**The relationship of angiogenesis to biological activity in human squamous cell carcinomas of the head and neck.** Albo, D., Granick, M. S., Jhala, N., Atkinson, B., Solomon, M. P. Department of Surgery, Medical College of Pennsylvania, Philadelphia 19129. *Annals of Plastic Surgery* (1994), June, Vol. 32 (6), pp. 588–94.
Tumour angiogenesis has recently been related to tumour growth and metastasis, which determine the clinical outcome of the patient. This study was designed to determine the relationship between angiogenesis in primary squamous cell carcinomas (SCC) of the head and neck and the development of recurrent or metastatic disease, or both. Different SCC of the head and neck were studied. Microvessels were selectively stained using a monoclonal antibody for factor VIII. Microvessel counts were performed in the tumour, in the tissues immediately adjacent, and in normal tissues of similar topographies. Microvessel counts were then correlated with clinical outcome (development of recurrent or metastatic disease, or both). Recurrent or metastatic disease, or both, developed in patients with high microvessel counts (mean, 121.25) in the tissues adjacent to the tumour 7 to 16 months after initial treatment. Those with low microvessel counts (mean, 33.75) were disease-free for 16 months to six years ($p<0.01$). Microvessel counts inside the tumour were also higher in those in whom recurrences or metastasis, or both, developed, but were not statistically significant. In this study, angiogenesis was directly related to clinical outcome. Thus, angiogenesis may be an independent predictor of recurrent or metastatic disease, or both, which could help in the selection of patients with SCC of the head and neck for aggressive therapy. Author.

**Pathological findings in clinically false-negative and false-positive neck dissections for oral carcinoma.** Woolgar, J. A., Vaughan, E. D., Scott, J., Brown, J. S. University of Liverpool School of Dentistry. *Annals of the Royal College of Surgeons in England* (1994) July, Vol. 76 (4), pp. 237–44.
A series of 86 patients presenting with oral cancer underwent neck dissection (114 sides of neck), after preoperative staging by palpation under general anaesthesia and CT imaging. Detailed histopathological assessment of the surgical neck dissection specimens showed the incidence of clinically false-negative and false-positive assessments was 27 and 40 per cent, respectively. Extranodal spread of metastatic carcinoma was present in 16 per cent of clinically negative necks. The pathological findings provided plausible explanations for the clinical misdiagnosis in all 19 of the false-positive necks and in 13 of the 18 false-negative necks, where micrometastases or metastasis to nodes measuring less than 1.7 cm accounted for five and seven misdiagnosed cases, respectively. We conclude that the most stringent clinical protocols, even when supplemented by CT scanning, cannot be expected to achieve 100 per cent accuracy. Detailed histopathological assessment provides the most reliable, currently available method of diagnosing cervical metastatic disease. Author.

**Effects of phenytoin on vection-induced motion sickness and gastric myoelectric activity.** Stern, R. M., Uijtdehaage, S. H., Muth, E. R., Koch, K. L. Department of Psychology, Penn State University, University Park 16802. *Aviation and Space Environment Medicine* (1994) June, Vol. 65 (6), pp. 518–21.
The purpose of this study was to test the prophylactic effects of a single low dose of phenytoin on motion sickness. In this double-blind study, fasted male subjects who were susceptible to motion sickness were given either a 200-mg tablet of phenytoin ($n = 19$) or a placebo ($n = 16$). Electrogastrograms (EGG's) were recorded predrug, postdrug (4 h after ingestion of drug), before drum rotation, and during drum rotation. During testing, subjects were exposed to an optokinetic drum which was stationary for 8 min and which then rotated at 10 rpm for 16 minutes. The results showed that the phenytoin subjects had a lower mean subjective symptom score than the placebo group (5.8 vs 7.1), but the difference was not significant. However, 6 of 16 placebo subjects requested early termination of drum rotation due to symptom severity, whereas only 2 of 19 phenytoin subjects terminated testing prematurely ($\chi^2 = 3.89$, $P<0.05$). The phenytoin group showed no increase in gastric tachyarrhythmia, the pattern of gastric myoelectric activity that usually accompanies nausea, during drum rotation, whereas tachyarrhythmia doubled for the placebo group. In conclusion, we have demonstrated that a single low dose of phenytoin prevents the development of gastric tachyarrhythmia and decreases the intensity of motion sickness symptoms. Author.

**Ossifying fibromyxoid tumour of soft parts—a new tumour of the parotid/zygomatic arch region.** Williams, R. W., Case, C. P., Irvine, G. H. Southmead Hospital, Bristol. *British Journal of Oral Maxillofacial Surgery* (1994) June, Vol. 32 (3), pp. 174–7.
The ossifying fibromyxoid tumour of soft parts was first described as recently as 1989 by Enzinger has not been previously reported in the maxillofacial literature. This tumour has a proven record of recurrence and a potential in a few cases to become malignant and to metastasise. Being such a rare and relatively newly described tumour it has proved to be difficult to diagnose and manage. In order to illustrate these difficulties we describe a case in which such a tumour occurred in the partoid/zygomatic arch region and recurred three times following surgical removal over a period of 24 years. Since the tumour has a pseudo-capsule containing nests of tumour cells, we recommend that it could be removed from the head and neck region with a wide margin of excision. Author.

**Enhancement of the turtle olfactory responses to fatty acids by treatment of olfactory epithelium with phosphatidylserine.** Taniguchi, M., Kashiwayanagi, M., Kurihara, K. Faculty of Pharmaceutical Sciences, Hokkaido University, Sapporo, Japan. *Brain Research* (1994) May 30, Vol. 647 (1), pp. 10–4.
The turtle olfactory epithelium was treated with suspensions of various lipids and their effects on the olfactory responses were examined by measuring the olfactory bulbar responses. The phosphatidylserine (PS)-treatment greatly lowered the threshold for n-valeric acid and enhanced its responses at all concentrations examined. The responses to isovaleric acid and n-butyric acid were also greatly enhanced by the PS-treatment. The responses to 10 other ordorants examined were a little enhanced or unchanged by the PS-treatment. The enhanced responses to the fatty acids returned to the original level about 10 h after the treatment. It was confirmed that PS was incorporated into olfactory epithelium by incubating the epithelium with PS-suspension containing (14C)PS. The treatment of the epithelium with phosphatidic acid or cardiolipin unchanged or suppressed the responses to odorants including the fatty acids. The present results suggest that lipids as well as proteins in the receptor membranes play an important role in odor reception. Author.

**Monaural sound localization: acute versus chronic unilateral impairment.** Slattery, W. H. 3rd, Middlebrooks, J. C. Department of Otolaryngology, University of Florida Brain Institute, Gainesville 32610-0244. *Hearing Research* (1994) May, Vol. 75 (1–2), pp. 38–46.
We tested the ability of human listeners to localize broadband noise bursts in the absence of binaural localization cues. The subject population consisted of five patients, who had normal hearing in one ear and congenital deafness in the other, and seven normal controls, who were tested with both ears open and with one ear plugged. Consistent with previous reports, the introduction of an ear plug unilaterally into control subjects resulted in a prominent lateral displacement in their localization judgements by an average of 30.9 degrees toward the side of the open ear. Vertical localization was less strongly impaired. The five monaural patients showed a considerable range of ability to localize sounds. Two of the patients were essentially indistinguishable from the plugged control subjects in that they showed a prominent displacement of responses toward the auditory cortex, resembling that obtained in psychoacoustical masking studies. The results demonstrate that frequency tuning of the neurons or neuron ensembles in the human auditory cortex can be studied completely noninvasively. Moreover, since the stimuli were ignored by the subjects, the filter shape is not affected by the criterion adopted by the subject in the discrimination task. Author.

**Cochlear function after selective inner hair cell degeneration induced by carboplatin.** Takeno, S., Harrison, R. V., Ibrahim, D., Wake, M., Mount, R. J. Department of Otolaryngology, Hospital for Sick Children, Toronto, Ontario, Canada. *Hearing Research* (1994) May, Vol. 75 (1–2), pp. 93–102.
The ototoxicity of carboplatin, a second generation anti-cancer agent, was examined using the chinchilla as an animal model. In animals treated with a clinical therapeutic dose (400 mg/m$^2$), the dominant degenerative change is to inner hair cells (IHCs). This is in sharp contrast to most other ototoxic agents, which damage primarily the outer hair cells (OHCs). Functional changes to the cochlea have been evaluated in carboplatin treated subjects by recording cochlear action potentials (CAP) and cochlear microphonics (CM); cochlear lesions were evaluated using scanning electron microscopy. In carboplatin treated animals, CAP thresholds to tone-pip stimuli were elevated in proportion to IHC damage in corresponding cochlear regions. In contrast, CM amplitudes and 'thresholds' remained close to normal in most cases, reflecting the preservation of OHCs in the basal turn. These results indicate a high degree of independence between the inner and outer hair cell systems in the cochlear transduction mechanism. We suggest that this species-specific preparation with selective IHC loss will provide a valuable tool for studying, separately, the role of OHCs in both afferent and efferent cochlear function. Author.

**Efficacy of topical amoxicillin plus clavulanate/ticarcillin plus clavulanate and clindamycin in contaminated head and neck surgery: effect of antibiotic spectra and duration of therapy.** Grandis, J. R., Vickers, R. M., Rihs, J. D., Yu, V. L., Johnson, J. T. Department of Otolaryngology, University of Pittsburgh School of Medicine, Pennsylvania. *Journal of Infectious Diseases* (1994) September, Vol. 170 (3), pp. 729–32.
This prospective, randomized trial was designed to determine the efficacy and mechanism of action of topical mouthwash versus parenterally administered perioperative prophylactic antibiotics in contaminated head and neck surgery. Patients were randomly assigned to one of four treatment groups: one day of parenteral clindamycin (standard prophylaxis), one day of topical clindamycin, five days of topical clindamycin, or one day of topical amoxicillin plus clavulanate/ticarcillin plus clavulanate. Patients who received the latter regimen had fewer bacteria postoperatively compared with the other three treatment groups. The number of gram-negative aerobic bacilli on postoperative oral cavity cultures was increased in all three clindamycin groups but not in the amoxicillin plus clavulanate/ticarcillin plus clavulanate group. Parenteral clindamycin appears to exert its effect by being in the neck tissues at the time of surgery; however, all three topical regimens were more effective at reducing the number of bacteria in the neck viscera. Topical antibiotic prophylaxis was simple, safe, effective, and well tolerated. Author.

**Uqusual inheritance of primary ciliary dyskinesia (Kartagener's syndrome).** Narayan, D., Krishnan, S. N., Upender, M., Ravikumar, T. S., Mahoney, M. J., Dolan, T. F. Jr., Teebi, A. S., Haddad, G. G. Department of Surgery, Yale University School of Medicine, New Haven, Connecticut. *Journal of Medical Genetics* (1994) June, Vol. 31 (6), pp. 493–6.
Primary ciliary dyskinesia syndrome is characterized by chronic sinusitis, bronchiectasis, and, in 50 per cent of cases, dextrocardia. It is generally believed to be inherited as an autosomal recessive disorder. In this report, we describe a family consisting of a mother and her five male children, the offspring of three different fathers, all of whom have this syndrome. This argues for either an X linked or autosomal dominant pattern of inheritance. Cytogenetic and FISH (fluorescent in situ hybridization) analyses were done on the mother and one son and were found to be normal. Author.

**Otitis media in early childhood and patterns of intellectual development and later academic performance.** Roberts, J. E., Burchinal, M. R., Campbell, F. Frank Porter Graham Child Development Center, University of North Carolina at Chapel Hill 27599–8180. *Journal of Pediatrics and Physiology* (1994) June, Vol. 19 (3), pp. 347–67.
Examined long-term associations between otitis media with effusion (OME) during the first five years of life and patterns of intellectual development from three to eight years and academic performance after three years in elementary school. Fifty-five socioeconomically disadvantaged children were studied prospectively between birth and eight years. OME history was routinely documented from birth through five years during well and illness periods. Two aspects of children's OME experience were examined in relation to developmental outcomes: timing (whether the OME occurred during infancy *vs* preschool years) and nature (whether the OME tended to be recurrent or persistent). Although OME during the first five years of life was not related to patterns of overall intellectual development between ages three and eight years, recurrent OME during infancy was a negative predictor of teachers' ratings of children's task orientation/distractibility in the classroom. Results are interpreted in the context of the growing OME literature. Author.

**MRI as a single screening procedure for acoustic neuroma: a cost effective protocol.** Robson, A. K., Leighton, S. E., Anslow, P., Milford, C. A. Department of Otolaryngology, Radcliffe Infirmary, Oxford, UK. *Journal of the Royal Society of Medicine* (1993) August, Vol. 86 (8), pp. 455–7.
Magnetic resonance imaging (MRI) is accepted as the 'gold standard' in diagnosing acoustic neuromas. Limited availability and perceived high costs have prevented clinicians from using it as a first-line investigation. A prospective study was set up in a specially designated screening session to audit the cost effectiveness and accuracy of audiovestibular investigations compared to MRI. Ninety-nine patients with asymmetrical audiovestibular symptoms or signs were investigated. Of these 54 evoked response audiometry tests, and 39 calorics were either not performed or were inconclusive. One patient refused to enter the MRI machine. All others received an unequivocal report after MRI and four tumours (three intracanalicular) were detected. The total cost of the audiovestibular protocol was 12,545 pounds compared to 12,900 pounds for the MRI protocol, which is a diagnostic and well-tolerated procedure. This study shows that MRI can be cost effective, as well as accurate, when used as a single screening procedure for acoustic neuromas. Author.

**Prognostic factors of poorly-differentiated squamous cell carcinoma of the nasopharynx.** Mitsuhashi, N., Niibe, H., Hayakawa, K., Takaki, Y., Takahashi, M., Yamakawa, M., Hashida, I., Akimoto, T., Kiryu, Y. Department of Radiology and Radiation Oncology, Gunma University School of Medicine, Maebashi. *Japanese Journal of Clinical Oncology* (1994) August, Vol. 24 (4), pp. 191–8.
Retrospective analysis was performed with intent to evaluate prognostic factors in radiation therapy for 72 patients with histologically confirmed poorly-differentiated squamous cell carcinoma of the nasopharynx. The 10-year overall actuarial and cause specific survival rates were 36 and 40 per cent, respectively. The median survival time was 43 months. Sixteen patients survived for more than 10 years (maximum 297 months). The five- and 10-year cause specific survival rates for Stages I, II, III and IV disease were 100 and 100 per cent, 80 and 27 per cent, 83 and 83 per cent, and 38 and 31 per cent, respectively. Two patients with Stage II disease died of a recurrent tumour more than seven years after their initial treatment. There was a significant difference between the survival curve for Stage I or III disease and that for Stage IV disease ($P<0.05$). The patients with a $T_{1-3}$ tumour had a statistically better survival rate than those with $N_3$ ($P<0.01$). Twenty-eight patients developed loco-regional recurrence. Twenty-one patients developed distant bone metastases, most of which occurred within a year of the initiation of radiation therapy. The survival for the patients with loco-regional recurrence was nearly the same as that for the patients without loco-regional recurrence. The 10-year survival rates for patients with and without distant bone metastases were 0 and 48 per cent, respectively ($P<0.001$). Multivariate analysis revealed that the parameters influencing cause specific survival were stage categories of T and N, and adjuvant chemotherapy, whereas those influencing loco-regional recurrence were only stage categories of T and N. The only parameter to influence distant bone metastases was sex. We concluded the most important cause of failure for the patients with poorly-differentiated squamous cell carcinoma of the nasopharynx to be distant bone metastases. Author.

**A double-blind, placebo-controlled trial by the sublingual route of immunotherapy with a standardized grass pollen extract.** Sabbah, A., Hassoun, S., Le-Sellin, J., Andre, C., Sicard, H. Laboratoire d'Immunollergologie, Centre Hospitalier Regional et Universitaire, Fresnes, France. *Allergy* (1994) May, Vol. 49 (5), pp. 309–13.
Fifty-eight patients with well-documented history of seasonal rhinoconjunctivitis caused by grass pollens were allocated randomly on a double-blind basis to receive either sublingual therapy with a solution of purified, standardized allergen preparation (Stallergenes) or a matched placebo for 17 weeks. The assessment of the effect of oral immunotherapy, done with drops of five-grass allergen extract, was on the clinical symptoms and on the medication score of the authorized rescue treatments. The actively treated patients had significantly ($P<0.05$ to $P<0.01$) fewer symptoms of rhinitis (sneezing and rhinorrhea) and of conjunctivitis (redness and tears) during the pollen season than the placebo group. Consumption of nasal solution of sodium cromoglycate and of betamethasone and dexchlorpheniramine was significantly less in the desensitized group ($P<0.01$). Side-effects were negligible. This study concludes that perlingual immunotherapy with grass pollen extract in grass-pollen-sensitive seasonal hay fever and conjunctivitis patients is effective, easy to perform, inexpensive, and safe. Author.

**Role of food allergy in serous otitis media.** Nsouli, T. M., Nsouli, S. M., Linde, R. E., O'Mara, F., Scanlon, R. T., Bellanti, J. A. Department of Pediatrics, Georgetown University School of Medicine, Washington, D.C. *Annals of Allergy* (1994) September, Vol. 73 (3), pp. 215–9.
BACKGROUND. The relationship between IgE-mediated hypersensitivity and recurrent serous otitis media has not been completely established. OBJECTIVE. The purpose of the present study was to examine the prevalence of food allergy in patients with recurrent serous otitis media. METHODS. A total of 104 unselected patients (age range 1.5 to nine years, mean 4.6 years) with recurrent serous otitis media were evaluated for food allergy by means of skin prick testing, specific IgE tests, and food challenge. Patients who were allergic to food(s) underwent an exclusion diet of the specific offending food(s) for a period of 16 weeks. A non-double blinded food challenge was performed with the suspected offending food(s). Their middle ear effusion was monitored and assessed by tympanometry (Welch Allyn Model 23600) during the pre-elimination, elimination and challenge diet phases. RESULTS. There was a significant statistical association, by chi-square analysis, between food allergy and recurrent serous otitis media in 81/104 patients (78 per cent). The elimination diet led to a significant amelioration of serous otitis media in 70/81 (86 per cent) patients as assessed by clinical evaluation and tympanometry. The challenge diet with the suspected offending food(s) provoked a recurrence of serous otitis media in 66/70 patients (94 per cent). CONCLUSIONS. The possibility of food allergy should be considered in all pediatric patients with recurrent serous otitis media and a diligent search for the putative food allergen made for proper diagnostic and therapeutic intervention. Author.

**Efficacy of loratadine versus placebo in the prophylactic treatment of seasonal allergic rhinitis.** Dolovich, J., Moote, D. W., Mazza, J. A., Clermont, A., Petit Clerc, C., Danzig, M. McMaster University, Hamilton, Ontario, Canada. *Annals of Allergy* (1994) September, Vol. 73 (3), pp. 235–9.
The efficacy of loratadine as prophylactic therapy for seasonal allergic rhinitis was evaluated in a randomized, double-blind, parallel group, placebo-controlled study. One hundred eighteen subjects received either loratadine, 10 mg once daily, or placebo for six weeks. Treatment was begun prior to the onset of grass pollen seasonal symptoms of allergic rhinitis. Total symptom-free days occurred more frequently in subjects receiving loratadine. More loratadine than placebo subjects (65 per cent versus 49 per cent) had no symptoms or mild rhinitis at the end of the study. In contrast, the differences between loratadine and placebo in symptom scores did not achieve significance. The incidence of sedation and anticholinergic effects were comparable between the groups. Prophylactic loratadine therapy was effective in suppressing symptoms of seaonal allergic rhinitis and providing patients with symptom-free days throughout the pollen season. Author.

**Once daily intranasal fluticasone propionate is effective for perennial allergic rhinitis.** Banov, C. H., Woehler, T. R., LaForce, C. F., Pearlman, D. S., Blumenthal, M. N., Morgan, W. F., Frazer, H., Southern, D. L., Gold, B., Field, E., *et al.* Research for Health, Inc, Houston, Texas. *Annals of Allergy* (1994) September, Vol. 73 (3), pp. 240–6.
The efficacy of intranasal fluticasone propionate 200 micrograms once daily or 100 micrograms twice daily in treating perennial allergic rhinitis was evaluated in a randomized, double-blind, placebo-controlled study of 24 weeks' duration in 365 patients. Clinician-rated and patient-rated total nasal symptom severity scores were improved within one week of treatment with either regimen of fluticasone propionate and improvement was maintained over the 24-week treatment period. Clinician-rated overall evaluation indicated a significantly better response in the two fluticasone propionate groups compared with the placebo group. All efficacy evaluations indicated no difference in response between the fluticasone propionate 200 micrograms once-daily and 100 micrograms twice-daily groups. Patients in both fluticasone propionate groups had significantly less nasal obstruction upon awakening than the placebo group at all assessment periods. Fewer patients in either fluticasone propionate group used antihistamine rescue medication compared with the placebo group. The percentage of patients with nasal eosinophils and basophils at the end of the 24-week treatment period was significantly lower in both fluticasone propionate groups compared with the placebo group. Safety evaluations indicated that intranasal fluticasone propionate was as safe as placebo when given as 200 micrograms once dailyor 100 micrograms twice daily. The incidence of drug-related adverse events was similar among the fluticasone propionate and placebo groups except for the incidence of epistaxis and blood in nasal mucus which was somewhat higher in the fluticasone propionate twice-daily group. There was no changes in the ophthalmic examinations to suggest corticosteroid-induced posterior subcapsular cataract formation. Author.

**The effect of otitis media with effusion at preschool age on some aspects of auditory perception at school age.** Schilder, A. G., Snik, A. F., Straatman, H., van den Broek, P. Department of Otorhinolaryngology, University of Nijmegen, The Netherlands. *Ear and Hearing* (1994) June, Vol. 15 (3), pp. 224–31.
The relationship between otitis media with effusion (OME) at preschool age and performance on five tests of auditory perception was studied in 89 school-age children who had OME histories well documented from participation in serial screening for OME at two to four years of age. The tests used at 7.5–8 years of age were: speech-in-noise, filtered speech, binaural fusion, dichotic speech, and auditory

memory. A significant effect of OME was found on the speech-in-noise test. No additional effects were demonstrated by this particular group of children. Author.

**High-frequency audiometric monitoring strategies for early detection of ototoxicity.** Fausti, S. A., Larson, V. D., Noffsinger, D., Wilson, R. H., Phillips, D. S., Fowler, C. G. Department of Veterans Affairs Medical Centre, Portland, Oregon. *Ear and Hearing* (1994) June, Vol. 15 (3), pp. 232–9.
Therapeutic drugs such as the aminoglycoside antibiotics (AMG) and the chemotherapy agent cisplatin (CDDP) are known to cause irreversible hearing loss, typically affecting highest frequency hearing first with progression of loss to the lower frequency regions. Conventional (0.25–8 kHz) and high-frequency (9–20 kHz) serial hearing threshold monitoring was done in 123 hospitalized patients (222 ears) administered AMG or CDDP. Of ears showing a decrease in sensitivity corresponding with treatment, 62.5 per cent demonstrated initial hearing loss solely in the high-frequency range, 13.5 per cent first showed loss only in the conventional-frequency range, and 24 per cent showed loss in both frequency ranges concurrently. Thus, if only high frequencies had been monitored, early change in auditory sensitivity would have been detected in 86.5 per cent of these patients. Further analysis revealed a range of five frequencies, specific to each individual's hearing threshold configuration, in which initial ototoxicity appeared most likely to be detected. Testing only these five frequencies would have identified 89.2 per cent of ears that showed change. The results of this study confirm the need to serially monitor auditory thresholds, especially in the high-frequency range, of patients receiving ototoxic drugs. A shortened five-frequency monitoring protocol is presented and suggested for use with patients unable to tolerate lengthy audiometric testing procedures. Author.

**The influence of radiotherapy treatment time on the control of laryngeal cancer: a direct analysis of data from two British Institute of Radiology trials to calculate the lag period and the time factor.** Roberts, S. A., Hendry, J. H., Brewster, A. E., Slevin, N. J. Biomathematics and Computing Unit, Paterson Institute for Cancer Research, Manchester, UK. *British Journal of Radiology* (1994) August, Vol. 67 (800), pp. 790–4.
This study analyses node-negative laryngeal tumour control data from two clinical trails conducted by the British Institute of Radiology in order to determine the time factors and the presence or absence of a lag period before the time factor takes effect. A direct maximum likelihood approach is used to fit a double-logarithmic model including a repopulation term which commences after an initial lag period, Tk. The analysis yields a time factor of 0.8 Gy per day (95 per cent confidence interval 0.5–1.1 Gy per day) as the extra dose required to counteract the reduction in tumour control probability (TCP) with extension of the treatment time. The latter reduction amounted to between five and 12 per cent TCP per week, depending on the stage and time period. With this dataset, where few patients were treated for short times, no statistically significant lag phase can be demonstrated. However, the best estimate of Tk is 21 days (95 per cent confidence interval 0–27 days), which is consistent with estimates from other studies on other datasets. If a lag phase exists, this study would indicate that the duration is less than 27 days. Other studies have used retrospective data and are subject to a number of potential biases. The present study, using data from multicentre prospective randomized clinical trials, is free from some of these sources of bias. The fact that very similar estimates of the radiobiological parameters are obtained lends credence to these other studies and suggests that the potential biases may be small in practice. Author.

**Case report: prolonged contrast enhancement of the inner ear on magnetic resonance imaging in Ramsay Hunt syndrome.** Downie, A. C., Howlett, D. C., Koefman, R. J., Banerjee, A. K., Tonge, K. A. Department of Radiology, St Thomas' Hospital, London, UK. *British Journal of Radiology* (1994) August, Vol. 67 (800), pp. 819–21.
There have been recent reports of enhancement of the inner ear in acute labyrinthitis on gadolinium enhanced magnetic resonance imaging (MRI). However, none has described persistence of enhancement beyond six weeks. We report a case of Ramsay Hunt syndrome with labyrinthitis, sensorineural hearing loss and facial nerve palsy in which marked enhancement of the inner ear structures was observed in MRI six months after the onset of symptoms. Enhancement on delayed or repeated imaging after a period of months does not exclude labyrinthitis from the differential diagnosis of the small intracanalicular acoustic neuroma, and care should be taken not to confuse them. Author.

**Cisplatin as a radiation sensitizer in the treatment of advanced head and neck cancers. Results of a phase II study.** Chougule, P. B., Suk, S., Chu, Q. D., Leone, L., Nigri, P. T., McRae, R., Lekas, M., Barone, A., Bhat, D., Bellino, J. Department of Radiation Oncology, Rhode Island Hospital, Providence 02903. *Cancer* (1994) 1 October, Vol. 74 (7), pp. 1927–32.
BACKGROUND. Surgery and radiotherapy mainstays in the management of advanced head and neck cancer, although historically, only 20 to 30 per cent of patients survive. Therefore, in an attempt to improve locoregional control and survival, a multimodal protocol using cisplatin as a radiosensitizer was implanted. METHODS. Between 1984 and 1990, 68 patients with advanced head and neck cancer (Stages III and IV) were treated with a regimen consisting of an induction phase of 4500 cGy and two cycles of cisplatin followed by an eradicative phase of either radical surgery (Group A, 27 patients) or radical radiotherapy (Group B, 41 patients). The maintenance phase chemotherapy consisted of adjuvant 5-fluorouracil (5-FU) and cisplatin after completion of locoregional treatment. Of the 68 patients, 19 had Stage III disease, and 49 had Stage IV; 21 had no regional lymph node metastases ($N_0$), and 47 had regional lymph node metastases (N+). RESULTS. The induction phase yielded a 26 per cent (18 patients) complete response (CR) rate and a 57 per cent (39 patients) partial response (PR) rate (response >50 per cent), yielding an overall response rate of 83 per cent. Eleven patients (16%) had stable disease (ST) (i.e. <50% response). The two-year survival rates by initial treatment response forpatients who had a CR, a PR, and stable disease were 53, 56, and 36 per cent, respectively; for Groups A and B, 63 and 45 per cent, respectively; for Stages III and IV, 68 and 43 per cent, respectively; and for $N_0$ and N+, 69 and 43 per cent, respectively. In Group A, 14 of 27 patients (52 per cent) had no viable tumour in the surgical specimen (i.e. had pathologic complete tumour clearance (CTC)); this subgroup had a five-year survival rate of 58 per cent. Ten patients (37 per cent) who had gross total resection of tumour with negative margins but had tumour present in the specimen had a five-year survival of 22 per cent. In Group B, the five-year survival rate was 43% for 27 patients who achieved CR after completion of radical radiotherapy (total tumour dose, 6480–7020 cGy). The five-year survival rate of the 14 patients who had a PR and stable disease after radical radiotherapy and three patients whose resection was incomplete was 0 per cent. The overall two- and five-year survival rates for all patients were 53 and 32 per cent, respectively. Of 21 patients in whom treatment failed, most (90 per cent) had a locoregional recurrence: 13 local recurrences (62 per cent), five regional (24 per cent), and one locoregional (five per cent). Two patients (10 per cent) experienced failure at distant sites (the lung). Major treatment-related morbidity developed in two patients. CONCLUSIONS. Although induction chemotherapy-radiotherapy produces a high clinical response rate, this does not translate into improved survival compared with historical controls. A subgroup that showed complete tumour clearance (CTC or pathologic complete response) at surgery had an apparent improved survival and merits further study. Patient selection did not appear to be a factor for the CTC group, because the majority of patients in this group had partial responses to induction therapy, nodal disease and advanced tumour stage, and tumour presence in unfavourable sites. Author.

**Synchronous and metachronous head and neck carcinomas.** Schwartz, L. H., Ozsahin, M., Zhang, G. N., Touboul, E., De Vataire, F., Andolenko, P., Lacau-Saint-Guily, J., Laugier, A., Schlienger, M. Department of Radiation Oncology, Hopital Tenon, Paris, France. *Cancer* (1994) 1 October, 74 (7), pp. 1933–8.
BACKGROUND. The incidence of head and neck cancer is increasing. To improve the survival of head and neck cancer patients, an effective program of screening and/or chemoprevention of second malignancies is essential. An analysis of the incidence, time to development, and risk factors of second malignant tumours in head and neck cancer patients can contribute to the design of effective screening and chemoprevention programs. METHODS. Eight hundred, fifty-one patients with initial squamous cell carcinoma of the larynx ($n$ = 224), tonsils ($n$ = 189), pyriform sinus ($n$ = 165), oral cavity ($n$ = 129), mobile tongue ($n$ = 72), and base of tongue ($n$ = 72) treated from 1978 to 1990 were analysed for the presence of a second malignancy after initial therapy. Of these 851 patients, 544 (64 per cent) were documented smokers and 35 (four per cent)

were nonsmokers. No smoking information was available for 272 patients. Four hundred, fifty-four patients (53 per cent) were consumers of alcohol and 64 patients (eight per cent) were nondrinkers. Alcohol consumption information was not available for 333 patients. RESULTS. One hundred, sixty-two (19 per cent) second head and neck carcinomas occurred in the original 851 patients. Sixty-six patients (41 per cent) had synchronous tumours, and 96 patients (59 per cent) had metachronous tumours. The probability of developing a second metachronous cancer five-years after undergoing treatment for the initial head and neck cancer was 22 per cent. Borderline statistical significance was observed in the five-year second cancer incidence based on the site of the initial primary cancer (46 per cent for the base of tongue, 34 per cent for the pyriform sinus, 23 per cent for the larynx, 18 per cent for the oral cavity, 15 per cent for the tonsils, and 10 per cent for the mobile tongue). Tobacco smoking (three per cent for nonsmokers *vs.* 26 per cent for < or = 20 pack-years *vs.* 42 per cent for > 20 and < or = 40 packs/year *vs.* 30 per cent for > 40 packs/year of smoking) and the consumption of alcohol (five per cent for non-drinkers *vs.* 32 per cent for drinkers) were both statistically significant in predicting the likelihood of developing a second malignancy. Multivariate analysis revealed that the two independent variables that influenced the occurrence of a second metachronous cancer were the anatomic site of the original primary cancer and patient age. The survival rate after the second cancer was influenced significantly by the site of the second cancer (20 per cent for a second head or neck cancer, three per cent for a second esophageal cancer, and two per cent for a second lung cancer). Continued smoking (20 per cent for nonsmokers *vs.* five per cent for smokers) and continued alcohol consumption (27 per cent for nondrinkers *vs.* six per cent for drinkers) also adversely influenced the survival after the occurrence of a second cancer. CONCLUSIONS. This study confirms the high rate of second cancers in patients with initial head and neck malignancies. The development of a second malignancy is almost always fatal. Screening programs and chemoprevention trials should be directed toward cancer patients with initial head and neck cancers. Only the small subset of nonsmokers and nondrinkers should be excluded from such trials. Author.

**Radiographic imaging studies in pediatric chronic sinusitis.** Garcia, D. P., Corbett, M. L., Eberly, S. M., Joyce, M. R., Le, H. T., Karibo, J. M., Pence, H. L., Nguyen, K. L. Department of Pediatrics, School of Medicine, University of Louisville, KY. *Journal of Allergy in Clinical Immunology* (1994) September, Vol. 94 (3 Pt 1), pp. 523–30.

BACKGROUND. The diagnosis of chronic sinusitis is dependent on the radiographic evidence of sinus disease. METHODS. We evaluated the performance of radiographs and computed tomographic (CT) scans for the examination of the paranasal sinuses of 91 patients of both sexes, ranging in age from two to 17 years, who had chronic upper respiratory tract symptoms for at least three months. The CT scan findings were categorized as no disease; minimal disease, and mild, moderate, and severe sinusitis. RESULTS: Fifty-eight patients (63 per cent) had chronic sinusitis: CT scan abnormalities were minimal in 17 per cent, mild in 19 per cent, moderate in 21 per cent, and severe in 43 per cent. There was a statistically significant correlation between rhinorrhea ($r = 0.25$, $P = 0.01$), cough ($r = 0.27$, $P = 0.009$), and the severity of sinus abnormality as determined by CT scan. Clinical presentation in the mild, moderate, and severe sinusitis groups ($P<0.05$) was significantly different from that of the no disease group, whereas the minimal disease group had subclinical presentation ($P = 0.11$). Clinically significant chronic sinusitis often occurred at multiple sites: 44 per cent of patients had pansinusitis, 50 per cent had disease involvement of at least two sinuses, and six per cent had disease in a single sinus. When sinus radiographs were compared with CT scans ($n = 70$ cases), radiographs could not identify minimal disease. For clinically signifiacnt sinusitis, sinus radiographs detected disease in one of five (20 per cent) frontal sinuses, 0 of 12 (0 per cent) sphenoidal sinuses, and 17 of 31 (54 per cent) ethmoidal sinuses. With the minimal criteria of 40 per cent to 50 per cent opacification or fluid level filling of the maxillary antrum, radiographs detected disease in 37 of 49 (75 per cent) cases. The sensitivity and specificity for a Waters view to confirm clinically significant chronic sinusitis without specifying the sites and severity were acceptable at 76 per cent and 81 per cent, respectively. When limited sinus CT scans were compared with full CT evaluation ($n = 49$ cases), limited studies detected five of five (100 per cent) frontal, nine of 11 (82 per cent) sphenoidal, 14 of 19 (73 per cent) ethmoidal, and 39 of 40 (97 per cent) cases of maxillary sinusitis. The overall agreement was 88 per cent. CONCLUSIONS. A single Waters view is an acceptable part of the initial evaluation of pediatric chronic sinusitis; however, a limited CT scan is a better alternative. Author.

**Radiologic appearance of the irradiated larynx. Part I. Expected changes.** Mukherji, S. K., Mancuso, A. A., Kotzur, I. M., Mendenhall, W. M., Kubilis, P. S., Tart, R. P., Lee, W. R., Freeman, D. Department of Radiology, University of Florida College of Medicine, Shands Teaching Hospital, Gainesville. *Radiology* (1994) October, Vol. 193 (1), pp. 141–8.

PURPOSE: To present the expected appearance of the irradiated larynx and neck as seen at computed tomography (CT). MATERIALS AND METHODS: Sixty-one patients with primary squamous cell carcinoma of the larynx or hypopharynx were treated with radiation therapy. All patients underwent CT before and after treatment. RESULTS: Expected changes include symmetric thickening of the epiglottis, aryepiglottic folds, and false cords and increased attenuation of the paralaryngeal fat. The posterior pharyngeal wall tends to thicken and its mucosa enhances; retropharyngeal space edema is common. Glottic changes include increased attentuation of the paraglottic fat planes and thickening of the anterior and posterior commissures. Subglottic changes include thickening of the mucosa and submucosa. Soft-tissue changes include skin and platysmal thickening, as well as reticulation and increased attentuation of the subcutaneous and deeper fat. CONCLUSION: Familiarization with expected radiologic changes is essential for interpretation of CT images of the irradiated larynx so that such changes are not mistaken for signs of persistent or recurrent tumour. Author.

**Radiologic appearance of the irradiated larynx. Part II. Primary site response.** Mukherji, S. K., Mancuso, A. A., Kotzur, I. M., Mendenhall, W. M., Kubilis, P. S., Tart, R. P., Freeman, D., Lee, W. R. Department of Radiology, University of Florida College of Medicine, Shands Teaching Hospital, Gainesville. *Radiology* (1994) October, Vol. 193 (1), pp. 149–54.

PURPOSE: To evaluate the computed tomographic (CT) appearance of laryngeal tumours treated with radiation therapy and the ability of CT to depict persistent or residual tumour. MATERIALS AND METHODS: Sixty-one patients with primary squamous cell carcinoma of the larynx or hypopharynx were treated with definitive radiation therapy. CT was performed in all patients before and after treatment. RESULTS: In 32 of 41 patients with cancer controlled at the primary site, CT showed complete resolution of tumour, whereas in 10 of 14 patients in whom radiation therapy failed, there was minimal or no reduction in tumour. In a subpopulation of patients who underwent repeat imaging, 18 of 19 with tumour controlled at the primary site had complete resolution of tumour. Overall, in four of 13 patients with 50–75 per cent reduction in tumour size or persistent substantial asymmetry at CT, therapy eventually failed at the primary site. CONCLUSION: Lesions that are reduced by 50 per cent or less at four month follow-up CT are highly suspicious for treatment failure. Repeat CT studies every four months is recommended in addition to careful clinical follow-up. Author.

**Digital feedback suppression (DFS). Clinical experiences when fitting a DFS hearing instrument on children.** Henningsen, L. B., Dyrlund, O., Bisgaard, N., Brink, B. GN Danavox A/S Copenhagen, Denmark. *Scandinavian Audiology* (1994), Vol. 23 (2), pp. 117–22.

A new power behind-the-ear hearing instrument with digital feedback suppression (DFS) seems to be an important step towards solving the problems of acoustic feedback in high power instrument fittings. Previous experiences (Dyrlund and Bisgaard, 1991) with a DFS prototype are confirmed in the present work. Ten profoundly hearing-impaired children were fitted with the new DFS instrument and wore it over a trial period of approximately three weeks, with the new instruments the rationale was to supply equivalent low frequency (<1 kHz) gain compared to the subjects' original hearing instruments, and extra 5–10 dB high frequency (>1 kHz) gain. The hypothesis was that with the new DFS system it would be possible to provide extra high frequency gain for these children without the annoyance of acoustic feedback. The test included questionnaires before and after the trial period, comparative free-field audiometry between the subjects' original and DFS instruments. The free-field audiometric results show a typical improvement of 5–10 dB at 2000 Hz and even larger improvements at higher frequencies. The increased high frequency gain provided by the new instruments did not give rise to significant complaints of feedback or howling during the trial period, and was generally preferred by nine of the 10 subjects after the trial period. Author.