

Abstract Selection

A gene for autosomal dominant nonsyndromic hearing loss (DFNA12) maps to chromosome 11q22-24. Verhoeven, K., Van Camp, G., Govaerts, P. J., Balemans, W., Schatteman, I., Verstreken, M., Van Laer, L., Smith, R. J., Brown, M. R., Van de Heyning, P. H., Somers, T., Offeciers, F. E., Willems, P. J. Department of Medical Genetics, University of Antwerp, Belgium. *American Journal of Human Genetics* (1997) May, Vol. 60 (5), pp. 1168-73.

We performed linkage analysis in a Belgian family with autosomal dominant midfrequency hearing loss, which has a prelingual onset and a nonprogressive course in most patients. We found LOD scores >6 with markers on chromosome 11q. Analysis of key recombinants maps this deafness gene (DFNA12) to a 36 cm interval on chromosome 11q22-24, between markers D11S4120 and D11S912. The critical regions for the recessive deafness locus DFNB2 and the dominant locus DFNA11, which were previously localized to the long arm of chromosome 11, do not overlap with the candidate interval of DFNA12. Author.

Tracheal mucus velocity remains normal in healthy sheep intubated with a new endotracheal tube with a novel laryngeal seal. Trawoger, R., Kolobow, T., Cereda, M., Sparacino, M. E. Section of Pulmonary and Cardiac Assist Devices, National Heart, Lung, and Blood Institute, Bethesda, Maryland 20892-1590, USA. *Anesthesiology* (1997) May, Vol. 86 (5), pp. 1140-4.

BACKGROUND: Tracheal mucus velocity (TMV), an index of mucociliary clearance, is reduced markedly in patients intubated with standard endotracheal tubes (ETTs) with high-compliance low-pressure (hi-lo) cuffs. The authors developed a new ultra-thin walled ETT in which the inflatable cuff is replaced with a no-pressure seal, positioned at the level of the larynx. The seal consists of 12 to 20 toroidal layers of thin polyurethane film ('gills') at the level of the vocal cords and prevents both air leak and fluid aspiration. The authors hypothesized that ETTs with the new laryngeal seal may impair TMV less than ETTs with inflated hi-lo cuffs do. **METHODS:** The TMV was measured in seven healthy female sheep by radiographically tracking the motion of small discs of tantalum inserted into the trachea through a bronchoscope. The TMV was measured in spontaneously breathing sheep before intubation (baseline) and after intubation with either a hi-lo ETT (control group) or after intubation with a new ETT with gills (study group). Four to six weeks later, the studies were repeated, but the sheep that were previously in the control group served as the study group, and those in the study group served as controls. **RESULTS:** Baseline TMV did not differ in the two groups. In the control group, TMV decreased significantly (by 67 per cent) from baseline. In the study group, TMV did not differ significantly from baseline and remained steady during three hours of intubation. **CONCLUSIONS:** The TMV does not change in sheep intubated with new ETTs with gills. The new ETTs may help promote a normal mucociliary clearance in patients who require ventilation. Author.

Schwannoma in the vestibule and cochlea. Susilawati, S., Adler, J., Fagan, P. Ear, Nose and Throat Department, Fatmawati Hospital, Jakarta, Indonesia. *Australasian Radiology* (1997) May, Vol. 41 (2), pp. 109-11.

Schwannoma of the vestibule or the cochlea is an unusual lesion. In the past, most examples have been found at autopsy or as unsuspected findings at surgery for vertigo. The symptoms of isolated labyrinthine schwannoma may be indistinguishable from advanced Meniere's disease. Magnetic resonance imaging has led to preoperative diagnosis in some cases. Two cases of schwannoma within the labyrinth from a series of 339 symptomatic acoustic tumours, are presented and the imaging findings are discussed. Author.

Role of accelerated fractionated irradiation for supraglottic carcinoma: assessment of results. Wang, C. C., Nakfoor, B. M., Spiro, I. J., Martins, P. Department of Radiation Oncology, Massachusetts General Hospital - Harvard Medical School, Boston 02114, USA. *Cancer Journal of Science in America* (1997) March-April, Vol. 3 (2), pp. 88-91.

PURPOSE: We evaluated the results of locoregional control, patients' relapse-free survival, and voice preservation in patients with supraglottic carcinoma treated with accelerated radiation therapy. **PATIENTS AND METHODS:** The records of 164 patients undergoing accelerated fractionated radiation therapy for carcinoma of the supraglottis from 1981 to 1992 were reviewed and evaluated for locoregional control, disease-specific survival, and rates of voice preservation. All patients were treated with 1.6 Gy per fraction two fractions a day (BID) for 67.2 to 70.0 Gy in six weeks. The median follow-up was 56 months. Due to severe acute mucosal toxicity, all patients were given a short treatment break after 38.4 to 48.0 Gy. **RESULTS:** For T1, T2, T3 and T4 tumours, the five-year actuarial local control rates were 96 per cent, 86 per cent, 76 per cent, and 43 per cent respectively, and relapse-free survival rates were 78 per cent, 82 per cent, 64 per cent and 40 per cent, respectively. With surgical salvage, the corresponding ultimate local control rates for the T1, T2, T3, and T4 tumours were 96 per cent, 93 per cent, 88 per cent and 51 per cent, respectively. Regional control by T and N stage was non-significant. Voice preservation rates for the T1, T2, T3, and T4 tumours were 96 per cent, 80 per cent, 72 per cent and 43 per cent, respectively, and for the entire group the rate was 79 per cent. **CONCLUSIONS:** Accelerated fractionated radiation therapy resulted in excellent locoregional control, relapse-free survival, and voice preservation rates for patients with supraglottic carcinoma. The T stage and N stage were significant predictors of outcome. T4 tumours and node-positive neck disease portended a poor prognosis. These results as compared to our historical control and the published data in the literature with conventional once-daily radiation therapy (QD) suggested improved local control and patient survival after accelerated fractionated BID radiation therapy. For confirmation of these results, a prospective randomized trial is needed. Author.

Role of acute cochlear neuritis in sudden hearing loss in multiple sclerosis. Yamasoba, T., Sakai, K., Sakurai, M. Department of Otolaryngology, University of Tokyo, Bunkyo-ku, Japan. *Journal of Neurological Science* (1997) March 10, Vol. 146 (2), pp. 179-81.

We report a patient with definite multiple sclerosis (MS) who developed unilateral sudden hearing loss coincident with exacerbation of central nervous system symptoms. Involvement of the peripheral cochlear nerve, suggested by auditory findings including auditory brainstem response, was confirmed by magnetic resonance imaging. The clinical, electrophysiological and neuro-radiological abnormalities disappeared in response to steroid pulse therapy. These findings suggest that acute inflammatory demyelinating lesion of the peripheral cochlear nerve can occur in MS, manifesting sudden hearing loss. Author.

Hearing impairment in infants after meningitis: detection by transient evoked otoacoustic emissions (see comments). Francois, M., Laccourreye, L., Huy, E. T., Narcy, P. Department of Otorhinolaryngology Head and Neck Surgery, Hopital Robert Debre, Paris, France. *Journal of Pediatrics* (1997) May, Vol. 130 (5), pp. 712-7. Comment in: *Journal of Pediatrics* (1997) May, 130 (5), pp. 685-6.

OBJECTIVE: To evaluate the feasibility and cost-effectiveness of using transient evoked otoacoustic emissions (TEOEs) to assess hearing in infants recovered from meningitis. **METHODS:** Recordings of TEOEs and visual reinforcement audiometry

(VRA) were performed in a prospective study of 39 children aged six to 24 months recovering from a purulent meningitis. Patients with no TEOEs, or whose VRA findings were abnormal, were also tested by impedance audiometry and recording of auditory brainstem responses (ABRs) after treatment of any secretory otitis media. Costs were compared with those of a previous protocol including VRA, impedance audiometry, and ABR for all children. **RESULTS:** A total of 29 children had TEOEs in both ears and normal VRA findings. Ten children lacked TEOEs in one or both ears; nine of them had otitis media with effusion. Further examination by VRA and ABR led to the diagnosis of bilateral sensorineural hearing loss in 2.6 per cent (1/39) of patients and unilateral sensorineural hearing loss in 7.7 per cent (3/39) of patients. Cost analysis revealed that this protocol costs about half the previous one. **CONCLUSION:** Recording TEOEs appears to be a feasible and cost-effective hearing screening test for infants recovered from meningitis. If TEOEs are absent, impedance audiometry, ABR recordings, and audiometric evaluation techniques are needed to distinguish between conductive and sensorineural hearing loss and to assess hearing thresholds precisely. Author.

The first attempt at radioisotopic evaluation of the integrity of the nose-brain barrier. Okuyama, S. Department of Radiology, Tohoku Rosai Hospital, Sendai, Japan. *Life Science* (1997), Vol. 60 (21), pp. 1881–4.

The first attempt at radioisotopic assessment of the integrity of the nose-brain barrier was performed on an anomic patient by spraying an aliquot of a mixture of ^{99m}Tc -DTPA and hyaluronidase onto the olfactory mucosa with the patient's head positioned vertically and subsequently measuring the cerebral radioactivity. A significant rise in cerebral radioactivity was observed five minutes after introduction of the radioisotope. This simple technique will aid in assessing olfactory impairment from selected etiologies and also in testing the integrity of the nose-brain barrier. In view of the study of diseases such as viral encephalitis and Alzheimer's disease, the clinical implications of this method cannot be overemphasized. This principle may also facilitate developing novel pharmaceuticals for some brain diseases. Author.

Management of vestibular schwannomas (acoustic neuromas): radiological features in 202 cases – their value for diagnosis and their predictive importance. Matthies, C., Samii, M., Krebs, S. Department of Neurosurgery, Nordstadt Hospital, Hannover, Germany. *Neurosurgery* (1997) March, Vol. 40 (3), pp. 469–81; discussion 481–2.

OBJECTIVE: Tumour-induced bony and soft tissue findings might reflect, in part, the biological characteristics of vestibular schwannomas and could predict clinical findings. In addition, the role of the individual anatomic conditions of the posterior fossa is of interest to the surgeon. **METHODS:** Of 1,000 vestibular schwannomas treated surgically at the neurosurgical department at Nordstadt Hospital, 202 cases, which were consecutively investigated at the same computed tomography (CT) unit and using the same technique (high-resolution CT at bone windows before and after surgery, contrast-enhanced high-resolution CT before surgery, and native high-resolution CT after surgery), were evaluated for special radiological features. Evaluation included, in 103 cases, anatomic parameters of the petrous bone and posterior fossa cavity and, in 202 cases, tumour-induced changes of bony structures, tumour relations with bony structures and with neural structures, and postoperative findings of bony structures and of neural tissues. These radiological parameters and the related clinical pre- and postoperative findings were transferred to a database for statistical evaluation of their positive or negative correlations, i.e. for their reliability in diagnosis and their importance in predicting postsurgical outcome. **RESULTS:** As important parameters, the following could be identified. The length of the posterior auditory canal wall and the interear difference of the maximum porus width both correlate with the degree of preoperative hearing deterioration ($p < 0.05$). The extent of the widening of the internal auditory canal is of predictive importance for the chances of postoperative hearing preservation or hearing loss ($p < 0.01$). The extent of tumour growth anterior and caudal to the internal auditory canal in large tumours is of significant importance for prediction of postoperative hearing function ($p < 0.05$). The tumour extension in all directions and the

extent of cystic tumour components correlate with the pre- and postoperative function of the facial and cochlear nerves. The positions of the labyrinthine structures and their geographical relations to the fundus and the sigmoid sinus and, thereby, to the suboccipital route, enable reliable calculations of the danger of labyrinthine destruction and help improve the planning of the surgical strategy. **DISCUSSION AND CONCLUSIONS:** In addition to the importance for surgical planning, preoperative bone window CT and contrast-enhanced images offer the opportunity to identify traits of tumour biology, such as bony destruction of the internal auditory canal, tumour shape and cyst formation, and aspects with predictive importance for postoperative outcome. The average size for hearing preservation in tumours was $14.5 \times 16.5 \times 11.8$ mm (coronal \times sagittal \times axial). The recent finding (eight) of a higher presentation age in female patients has an apparently anatomic basis, which is a relatively larger internal auditory meatus. Author.

Direct brainstem recording of auditory evoked potentials during vestibular schwannoma resection: nuclear BAEP recording. Technical note and preliminary results. Matthies, C., Samii, M. Department of Neurosurgery, Nordstadt Hospital, Hannover, Germany. *Journal of Neurosurgery* (1997) June, Vol. 86 (6), pp. 1057–62.

The usefulness of intraoperative monitoring in cerebellopontine angle surgery should be improved by obtaining faster and stronger brainstem auditory evoked potential (BAEP) responses. A new technique of direct recording at the brainstem has been developed, which is applicable to all tumour sizes. By placing a retractor with electrodes attached to its tip at the cerebellomedullary junction, the authors have recorded BAEP amplitudes that are 10 times greater than those recorded using the conventional technique. Only small sampling numbers (64–256 recordings) are required and are obtained in five to 15 seconds. The technique has been applied successfully in 34 patients who underwent vestibular schwannoma resections. It has also been tested in patients with intrameatal-extrameatal meningiomas and in those with vascular compressive disorders; there have been no false results. The advantages of this new technique are: (1) identification of BAEP components is easier and faster; (2) reliable BAEP responses are obtained in some cases in which conventional BAEP responses are lost or severely deformed; and (3) BAEP response deterioration and improvement are recognized earlier than would occur using the conventional technique. This last advantage provides the surgeon with a useful warning at a stage of surgery at which BAEP changes are still temporary and can be reversed. This method is different from other trials of intradural BAEP recordings in three respects: its use is not limited to particular tumour sizes; there is no interference with the surgical process; and, most important, the obtained responses correlate well with those of conventional BAEP responses, probably because the recording site is in the vicinity of the anterior cochlear nucleus. In conclusion, the chances of useful monitoring feedback with adequate adaptation of the microsurgical strategy are improved considerably. Author.

Functional MR spectroscopy of the auditory cortex in healthy subjects and patients with sudden hearing loss (see comments). Richards, T. L., Gates, G. A., Gardner, J. C., Merrill, T., Hayes, C. E., Panagiotides, H., Serafini, S., Rubel, E. W. Department of Radiology, University of Washington, Seattle 98195, USA. *American Journal of Neuroradiology* (1997) April, Vol. 18 (4), pp. 611–20. Comment in: *American Journal of Neuroradiology* (1997) April, 18 (4), pp. 621–3.

PURPOSE: To use MR spectroscopy to study the biochemical changes produced by auditory stimuli in patients with sudden sensorineural hearing loss and to compare these findings with the biochemical changes seen in healthy volunteers. **METHODS:** Single-voxel MR spectroscopy was used to study biochemical changes in the auditory cortex in 11 control subjects and 19 patients with sudden sensorineural hearing loss. MR spectroscopic signals were measured during three different sound conditions (scanner noise, music and sirens). **RESULTS:** A lower MR spectroscopic lactate signal was observed in control subjects during the music stimulus than during the other sound conditions. This music-induced lactate change was not observed in patients with hearing loss. The other proton metabolites (choline, creatine, N-acetylaspartate (NAA)) remained stable during the different auditory stimuli. However, the NAA/creatine ratio was higher in

the auditory cortex of patients than in the control subjects, and was not dependent on the sound condition. **CONCLUSION:** The detection of stimulus-induced and stable biochemical MR spectroscopic changes in patients with hearing loss may be useful in assessing disease activity. Author.

Multichannel cochlear implant in a deaf-blind patient. Arauz, S. L., Aronson, L., Mastroianni-Pinto, S. N., Preti, M. C., Pallante, S. A., Estienne, P. A., Ortega, M. Arauz Foundation, Cochlear Implant Department, Buenos Aires, Argentina. *Audiology* (1997) March-April, Vol. 36 (2), pp. 109-16.

In this work, a case study of the first deaf-blind patient implanted with the Combi-40 cochlear implant is analysed. The patient is a 69-year-old man who has been blind since the age of 25 and deaf since the age of 51. Before surgery, his wife used Braille and finger-spelling on his hand to communicate with him. In this study, we intend to show how the rehabilitation programme was applied to his particular characteristics and to describe the problems we faced throughout the process. Significant improvements in the dynamic ranges of perception and comprehension of segmental features of speech were observed within two weeks after the setting up. Within four weeks, the patient was able to maintain a simple conversation through the cochlear implant alone, and he abandoned the use of tactile communication. Nowadays, he is able to speak over the phone. A battery of tests was performed two, four and six months after the switch-on. The results obtained for this patient, whose scores are among the best in our experience, suggest that deaf-blind individuals may benefit from a multichannel cochlear implant as an auditory substitute. Author.

The role of hypotension in the pathogenesis of sudden hearing loss. Pirodda, A., Saggese, D., Ferri, G. G., Giausa, G., Grippo, M. C., Gaddi, A. Dipartimento di Scienze, Chirurgiche e Anestesiologiche, Università degli Studi di Bologna, Italy. *Audiology* (1997) March-April, Vol. 36 (2), pp. 98-108.

The generic term 'sudden hearing loss' indicates the lack of knowledge about the etiology and pathogenesis of this phenomenon. In most cases it would seem feasible to consider infections or organic circulatory defects, but there are cases, generally affecting young subjects in whom the damage is often reversible, in which a functional origin is possible. We therefore investigated the possible effect of systemic arterial pressure in a retrospective study in a group of 36 patients aged not more than 40 years, treated for sudden hearing loss, comparing the mean values of their arterial pressure with those of a control group of 25 subjects, of similar age, admitted for other disorders. The significantly lower mean values of arterial pressure in the group affected by sudden hearing loss and the easier reversibility of the damage in these patients suggests that, at least in some cases, the cochlear damage may be caused by a perfusion deficit due to the combined effect of hypotension and imperfect vasomotor regulation. Author.

KTP laser-resistant properties of the reinforced laryngeal mask airway. Pandit, J. J., Chambers, P., O'Malley, S. Department of Anaesthetics, Milton Keynes General Hospital. *British Journal of Anaesthesia* (1997) May, Vol. 78 (5), pp. 594-600.

We have assessed, in vitro, the effect of KTP laser strike on the reinforced laryngeal mask airway (RLMA) under a variety of conditions. At power densities normally encountered in clinical practice, using a divergent KTP laser beam, the RLMA could not be penetrated and did not ignite with laser strike. The RLMA was penetrated at a high power density of 6.94 W mm² after 45-60 s. A flame appeared over the RLMA shaft at this power density after 12-35 s. The black marker line on the RLMA shaft was somewhat more vulnerable to the effects of laser strike. The flow of oxygen and nitrous oxide within the shaft did not appreciably alter the laser-resistant properties of the RLMA. The RLMA cuff was more vulnerable to laser strike than was the shaft and was penetrated at very low power densities. Filling the cuff with saline had a protective effect and penetration did not occur at power densities which caused penetration of air-filled cuffs (0.37 W mm²). Author.

Hearing impairment and otitis media in a rural primary school in south India. Jacob, A., Rupa, V., Job, A., Joseph, A. Department of Otolaryngology, Christian Medical College and Hospital, Vellore, India. *International Journal of Pediatric Otorhinolaryngology* (1997) March 6, Vol. 39 (2), pp. 133-8.

In order to determine the prevalence of hearing impairment and

otitis media in rural primary schoolchildren, a pilot study of 284 children aged six to 10 years was performed. These children were screened by otoscopy, pure tone audiometry and tympanometry. The overall prevalence of otological abnormalities (excluding wax) was 21.5 per cent. Hearing impairment was detected in 34 children (11.9 per cent). Conductive hearing impairment was predominant (10.9 per cent). Otitis media was diagnosed in 17.6 per cent of children. While 91.2 per cent of children with hearing impairment had associated middle ear disease, only 53.4 per cent of those with middle ear disease were detected as having hearing impairment. The importance of including tympanometry as part of the screening protocol is highlighted. Author.

Carcinoma of the nasopharynx treated by radiotherapy alone: determinants of local and regional control (see comments). Sanguineti, G., Geara, F. B., Garden, A. S., Tucker, S. L., Ang, K. K., Morrison, W. H., Peters, L. J. Department of Radiation Oncology, The University of Texas M.D. Anderson Cancer Center, Houston 77030, USA. *International Journal of Radiation Oncology, Biology and Physiology* (1997) March 15, Vol. 37 (5): pp. 985-96.

PURPOSE: This retrospective study was conducted to review the results of treatment and to identify prognostic factors for local and regional control in a population of 378 patients with nasopharyngeal carcinomas treated in a single institution by radiation therapy alone. **METHODS AND MATERIAL:** All patients were treated at The University of Texas M.D. Anderson Cancer Center between 1954 and 1992 following a consistent treatment philosophy but with evolving technique. There were 286 males and 92 females with a median age of 52 years (range: 16-86 years). The majority of the patients were Caucasian (282 patients, 75 per cent). Thirty-two patients (eight per cent) had one or more cranial nerve deficits. Three-fourths of the patients presented with AJCC Stage IV disease (T4, N0-3, 118 patients; T1-3, N2-3 164 patients). Histologically, 193 tumours (51 per cent) were squamous cell carcinomas, 154 (41 per cent) lymphoepitheliomas, and 31 (eight per cent) unclassified carcinomas. Average total dose varied with T-stage and ranged from 60.2 to 72.0 Gy. Median follow-up time was 10 years. **RESULTS:** For the entire population the five-, 10- and 20-year actuarial survival rates were 48, 34, and 18 per cent, respectively, with 184 patients (49 per cent) dying of nasopharyngeal cancer. Actuarial control rates at five, 10, and 20 years were 71, 66, and 66 per cent for the primary site and 84, 83, and 83 per cent for the neck. A total of 100 patients (26 per cent) had local failures and 51 patients (13 per cent) had regional failures with a median time to recurrence of 8.2 months and 13 months, respectively. Advanced T-stage, squamous histology, and presence of cranial nerve deficits were poor prognostic factors for local control in both univariate and multivariate analyses. N-stage and tumour histology were significant factors for neck control. Treatment year, total dose within the ranges used, and duration of treatment did not have any significant effect on local or regional control. The actuarial incidence of Grade 3-5 late complications was 16, 19, and 29 per cent at five, 10 and 20 years, respectively. Twelve patients (three per cent) died of treatment-related complications; all but one fatal complication occurred before 1971 and the other in 1976. **CONCLUSIONS:** This study shows very good long-term local and regional control rates for nasopharyngeal carcinomas after definitive radiotherapy and establishes a benchmark for newer treatment strategies. Improvements in treatment technique over the years have dramatically reduced the frequency of severe late complications. Patients with advanced stage tumours and differentiated squamous histology have a relatively poor prognosis when treated with conventional radiotherapy and are candidates for dose escalation or combined modality studies. Author.

Radiosurgery for skull base malignancies and nasopharyngeal carcinoma (see comments). Cmelak, A. J., Cox, R. S., Adler, J. R., Fee, W. E. Jr., Goffinet, D. R. Department of Radiation Oncology, Stanford University Medical Center, CA, USA. *International Journal of Radiation Oncology, Biology and Physiology* (1997) March 15, Vol. 37 (5), pp. 997-1003. Comment in: *International Journal of Radiation Oncology, Biology and Physiology* (1997) March 15, Vol. 37 (5), pp. 973-4.

PURPOSE: Patients with skull base lesions present a challenging management problem because of intractable symptoms and

limited therapeutic options. In 1989 we began treating selected patients with skull base lesions using linac stereotactic radiosurgery. In this study the efficacy and toxicity of this therapeutic modality is investigated. **METHODS AND MATERIALS:** Forty-seven patients with 59 malignant skull base lesions were treated with linac radiosurgery between 1989 and 1995. Eleven patients were treated for primary nasopharyngeal carcinoma using radiosurgery as a boost (7 Gy-16 Gy, median: 12 Gy) to the nasopharynx after a course of fractionated radiotherapy (64.8-70 Gy) without chemotherapy. Another 37 patients were treated for 48 skull base metastases or local recurrences from primary head and neck cancers. Eight of these patients had 12 locally recurrent nasopharyngeal carcinoma lesions occurring six to 96 months after standard radiotherapy, including one patient with nasopharyngeal carcinoma who developed a regional relapse after radiotherapy with a stereotactic boost. Lesion volumes by CT or MRI ranged from 0 to 51 cc (median: 8 cc). Radiation doses of 7.0 Gy-35.0 Gy (median: 20.0 Gy) were delivered to recurrent lesions, usually as a single fraction. **RESULTS:** All 11 patients who received radiosurgery as a nasopharyngeal boost after standard fractionated radiotherapy remain locally controlled (follow-up: two to 34 months, median: 18). However, one patient required a second radiosurgical treatment for regional relapse outside the initial radiosurgery volume. Thirty-three of 48 (69 per cent) recurrent/metastatic lesions have been locally controlled, including seven of 12 locally recurrent nasopharyngeal lesions. Follow-up for all patients with recurrent lesions ranged from one to 60 months (median: nine months). Local control did not correlate with lesion size ($p = 0.80$), histology ($p = 0.78$), or radiosurgical dose ($p = 0.44$). Major complications developed after five of 59 treatments (8.4 per cent), including three cranial nerve palsies, one CSF leak, and one trismus. Complications were not correlated with radiosurgical volume ($p = 0.20$), prior skull base irradiation ($p = 0.90$), or radiosurgery dose >20 Gy ($p = 0.49$). **CONCLUSION:** Stereotactic radiosurgery is a reasonable treatment modality for patients with skull base malignancies, including patients with primary and recurrent nasopharyngeal carcinoma. The dose distribution obtained with stereotactic radiosurgery provides better homogeneity than an intracavitary implant when used as a boost for nasopharyngeal lesions, especially lesions which involve areas distant to the nasopharyngeal mucosa. Author.

Selective cochlear neurotomy in the cerebellopontine cistern using electrophysiological monitoring in a patient with intractable tinnitus. Case report. Ryu, H., Yamamoto, S., Sugiyama, K., Uemura, K. Department of Neurosurgery, Hamamatsu University School of Medicine, Shizuoka, Japan. *Journal of Neurosurgery* (1997) June, Vol. 86 (6), pp. 1053-6.

Selective cochlear neurotomy for intractable tinnitus is quite difficult to perform because there is no way to approach the cochlear nerve without interfering with other neural structures. The authors successfully performed selective cochlear neurotomy in the cerebellopontine cistern in a patient with persistent intractable high-pitched tinnitus, but with normal hearing and vestibular functions, by monitoring cochlear nerve compound action potentials and auditory brainstem responses. The procedure is a very simple and safe technique for the treatment of intractable tinnitus. Although this destructive procedure is the last choice of treatment, it can be justified in patients who have poor hearing and severe tinnitus in spite of normal vestibular functions. The procedure may also be applied in some rare cases such as that of the present patient whose quality of life was markedly reduced because loud tinnitus prevented him from hearing anything with the affected ear even though his hearing and vestibular functions were normal. Author.

Molding therapy for infants with deformational auricular anomalies. Tan, S. T., Abramson, D. L., MacDonald, D. M., Mulliken, J. B. Division of Plastic Surgery, Children's Hospital, Harvard Medical School, Boston, MA 02115, USA. *Annals of Plastic Surgery* (1997) March, Vol. 38 (3), pp. 263-8.

Congenital auricular anomalies can be categorized as either malformed or deformational. Auricular deformations most commonly affect the helix and antehelix. Surgical correction involves sutural modelling, wedge excision, reshaping and reversing cartilage segments, and morselization. Since neonatal auricular cartilage is extremely pliable, we used early splinting to correct

deformational ear anomalies. Splints were constructed of leadfree, soft soldering wire threaded into polyethylene tubing and held in place with Steri-Strips. From August 1995 through February 1996 we treated 19 infants with 32 deformed auricles: 10 infants were male and nine were female, ranging in age from one day to 10 weeks. Thirteen infants had both ears affected. There were eight prominent ears, 23 lop ears, two Stahl's ears, and one infant with an inverted concha. For prominent ears, the helical-mastoid distance decreased from an average of 16.8 to 12.2 mm, after an average of 13 weeks of splinting. Fourteen corrected lop ears had a normal appearance, and nine were improved with minor residual deformity. There was only one complication: skin irritation requiring adjustment of the prosthesis. Five children had moulding started after three months of age and all had no significant improvement. In addition, the parents of five children refused therapy and 12 children had either poor compliance to therapy or were lost to follow-up. Our experience with auricular moulding confirmed that it is easy, effective, and inexpensive. If moulded sufficiently early, most auricular deformations should not need surgical correction in childhood. Author.

Current practice in pharyngeal pouch surgery in England and Wales. Koay, C. B., Sharp, H. R., Bates, G. J. Department of Otolaryngology, Radcliffe Infirmary, Oxford. *Annals of the Royal College of Surgery in England* (1997) May, Vol. 79 (3), pp. 190-4. A survey of the current surgical practice for patients with a pharyngeal pouch was conducted among general surgeons, otolaryngologists and cardiothoracic surgeons in England and Wales. Our results show that while pouch excision remains the most common method used, endoscopic stapling diverticulotomy is rapidly being adopted. The reasons why this recently introduced technique is likely to become the definitive treatment of pharyngeal pouch are discussed. Author.

Are antibiotics indicated as initial treatment for children with acute otitis media? A meta-analysis. Del-Mar, C., Glasziou, P., Hayem, M. Centre for General Practice, University of Queensland, Graduate School of Medicine, Brisbane, Australia. *British Medical Journal* (1997) May 24, Vol. 314 (7093), pp. 1526-9.

OBJECTIVE: To determine the effect of antibiotic treatment for acute otitis media in children. **DESIGN:** Systematic search of the medical literature to identify studies that used antibiotics in randomized controlled trials to treat acute otitis media. Studies were examined blind, and the results of those of satisfactory quality of methodology were pooled. **SUBJECTS:** Six studies of children aged seven months to 15 years. **MAIN OUTCOME MEASURES:** Pain, deafness, and other symptoms related to acute otitis media or antibiotic treatment. **RESULTS:** 60 per cent of placebo treated children were pain free within 24 hours of presentation, and antibiotics did not influence this. However, at two to seven days after presentation, by which time only 14 per cent of children in control groups still had pain, early use of antibiotics reduced the risk of pain by 41 per cent (95 per cent confidence interval 14 per cent to 60 per cent). Antibiotics reduced contralateral acute otitis media by 43 per cent (nine per cent to 64 per cent). They seemed to have no influence on subsequent attacks of otitis media or deafness at one month, although there was a trend for improvement of deafness at three months. Antibiotics were associated with a near doubling of the risk of vomiting, diarrhoea, or rashes (odds ratio 1.97 (1.19 to 3.25)). **CONCLUSIONS:** Early use of antibiotics provides only modest benefit for acute otitis media: to prevent one child from experiencing pain by two to seven days after presentation, 17 children must be treated with antibiotics early. Author.

Relationship between nasopharyngeal colonization and the development of otitis media in children. Tonawanda/Williamsville Pediatrics. Faden, H., Duffy, L., Wasielewski, R., Wolf, J., Krystofik, D., Tung, Y. Department of Pediatrics, School of Medicine and Biomedical Sciences, State University of New York, Buffalo, USA. *Journal of Infectious Diseases* (1997) June, Vol. 175 (6), pp. 1440-5.

Streptococcus pneumoniae, nontypeable *Haemophilus influenzae*, and *Moraxella catarrhalis* are the predominant bacteria associated with otitis media. A cohort of 306 infants was followed from birth through 12 months to determine frequency and duration of colonization and risk of acute otitis media (AOM) and otitis media with effusion (OME). *M. catarrhalis* was the most common

bacterium isolated. Infants colonized at \leq three months of age were at increased risk of AOM and OME. Early colonization with *M. catarrhalis* revealed the greatest risk (relative risk (RR) = 1.24), especially for OME (RR = 1.57). There was a strong relationship between the frequency of colonization and OM ($r = 0.37, p < 0.001$), for each pathogen. Although *S. pneumoniae*, nontypeable *H. influenzae*, and *M. catarrhalis* are part of the normal nasopharyngeal flora during infancy, an increased rate of colonization may identify a subpopulation of children that is at increased risk of OM. Author.

Innervation of adult human laryngeal muscle fibres. Perie, S., St Guily, J. L., Callard, P., Sebille, A. Service d'Otolaryngologie et de chirurgie de la Face et du Cou, Hôpital Tenon, Paris, France. *Journal of Neurological Science* (1997) July, Vol. 149 (1), pp. 81–6. The innervation of laryngeal muscle fibres was appraised in adult humans. Sixteen intrinsic laryngeal muscles were dissected during the autopsy of four adults (41–71 years old). Longitudinal serial frozen sections, 60 microm thick, of the whole muscles were double-stained for cholinesterase activity and axonal visualization. About 945 endplates per muscle were analysed using light microscopy. The neuromuscular junctions were always scattered throughout the whole muscles. Most of the muscle fibres showed a single neuromuscular junction, but multi-innervated fibres were found in all of the muscles. Their number was highest in interarytenoid muscles (21 per cent of all the fibres). The distance between multiple neuromuscular junction was most frequently less than 150 microm. Two neuromuscular junctions were frequently displayed, opposite one another, particularly in thyroarytenoid muscles, and this unusual feature seems specific for laryngeal muscles. The innervation of all of muscle fibres was exclusively found to be unineuronal, with multi-innervated fibres being innervated by a single axon. Distal axonal degeneration occurred with aging, resulting in a loss in the number of multi-innervated muscle fibres. Author.

Management of 1,000 vestibular schwannomas (acoustic neuromas): the facial nerve – preservation and restitution of function. Samii, M., Matthies, C. Department of Neurosurgery, Nordstadt Hospital, Hannover, Germany. *Neurosurgery* (1997) April, Vol. 40 (4), pp. 684–94; discussion 694–5.

OBJECTIVE: Although the rate of reported facial nerve preservation after surgery for vestibular schwannomas continuously increases, facial nerve paresis or paralysis is a frequent postsurgical sequelae of major concern. The major goal of this study was to define criteria for the right indication, timing, and type of therapy for patients with palsies despite anatomic nerve continuity and those with loss of anatomic continuity. **METHODS:** 1,000 vestibular schwannomas were surgically treated at the Department of Neurosurgery at Nordstadt Hospital from 1978 to 1993. Of 979 cases of complete removal and 21 cases of deliberately partial removal, the facial nerve was anatomically preserved in 929 cases (93 per cent). The rate of preservation is increasing, as is evidenced in the most recent cases, and preservation is supported by special electrophysiological monitoring. The facial nerve was anatomically severed in 60 cases (six per cent). It was anatomically lost in previous operations that were performed elsewhere in 11 cases (one per cent). In case of nerve discontinuity (42 cases), immediate nerve reconstruction by one of three available intracranial-intratemporal, intracranial-extracranial) was performed in the same surgical setting. In case of loss of the proximal facial nerve stump at the brain stem, early reanimation by combination with the hypoglossal nerve was achieved in most patients within weeks after tumour surgery. In a few patients with anatomic nerve continuity but absence of reinnervation for 10 to 12 months, a hypoglossal-facial combination was applied. All the patients with partial or with complete palsies were treated in a special follow-up programme of regular controls and of modulation of physiotherapeutic treatment every three to six months. **RESULTS:** In intracranial nerve reconstruction at the cerebellopontine angle, 61 to 70 per cent of patients regained complete eye closure and an overall result equivalent to House-Brackmann Grade 3. Hypoglossal-facial reanimation led to Grade 3 in 79 per cent. The duration between the onset of paralysis and the reconstructive procedure is decisive for the quality of the outcome. These data are discussed in view of other treatment options and certain parameters influencing outcome. **CONCLUSIONS:** This management contains three major principles as

follows: 1) preservation of facial nerve continuity in function by the aid of intraoperative monitoring, 2) early nerve reconstruction in case of lost continuity, and 3) scheduled follow-up programme for all patients with incomplete or complete palsies. Author.

Management of vestibular schwannomas (acoustic neuromas): auditory and facial nerve function after resection of 120 vestibular schwannomas in patients with neurofibromatosis 2. Samii, M., Matthies, C., Tatagiba, M. Department of Neurosurgery, Nordstadt Hospital, Hannover, Germany. *Neurosurgery* (1997) April, Vol. 40 (4), pp. 696–705; discussion 705–6.

OBJECTIVE: Vestibular schwannomas (VSs) affect young patients with Neurofibromatosis 2 (NF-2) and cause very serious problems for hearing, facial expression, and brain stem function. Our objective was to determine a therapy concept for the right timing and indication of neurosurgical therapy. **METHODS:** In 1,000 consecutive VS resections, 120 tumours in 82 patients with NF-2 were surgically treated by the same surgeon (MS) at the Department of Neurosurgery at Nordstadt Hospital from 1978 to 1993. The mean age of the patients was 27.5 years. Sixty tumours were surgically treated in 41 male patients, and 60 tumours were surgically treated in 41 female patients. Bilateral tumour resection was performed in 38 patients (76 operations, after previous partial surgery in 15 cases elsewhere), and unilateral operations were performed in 44 patients, five of whom had undergone ipsi- or contralateral surgery that was performed elsewhere. The operative and clinical findings are evaluated and compared with the data of patients without NF-2. **RESULTS:** In 105 cases, complete tumour resections were achieved. In 15 cases, deliberate subtotal resections were performed. These were for brain stem decompression in four cases and for hearing preservation in the last hearing ear in 11 cases, with successful preservation in eight of the 11. Pre- and postoperative hearing rates were higher in male than in female patients (70 per cent in male versus 65 per cent in female patients before surgery and 40.5 versus 31 per cent, respectively, after surgery). Hearing was preserved in 29 of 81 ears (36 per cent). The rate of preservation was 24 per cent in cases of large tumours and 57 per cent in cases of small tumours (< 30 mm). Twenty-one of 82 patients (26 per cent) were bilaterally deaf before surgery. Twenty-five patients had uni- or bilateral hearing after surgery (i.e. 41 per cent of those with preoperative hearing or 30.5 per cent of the whole group). Anatomic facial nerve preservation was achieved in 85 per cent. The facial nerve was reconstructed intracranially at the cerebellopontine angle by sural grafting in 17 cases and by hypoglossal-facial reanimation in five. Two deaths occurred one and three months postsurgically as a result of malignant tumour growth with brain stem dysfunction and respiratory problems. In summary, for patients with NF-2, the presentation ages are lower, tumour progression is faster, the chances of anatomic and functional nerve preservation are lower, the chances of good outcomes are best when surgery is performed early and when there is good preoperative hearing function, and the danger of sudden hearing loss is higher. The chances and danger often differ from side to side among individual patients. **CONCLUSION:** The indication and the timing of tumour resections are in some respects different from normal VS handling and are dependent on the tumour extension and related necessity of brain stem decompression and on the auditory function. As an optimal goal, completeness of resection with functional cochlear nerve preservation is formulated, and as an acceptable compromise, subtotal microsurgical resection with functional cochlear nerve preservation in the last hearing ear is suggested. Author.

Should endolymphatic sac tumors be considered part of the von Hippel-Lindau complex? Pathology case report. Tibbs, R. E. Jr., Bowles, A. P. Jr., Raila, F. A., Fratkin, J. D., Hutchins, J. B. Department of Neurosurgery, University of Mississippi Medical Center, Jackson 39216, USA. *Neurosurgery* (1997) April, Vol. 40 (4), pp. 848–55; discussion 855.

OBJECTIVE: Von Hippel-Lindau (vHL) disease is an inherited disorder characterized by numerous cystic and solid neoplasms. Because of the recent identification of the vHL gene, other investigators have demonstrated genetic mutations in this gene in several of the neoplasms associated with the disease. We describe a patient with an endolymphatic sac (ELS) tumour and vHL disease. The purpose of this study was to identify a similar genetic mutation within the vHL gene of the ELS tumour. **METHODS:** Using the patient's archival pathological slides, neoplastic cells

were microdissected to yield a purely neoplastic cell population. The deoxyribonucleic acid of these cells was then extracted and amplified via polymerase chain reaction. After sufficient amplification, the specimen was analysed on a single-strand conformation polymorphism gel system to detect putative changes in the base sequence. **RESULTS:** Single-strand conformation polymorphism gel system analysis yielded two bands representing the two single strands of deoxyribonucleic acid that were amplified. The upper band of the specimen was shifted down (compared with controls), representing a conformational change as a result of genetic mutation. **CONCLUSION:** ELS tumours are uncommon, and, to our knowledge, only seven cases associated with vHL disease have been reported in the literature. Although this association has been previously mentioned, no definitive studies have linked the two together. We report the eighth case of ELS tumour and vHL disease. We have demonstrated through molecular biological techniques, that, in our patient's tumour, a genetic mutation occurred, and that this mutation is similar to mutations previously reported in other neoplasms associated with vHL. We therefore suggest that ELS tumours be considered among the neoplasms associated with vHL. Author.

Continuous twice daily or once daily amoxicillin prophylaxis compared with placebo for children with recurrent acute otitis media. Roark, R., Berman, S. Department of Pediatrics, University of Colorado School of Medicine, Denver, USA. *Pediatric Infectious Disease Journal* (1997) April, Vol. 16 (4), pp. 376–81. **OBJECTIVE:** To determine the effectiveness of amoxicillin administered continuously twice daily vs. once daily vs. placebo to prevent new episodes of acute otitis media (AOM). **DESIGN:** Randomized, double blind, placebo-controlled clinical trial at a hospital-based general paediatric clinic and a private paediatric practice, both in Denver. **CO PARTICIPANTS:** 194 children (age three months through six years) were enrolled with three documented AOM episodes within the prior six months, without ventilating tubes or associated anatomic defects, immunodeficiency disorders or allergy to penicillin. Thirty-six were noncompliant and were excluded from the study, leaving 158 evaluable subjects. **INTERVENTIONS:** The amoxicillin dosage was 20 mg/kg/day either bid or qd. After randomization to placebo twice daily (bid), amoxicillin once daily (qd)/placebo qd or amoxicillin bid, patients were followed monthly and were also seen for upper respiratory infection symptoms during enrolment in the trial. Development of two new AOM episodes terminated the patients from the study. **MEASUREMENTS/MAIN RESULTS:**

Incidence density (ID) measurements were calculated for all study subjects and were stratified by age and season. Overall study subjects in all three arms of the trial had 7,243 days at risk during which time they developed 56 new AOM episodes for an annual ID of 2.82. There were no significant differences in the IDs between amoxicillin qd vs. bid or amoxicillin (bid or qd) vs. placebo. After stratifying by age and season of enrolment, there were no significant differences in ID rates among the three groups. The proportion of subjects remaining otitis-free was 63 per cent for the placebo group, 64 per cent for once daily amoxicillin and 61 per cent for twice daily amoxicillin. **CONCLUSION:** While once-a-day dosing was equivalent to twice-a-day dosing for amoxicillin prophylaxis, there was no benefit of amoxicillin prophylaxis compared with a placebo control in preventing new AOM episodes. Because of the potential of excessive antibiotic use to promote the acquisition of resistant pneumococci and the lack of effectiveness in this trial, routine use of amoxicillin prophylaxis should be discouraged. Author.

Macrolides in the management of streptococcal pharyngitis/tonsillitis. Tarlow, M. J. Department of Pediatrics, Birmingham Heartlands Hospital, Bordesley Green East, UK. *Pediatric Infectious Disease Journal* (1997) April, Vol. 16 (4), pp. 444–8.

The most frequent bacterial cause of pharyngitis/tonsillitis, a common infection in children, is group A beta-hemolytic streptococci. Prevention of acute rheumatic fever is the principal goal of treatment, although antibiotic therapy may also relieve the signs and symptoms of infection, shorten the infective period and prevent suppurative complications. Penicillin is the drug of choice. Alternatives are required, however, for patients allergic to penicillin and may be needed if the rate of bacteriologic failure with penicillin observed during the past decade continues. Erythromycin is generally effective in this infection, but its use, especially in children, is complicated by the need for multiple daily doses, a lengthy treatment period and a high rate of gastrointestinal side effects. The newer macrolides clarithromycin and azithromycin offer lower rates of gastrointestinal complaints and more convenient dosing. Clarithromycin is recommended for twice daily and azithromycin for once daily administration. Because of its prolonged tissue half-life, the recommended duration of azithromycin therapy is five days, compared with 10 days for penicillin, erythromycin and clarithromycin. Newer macrolides are rational alternatives to erythromycin for streptococcal pharyngitis/tonsillitis in penicillin-allergic patients. Author.