

Abstract Selection

MR enhancement of the internal auditory canal induced by tissue implant after resection of acoustic neurinoma. Kremer, P., Forsting, M., Hamer, J., Sartor, K. Department of Neurosurgery, University of Heidelberg Medical School, Germany. *American Journal of Neuroradiology* (1998) January, Vol. 19 (1), pp. 115–8. **PURPOSE:** We studied intrameatal changes in MR enhancement induced by free-tissue implant over time after surgery for acoustic neurinoma. **METHODS:** Twenty-one patients were examined by MR imaging after suboccipital resection of an acoustic neurinoma. Precontrast and postcontrast MR images were obtained within three days after surgery (early MR images), then six weeks (intermediate MR images) and six months (late MR images) after surgery. A muscle graft as a free-tissue implant was used within the internal auditory canal in 18 of the 21 patients to seal pneumatic cells of the petrosal bone inadvertently opened and to prevent leakage of cerebrospinal fluid. **RESULTS:** On the early MR images, only minimal leptomeningeal or perineural enhancement was seen in 16 patients. There was no sign of residual tumour; however, enhancement increased and changed from linear to nodular on the intermediate MR images in 16 of the 18 cases in which a muscle graft had been used during surgery, mimicking a small intrameatal tumour. This nodular enhancement was still visible on the late MR images in 13 of the 16 cases. **CONCLUSION:** Nodular MR enhancement within the internal auditory canal a few weeks to months after surgery for acoustic neurinoma may be induced by packing material and should be considered when interpreting postoperative MR images. Author.

Beyond the promontory: the multifocal origin of glomus tympanicum tumors. Weissman, J. L., Hirsch, B. E. Department of Radiology, University of Pittsburgh Medical Center, Pa 15213, USA. *American Journal of Neuroradiology* (1998) January, Vol. 19 (1), pp. 119–22.

PURPOSE: We examined other middle ear locations of glomus tympanicum tumours, which arise from glomus bodies accompanying the tympanic (Jacobson's) nerve through the middle ear. Most descriptions place these tumours on the promontory over the basal turn of the cochlea. **METHODS:** We identified seven patients (all women) with small surgically confirmed glomus tympanicum tumours (not completely filling the middle ear) for whom CT scans were available for retrospective review. Patients' ages ranged from 23 to 78 years at the time of the high-resolution CT study (1.0 to 1.5 mm thick sections). **RESULTS:** All tumours arose on the medial wall of the middle ear. One was anterior to the promontory, beneath the cochleariform process and the semicanal of the tensor tympani. Two were inferior to the promontory, in the recess beneath the basal turn of the cochlea. Four were anteroinferior. None was actually on the apex of the promontory. **CONCLUSION:** Glomus tympanicum tumours may arise in various locations on the medial wall of the middle ear, where Jacobson's nerve runs. The promontory is only one middle ear location in which glomus tympanicum tumours may arise. Familiarity with the course of the tympanic nerve helps tailor the search for, and facilitates accurate identification of, tiny glomus tympanicum tumours. Author.

Choanal atresia and hypothelia following methimazole exposure in utero: a second report. Wilson, L. C., Kerr, B. A., Wilkinson, R., Fossard, C., Donnai, D. Regional Genetics Service, St Mary's Hospital, Manchester, United Kingdom. *l.wilson@central.cmht.n-west.nhs.uk*. *American Journal of Medical Genetics* (1998) January 13, Vol. 75 (2), pp. 220–2.

We report on a three-year-old boy with bilateral choanal atresia, hypoplastic nipples, and developmental delay who had been exposed to carbimazole in utero because of maternal Graves disease. His combination of abnormalities and facial appearance strongly resembles that of a previously reported child exposed to

methimazole (which is the active metabolite of carbimazole) in utero. We suggest that this represents a rare but distinct syndrome of methimazole teratogenicity, probably related to first-trimester exposure. Recognition of such teratogenic effects is clearly important for genetic counselling and for management of subsequent pregnancies. Author.

Hereditary motor and sensory neuropathy with deafness, mental retardation, and absence of sensory large myelinated fibers: confirmation of a new entity. Sabatelli, M., Mignogna, T., Lippi, G., Servidei, S., Zollino, M., Padua, L., Lo-Monaco, M., De Armas, L., Mereu, M. L., Tonali, P. Istituto di Neurologia, Policlinico A. Gemelli, Università Cattolica del Sacro Cuore, U.I.L.D.M., Rome, Italy. *American Journal of Medical Genetics* (1998) January 23, Vol. 75 (3), pp. 309–13.

We describe two brothers, 11 and 13 years old, respectively, with an early-onset hereditary motor and sensory neuropathy, deafness, and mental retardation. Electrophysiological studies showed marked reduction of motor and sensory conduction velocity and absence of sensory action potentials. Sural nerve biopsy, performed in both patients, showed absence of large myelinated fibres with normal density of small myelinated fibres without axonal degeneration. Signs of demyelination were found only in the younger patient. We suggest that motorsensory neuropathy associated with deafness and mental retardation with absence of large myelinated fibres on sural nerve biopsy represents a distinct clinicopathological entity, which is transmitted in families probably as an autosomal recessive trait. Author.

Intranasal beclomethasone as an adjunct to treatment of chronic middle ear effusion. Tracy, J. M., Demain, J. G., Hoffman, K. M., Goetz, D. W. Department of Allergy-Immunology, Wilford Hall Medical Center, Lackland AFB, Texas, USA. *Annals of Allergy in Asthma Immunology* (1998) February, Vol. 80 (2), pp. 198–206.

BACKGROUND: Following otitis media, 10 to 50 per cent of children develop residual middle ear effusion with concurrent hearing loss and potential cognitive, behavioural, and language impairment. Prophylactic antibiotics and tympanostomy tubes are currently recommended treatments for chronic middle ear effusion. **OBJECTIVE:** In a double-blind, placebo-controlled, randomized study of chronic middle ear effusion, we assessed the effectiveness of topical intranasal beclomethasone as an adjunct to prophylactic antibiotic therapy. **METHODS:** Sixty-one children, aged three to 11 years with persistent middle ear effusion greater than three months, were randomized into three treatment groups: (1) prophylactic antibiotics; (2) prophylactic antibiotics plus intranasal beclomethasone (336 micrograms/day); and (3) prophylactic antibiotics plus intranasal placebo. Patients were evaluated with aeroallergen skin tests at entry; and tympanogram, otoscopic examination, and symptom questionnaire at 0, 4, 8 and 12 weeks. **RESULTS:** While middle ear pressures, otoscopic examinations, and symptom scores were improved for each treatment group over 12 weeks of therapy, the beclomethasone plus antibiotics group improved all three measures more rapidly than the antibiotics-alone and placebo nasal spray plus antibiotics groups over the first eight weeks. Only the beclomethasone group significantly improved left ($p = 0.004$) and right ($p = 0.01$) middle ear pressures over 12 weeks. Resolution of chronic middle ear effusions was more frequent in the beclomethasone group ($p < 0.05$ at four and eight weeks). No difference in response to nasal steroids was observed between atopic and nonatopic subjects. **CONCLUSIONS:** We conclude that intranasal beclomethasone may be a useful adjunct to prophylactic antibiotic treatment of chronic middle ear effusion. Author.

The role of chemotherapy in the management of nasopharyngeal carcinoma. Chan, A. T., Teo, P. M., Leung, T. W., Johnson, P. J. Department of Clinical Oncology, Sir Y. K. Pao Cancer Centre, Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, New Territories. *Cancer* (1998) March 15, Vol. 82 (6), pp. 1003–12.

BACKGROUND: Nasopharyngeal carcinoma (NPC) is a radio-sensitive tumour for which there is a high local control rate after radical radiotherapy (RT). However, for patients with locoregionally advanced disease, the rate of distant metastasis is high and the five-year overall survival rate is poor. **METHODS:** A review of retrospective and prospective clinical studies was performed to assess the role of chemotherapy in three settings: metastatic disease; neoadjuvant and/or adjuvant; and concurrent chemotherapy with radiotherapy. **RESULTS:** Cisplatin-based combination chemotherapy results in a high response rate in patients with metastatic NPC, and a subgroup may achieve long term disease free survival. The use of neoadjuvant and adjuvant chemotherapy to treat locoregionally advanced disease has resulted in consistently high response rates, but no randomized trial to date has demonstrated an improvement in overall survival. A recent Head and Neck Intergroup study randomized patients in the United States to receive concurrent chemotherapy (cisplatin) and radiotherapy or radiotherapy only. Although this approach demonstrated significant benefit in overall survival favouring the use of concurrent chemotherapy and radiotherapy, its applicability in geographic areas of high NPC incidence remains to be proven. **CONCLUSIONS:** NPC is a chemosensitive tumour, and patients with metastatic disease have a high response rate. Further prospective studies will define the standard approach to treating locoregionally advanced NPC, which is likely to incorporate into the primary treatment some form of systemic chemotherapy. Author.

Changes in synthetic and natural vowel perception after specific training for congenitally deafened patients using a multichannel cochlear implant. Dawson, P. W., Clark, G. M. Australian Bionic Ear and Hearing Research Institute, East Melbourne, Australia. *Ear and Hearing* (1997) December, Vol. 18 (6), pp. 488–501.

OBJECTIVE: The aim was to determine whether the ability to use place-coded vowel formant information could be improved after training in a group of congenitally deafened patients, who showed limited speech perception ability after cochlear implant use ranging from one year eight months to six years 11 months. A further aim was to investigate the relationship between electrode position difference limens and vowel recognition. **DESIGN:** Three children, one adolescent, and one young adult were assessed with synthesized versions of the words/hid, head, had, hud, hod, hood/containing three formants and with a natural version of these words as well as with a 12-alternative, closed-set task containing monosyllabic words. The change in performance during a nontraining period was compared to the change in performance after 10 training sessions. **RESULTS:** After training, two children showed significant gains on a number of tests and improvements were consistent with their electrode discrimination ability. Difference limens ranged from one to three electrodes for these patients as well as for two other patients who showed minimal to no improvements. The minimal gains shown by the final patient could be partly explained by poorer apical electrode position difference limen. **CONCLUSIONS:** Significant gains in vowel perception occurred post-training on several assessments for two of the children. This suggests the need for children to continue to have aural rehabilitation for a substantial period after implantation. Minimal improvements, however, occurred for the remaining patients. With the exception of one patient, their poorer performance was not associated with poorer electrode discrimination. Author.

Neurotopographic considerations in the microsurgical treatment of small acoustic neurinomas. Koos, W. T., Day, J. D., Matula, C., Levy, D. I. Department of Neurosurgery, University of Vienna, Austria. *Journal of Neurosurgery* (1998) March, Vol. 88 (3), pp. 506–12.

OBJECT: The authors studied the relationships between tumour size, location, and topographic position relative to the intact facial nerve bundles in acoustic neurinomas to determine the influence of these factors on hearing preservation postoperatively. Consistent topographic relationships were found. **METHODS:** Four

hundred and fifty-two patients with acoustic neurinoma treated via a retrosigmoid approach were analysed with respect to hearing preservation and facial nerve function. One hundred and fifteen tumours were identified as small and were categorized as Grades I and II. Patients with Grade I tumours, that is, purely intracanalicular lesions, all had good hearing preoperatively, defined by a less than 50 dB pure tone average and 50 per cent speech discrimination score. All 14 Grade I tumours were removed, resulting in preservation of the patient's hearing by these criteria. There were no particular topographic anatomical relationships associated with these tumours that affected hearing preservation. Grade II tumours, defined as those protruding into the cerebello-pontine angle without contacting the brainstem, were found in 101 patients and were divided by size into two grades: IIA (< 1 cm) and IIB (1–1.8 cm). In 90 patients with Grade IIA tumours, 72 (80 per cent) of 81 who had preserved hearing preoperatively maintained it postoperatively, and in the 11 patients with Grade IIB tumours, six of whom had good hearing preoperatively, four (67 per cent) had preserved hearing postoperatively. Six morphological types were identified based on their neurotopographic relationships to the elements of the vestibulocochlear nerve. **CONCLUSIONS:** Hearing preservation postsurgery by tumour type was as follows: 1A, 92 per cent; 1B, 88 per cent; 1C, 100 per cent; 2A, 83 per cent; 2B, 92 per cent; and 3, 57 per cent. Combined, this represents a hearing preservation rate of 87 per cent after surgical treatment of Grade II acoustic neurinomas. Full nerve function was maintained in 88 per cent of patients with anatomically preserved facial nerves in both Grade I and II tumours. The remaining 12 per cent of patients retained partial function of the facial nerve. Two patients in the series lost anatomical integrity of the nerve due to surgery. Author.

Long-term survival in rhinocerebral mucormycosis. Case report.

Weprin, B. E., Hall, W. A., Goodman, J., Adams, G. L. Department of Neurosurgery, University of Minnesota Hospital and Clinic, Minneapolis 55455, USA. *Journal of Neurosurgery* (1998) March, Vol. 88 (3), pp. 570–5.

Mucormycosis refers to a group of rapidly progressive infections caused by fungi belonging to the order Mucorales. Infection most often develops in individuals with immunological or metabolic compromise, although patients without underlying abnormalities have been affected. Specific clinical manifestations are associated with various predisposing factors. Rhinocerebral mucormycosis is the most common form and most frequently develops in individuals with poorly controlled diabetes mellitus. The extent of anatomical involvement and clinical course are unpredictable, depending on the intrinsic factors of the host. Over the past 20 years the prognosis for patients with rhinocerebral mucormycosis, once considered to be a uniformly fatal disease, has improved. Coordinated medical and surgical treatment, including rapid diagnosis, the advent of systemic antifungal agents, aggressive surgical debridement, and control of the underlying disease process, have been credited with its successful management. The range of survival rates recorded with the regimen of combined therapies is wide because the number of patients reported is limited and anatomical involvement is diverse. Survival with intracerebral abscess is rare. The authors describe the successful management of a patient who developed a bifrontal fungal abscess during treatment for rhinocerebral mucormycosis associated with ketoacidosis and diabetes mellitus. The patient remains without radiographic or clinical evidence of infection more than two years after treatment. The authors review the characteristic clinical, radiographic, and pathological features of previously reported infections and emphasize the importance of early detection and aggressive treatment in the management of this frequently fulminant and fatal disease. Author.

Imaging features and clinical significance of perineural spread or extension of head and neck tumours. Caldemeyer, K. S., Mathews, V. P., Righi, P. D., Smith, R. R. Department of Radiology, Indiana University School of Medicine, University Hospital, Indianapolis 46202-5253, USA. *Radiographics* (1998) January-February, Vol. 18 (1), pp. 97–110.

Perineural spread of head and neck tumours is a form of metastatic disease in which tumour disseminates to noncontiguous regions along the endoneurium or perineurium. Both computed tomography (CT) and magnetic resonance (MR) imaging can help detect perineural spread, although MR imaging is the modality of

choice because of its multiplanar capability, its superior soft-tissue contrast, and the decreased amount of artifact from dental hardware. Perineural spread most commonly occurs in adenoid cystic carcinoma and squamous cell carcinoma. Nerve enlargement may lead to foraminal enlargement and, ultimately, to foraminal destruction, findings that are best seen at CT. Extension through the foramen ovale and involvement of the Meckel cave is best seen on coronal T1-weighted MR images, and nerve enhancement is best seen on fat-suppressed T1-weighted MR images. Other radiologic findings include obliteration of fat planes at foraminal openings, neuropathic atrophy, cavernous sinus enlargement, and replacement of the trigeminal subarachnoid cistern with soft tissue. The pathway of perineural tumour spread is predictable with knowledge of the pertinent cranial nerve anatomy; however, patients with radiologically or pathologically proved perineural spread may have normal nerve function at clinical examination. Therefore, it is imperative that the radiologist be familiar with both normal cranial nerve anatomy and the radiologic appearance and assessment of perineural tumour extension. Author.

Technical and audiological factors in the implementation and use of digital signal processing hearing aids. Naylor, G. Oticon Research Centre, Snekkersten, Denmark. gn@oticon.dk400.dk. *Scandinavian Audiology* (1997), Vol. 26 (4), pp. 223–9.

Fully digital hearing aids, to be worn behind or within the ear, are coming on to the market. The new possibilities and challenges of such aids are both technological and audiological in character. This paper describes some of the challenges, and one manufacturer's approach to them. The signal processing structure in one current digital hearing aid is presented, and justified in audiological terms, as a background to discussions of (i) the relative urgency of further advances in technology and audiological knowledge, and (ii) the challenges to the practice of hearing aid dispensing. It is concluded that further advances in rehabilitative audiology are more pressing than further major technological progress, and that the potential client benefits of the new generation of digital hearing aids will only be realized if the challenges they present to software design and dispensing practice are recognized and met. Author.

Papillary thyroid carcinoma: modified radical neck dissection improves prognosis. Noguchi, S., Murakami, N., Yamashita, H., Toda, M., Kawamoto, H. Noguchi Thyroid Clinic and Hospital Foundation, Beppu, Oita, Japan. *Archives of Surgery* (1998) March, Vol. 133 (3), pp. 276–80.

OBJECTIVE: To ascertain whether modified radical neck dissection offers a survival advantage for some subsets of patients with papillary cancer of the thyroid. **DESIGN:** A retrospective cohort study of 2,966 patients curatively treated at the Noguchi Thyroid Clinic and Hospital Foundation, Oita, Japan, between 1946 and 1991. **SETTING:** A centre for the treatment of thyroid disease, where about 1,400 thyroid operations are performed per year. **PATIENTS:** Between 1946 and 1991, patients with papillary cancer whose primary tumour was 1 cm or larger and who were curatively treated were studied. Of the 2,859 patients, 72.1 per cent underwent modified radical neck dissection, 8.5 per cent underwent partial node excision, and 19.4 per cent underwent no node excision. **RESULTS:** A univariate analysis revealed a subset of patients who benefited from modified radical neck dissection. A multivariate analysis revealed that sex ($p < 0.001$), age at the time of the operation ($p < 0.001$), size of the primary tumour ($p < 0.001$), extrathyroidal invasion ($p < 0.001$), and the presence of nodal metastasis ($p < 0.01$) are significant risk factors. **CONCLUSION:** Patients with nodal metastasis, patients in whom the primary tumour invades beyond the thyroid capsule, and women older than 60 years can benefit from modified radical neck dissection. Author.

An evaluation of a nurse-led ear care service in primary care: benefits and costs. Fall, M., Walters, S., Read, S., Deverill, M., Lutman, M., Milner, P., Rodgers, R. University of Sheffield. *British Journal of General Practice* (1997) November, Vol. 47 (424), pp. 699–703.

BACKGROUND: Nurses trained in ear care provide a new model for the provision of services in general practice, with the aim of cost-effective treatment of minor ear and hearing problems that affect well-being and quality of life. **AIM:** To compare a prospective observational cohort study measuring health out-

comes and resource use for patients with ear or hearing problems treated by nurses trained in ear care with similar patients treated by standard practice. **METHOD:** A total of 438 Rotherham and 196 Barnsley patients aged 16 years or over received two self-completion questionnaires: questionnaire 1 (Q1) on the day of consultation and questionnaire 2 (Q2) after three weeks. Primary measured outcomes were changes in discomfort and pain; secondary outcomes included the effect on normal life, health status, patient satisfaction, and resources used. **RESULTS:** After adjusting for differences at Q1, by Q2 there was no statistical evidence of a difference in discomfort and pain reduction, or differential change in health status between areas. Satisfaction with treatment was significantly higher ($p = 0.0001$) in Rotherham (91 per cent) than in Barnsley (82 per cent). Average total general practitioner (GP) consultations were lower in Rotherham at 0.4 per patient with an average cost of 6.28 pounds compared with Barnsley at 1.4 per patient and an average cost of 22.53 pounds ($p = 0.04$). Barnsley GPs prescribed more drugs per case (six per cent of total costs compared with 1.5 per cent) and used more systemic antibiotics ($p = 0.001$). **CONCLUSIONS:** Nurses trained in ear care reduce costs, GP workload, and the use of systemic antibiotics, while increasing patient satisfaction with care. With understanding and support from GPs, such nurses are an example of how expanded nursing roles bring benefits to general practice. Nurses trained in ear care reduce treatment costs, reduce the use of antibiotics, educate patients in ear care, increase patient satisfaction, and raise ear awareness. Author.

Resonance imaging of the eustachian tube cartilage in microtia. Imai, Y., Matsuo, K., Imai, N. Department of Plastic and Reconstructive Surgery, Shinshu University School of Medicine, Asahi, Matsumoto, Japan. *Cleft Palate Craniofacial Journal* (1998) January, Vol. 35 (1), pp. 26–34.

OBJECTIVE: The purpose of this study was to determine whether external and internal defects in microtia are related. **METHOD:** Magnetic resonance images of the eustachian tube cartilage were evaluated for 20 patients who had unilateral microtia. Nineteen patients were classified as Grade 2, and one was classified as Grade 3. The Grade 3 patient also had unilateral facial palsy. **RESULTS:** On T1-, T2- and proton-density-weighted images, the eustachian tube cartilage was clearly identified as a pair of straight lines with low signal intensity. There was no evidence of hypoplasia of the eustachian tube cartilage on the microtic side in any Grade 2 patient, but hypoplasia was evident on the microtic side of the patient classified as Grade 3. **CONCLUSION:** These findings are consistent with the view that impairment of embryonic development before six weeks results in injury to the immature primordium and malformation of both the external and middle ear. In contrast, injuries that occur at a later fetal age (i.e. after three months) do not appear to cause middle ear malformations. Author.

Clinical and radiological findings related to treatment outcome in patients with temporomandibular disorders. Nilner, M., Petersson, A. Department of Stomatognathic Physiology, Faculty of Odontology, Lund University, Malmö, Sweden. *Dentomaxillofacial Radiology* (1995) May, Vol. 24 (2), pp. 128–31.

OBJECTIVES: To test the hypothesis that the outcome of temporomandibular disorders (TMD) is not influenced by condylar position, asymmetry, angle or structural bone changes. **METHODS:** Eighty consecutive patients (60 women, 20 men) with an age range of six–81 years, referred to the Department of Stomatognathic Physiology, were included in the study. The patients were clinically and radiologically examined before and at least one year after treatment. **RESULTS:** The most common clinical diagnoses among the patients were TMD with a neuromuscular background in 35 per cent and osteoarthritis in 21 per cent. Seventy-two per cent of the patients were symptom-free or better, 24 per cent unchanged and one per cent worse one year or more after treatment. After treatment the bone structure of the TMJ was unchanged in 83 per cent of the patients, in 12 per cent erosions healed and in five per cent erosions developed. Almost all patients had some degree of condylar displacement on tomography before treatment. **CONCLUSION:** No single radiographic finding was found to be related to the treatment outcome and therefore plain radiography has a minor role in the management of TMD. Author.