The Journal of Laryngology and Otology
August 1999, Vol. **113,** pp. 785–787

Abstract Selection

The presence of atopy does not determine the type of cellular infiltrate in nasal polyps. Park, H. S., Kim, H. Y., Nahm, D. H., Park, K., Suh, K. S., Yim. H. Department of Allergy and Clinical Immunology, Ajou University School of Medicine, Suwon, Korea. *Allergy and Asthma Proceedings* (1998) November–December, Vol. 19 (6), pp. 373–7.
BACKGROUND AND OBJECTIVES: Any relationship between atopy and nasal polyposis remains to be further studied to determine the contribution of atopy to the pathogenesis of nasal polyps. MATERIALS AND METHOD: We have compared the inflammatory cellular infiltrate in nasal polyp tissue taken during resection from 10 atopic and 11 non-atopic subjects. We have used immunohistochemistry to enumerate the individual inflammatory cell types using monoclonal antibodies against tryptase (AA1) to identify mast cells, the secreted forms of eosinophil cationic protein (EG2) to identify activated eosinophils, neutrophil elastase (NE+) to demonstrate neutrophils, and T cell surface markers (CD3) to identify pan T cells. RESULT: The number of AA1+ and NE+ cells tended to be higher in atopics, but no statistical significance was found ($p = 0.06$, $p = 0.12$). Eosinophil numbers (EG2) were abundant in both groups and found to be not different between them ($p = 0.65$). Some subjects had CD3+ cells with no significant difference between atopic and non-atopic subjects ($p = 0.21$). Significant correlation was found between NE+ and AA1+ or EG2 cells ($r = 0.59$, $r = 0.63$, $p<0.05$, respectively). CONCLUSION: These results suggest that the presence of atopy does not determine either the type of extent of cellular infiltration of nasal polyps. Author.

Oxygen modulates Na+ absorption in middle ear epithelium. Portier, F., van den Abbeele, T., Lecain, E., Sauvaget, E., Escoubet, B., Huy, P. T., Herman, P. Laboratoire d'Otologie Experimentale, Faculte Lariboisiere-St-Louis, Institut National de la Sante et de la Recherche Medicale Unite 426, Faculte Xavier Bichat, Universite Paris VII, 75010 Paris, France. *American Journal of Physiology* (1999) February, Vol. 276 (2 Pt 1), pp. C312–7.
The physiology of the middle ear is primarily concerned with keeping the cavities air filled and fluid free to allow transmission of the sound vibrations from the eardrum to the inner ear. Middle ear epithelial cells are thought to play a key role in this process, since they actively transport Na+ and water. The PO2 of the middle ear cavities varies from 44 to 54 mmHg in healthy human ears but may be lower in the course of secretory otitis media. The effect of chronic hypoxia on ion transport was investigated on a middle ear cell line using the short-circuit current technique. Chronic hypoxia reversibly decreased the rate of Na+ absorption across the MESV cell line. Although a decrease in cellular ATP content was observed, the decrease of Na+ absorption seemed related to a primary modulation of apical Na+ entry. As revealed by RNase protection assay, the decrease in the rate of apical Na+ entry strictly paralleled the decrease in the expression of transcripts encoding the alpha-subunit of the epithelial Na+ channel. This effect of oxygen on Na+ absorption might account for 1) the presence of fluid in the middle ear in the course of secretory otitis media and 2) the beneficial effect of the ventilation tube in treating otitis media that allows the PO2 to rise and restores the fluid clearance. Author.

The management of brain abscess in a developing country: are the results any different? Joshi, S. M., Devkota, U. P. Neurosurgical Unit, Bir Hospital, Kathmandu, Nepal. *British Journal of Neurosurgery* (1998), August, Vol. 12 (4), pp. 325–8.
A retrospective study of 57 surgically-managed brain abscesses at the Neurosurgical Unit, Bir Hospital during a six-year period from October 1990 is presented. Detailed hospital case notes could be traced in only 37 cases, consisting of 25 males and 12 females with age range from five months to 60 years. Cryptogenic abscess was the commonest category followed by abscess caused by chronic ear infection. The diagnosis was made with enhanced computed tomography (CT) in all the cases. Positive bacteriology was found in only nine cases. The treatment consisted of six weeks of intensive intravenous antibiotics and emergency surgical drainage of the abscess. Five out of the total cases died (13.5 per cent). These patients were all in an extremely poor condition at the time of presentation. All the survivors made a good recovery. With timely CT diagnosis, surgical drainage and antibiotics, good results can be achieved even in a developing country. Author.

Regrowth of the residual tumour after acoustic neurinoma surgery. Ohta, S., Yokoyama, T., Nishizawa, S., Uemura, K. Department of Neurosurgery, Hamamatsu University, School of Medicine, Japan. *British Journal of Neurosurgery* (1998), October, Vol. 12 (5), pp. 419–22.
Ideally, acoustic neurinomas should be completely removed without neurological deficit. In some cases, however, removal is subtotal in order to preserve anatomical continuity of the facial nerve. In this report we discuss the regrowth of residual tumour in these patients and the difference between regrowing and dormant tumours. Eight of 81 patients with acoustic neurinomas where the facial nerve was anatomically preserved leaving tumour overlying it were investigated and followed-up. Only one case with residual tumour along the 7th nerve from the intrameatal portion to its entry to the brainstem showed regrowth 3.5 years after the operation. In the other seven cases with residual tumour along the nerve from the porus to the brainstem, the tumour remained dormant during a follow-up period of 4.5–8.5 years. Removal of tumour in the internal auditory meatus may make regrowth unlikely. Author.

Recurrence of vestibular (acoustic) schwannomas in surgical patients where preservation of facial and cochlear nerve is the priority. Cerullo, L., Grutsch, J., Osterdock, R. Chicago Institute for Neurosurgery and Neuroresearch, Illinois 60614, USA. *British Journal of Neurosurgery* (1998), December, Vol. 12 (6), pp. 547–52.
The risk of tumour recurrence was measured in a series of surgically treated vestibular (acoustic) schwannoma patients where preservation of facial and cochlear nerve function was a routine objective. This report describes the influence of this surgical philosophy on the hazards of tumour recurrence or continued growth from residual tumour cells left in situ. A series of 116 consecutive vestibular schwannoma patients underwent primary surgical resection in a general community hospital by a single neurosurgeon. Recurrence of a tumour was assessed radiologically. Eighteen patients experienced a recurrence. No relationship was found between recurrence and age, residual coagulated morsels of tumour, preoperative tumour size, or opening of the internal auditory canal. Time to recurrence ranged from six to 148 months and all but two recurrent lesions were non symptomatic. Lifelong follow-up of these patients is therefore, suggested. Author.

Galvanic stimulation evokes short-latency EMG responses in sternocleidomastoid which are abolished by selective vestibular nerve section. Watson, S. R., Fagan, P., Colebatch, J. G. Institute of Neurological Sciences, The Prince of Wales Hospital, Randwick, Sydney, Australia. *Electroencephalography and Clinical Neurophysiology* (1998), December, Vol. 109 (6), pp. 471–4.
OBJECTIVE: To describe vestibulocollic responses in sternocleidomastoid (SCM) evoked by transmastoid galvanic (DC) stimulation. METHODS: We studied the averaged responses in

the unrectified EMG of SCM to transmastoid galvanic stimulation (5 mA/2 ms) and also to 100 dB clicks. Two patients with Meniere's disease were studied both before and after unilateral selective vestibular nerve section. RESULTS: Transmastoid galvanic stimulation produced a positive-negative biphasic EMG response at short latency in the SCM ipsilateral to the side of cathode placement, which resembled that which followed vestibular activation by loud clicks (p13/n23). Selective unilateral vestibular nerve section abolished this galvanic-evoked response. CONCLUSIONS: Galvanic-evoked vestibulocollic responses can be recorded in SCM. This is a new method of studying vestibular reflex function which may have application in the clinical assessment of vestibular disorders. Author.

Day-care and otitis media in young children: a critical overview. Rovers, M. M., Zielhuis, G. A., Ingels, K., van der Wilt, G. J. Department of Otorhinolaryngology, University Hospital, Nijmegen, The Netherlands. m.rover@mie.kun.nl. *European Journal of Pediatrics* (1999), January, Vol. 158 (1), pp. 1–6.
To review the evidence concerning the association between (different forms of) day-care and otitis media in children aged 0 to four years, we performed a meta-analysis of studies identified by a systematic search with Medline from 1966 to July 1997 and by the reference lists. Seventeen articles were classified as useful because these articles studied children of 0 to four years of age and because odds ratios as well as confidence intervals were presented or could be calculated. All these studies found a association between attending a day-care centre and otitis media. The association between otitis media and family care was less clear. Differences in study design, age of the subjects, and controlled variables did not explain the association. CONCLUSION: Day-care is a risk factor for developing otitis media: the number of children seems to be important for this effect, probably due to increased exposure to otitis media pathogens. Author.

X-linked deafness with stapes gusher in females. Papadaki, E., Prassopoulos, P. Bizakis, J., Karampekios, S., Papadakis, H., Gourtsoyiannis, N. Department of Radiology, Faculty of Medicine, University Hospital of Heraklion, Medical School of Crete, Greece. *European Journal of Radiology* (1998), November, Vol. 29 (1), pp. 71–5.
A 22-year-old woman presented with severe mixed hearing loss and a flow of cerebrospinal fluid in the middle ear during stapes surgery (stapes gusher). HRCT of the temporal bones showed characteristic abnormalities of the inner ear (bulbous dilatation of the lateral portion of the internal acoustic meatus with incomplete separation from the cochlea, and widening of the first part of the facial nerve canal) described in X-linked progressive mixed deafness with stapes gusher. The evaluation of the patient's family revealed a sister with the same clinical history and identical HRCT findings, and 11 normal male relatives. This is the first report with typical findings of this entity that affects only female members of a family, suggesting another type of inheritance. Author.

Acquired resistance to acoustic trauma by sound conditioning is primarily mediated by changes restricted to the cochlea, not by systemic responses. Yamasoba, T., Dolan, D. F., Miller, J. M. Kresge Hearing Research Institute, The University of Michigan, Ann Arbor 48109-0506, USA. *Hearing Research* (1999) January, Vol. 127 (1-2), pp. 31–40.
Hearing loss caused by intense sound exposure can be significantly reduced by pre-exposing subjects to moderate-level acoustic stimuli. This phenomenon occurs in a variety of mammals. We investigated whether sound conditioning provides acquired resistance to acoustic trauma through local mechanisms selectively in the conditioned ears or if systemic mechanisms are involved that would yield contralateral protection in unconditioned ears. Guinea pigs (group I) in which one external ear canal was occluded were exposed to conditioning sound (2–20 kHz, 85 dB SPL, five h/day, 10 days). After removing the occlusion, the animals were then subjected bilaterally to intense noise (2–20 kHz, 110 dB SPL, five h) five days after the last conditioning exposure. Animals without ear canal occlusion were also exposed to the intense sound without conditioning (group II) or following the same conditioning exposure (group III). Intense sound exposure caused significantly greater permanent ABR threshold shifts at all frequencies tested (four, eight, 12, 16 and 20 kHz) in group II than in group III. In group I, the occluded ears showed significantly greater threshold shifts at all frequencies compared to the unoccluded ears. The threshold shifts in the occluded ears in group I were identical to those observed in group II; and the shifts in unoccluded ears in group I were identical to those in group III. Protective effects provided by sound conditioning were almost the same in group III and in the occluded ears in group I. The extent of hair cell damage supported the physiological findings. These results indicate that acquired resistance to acoustic trauma provided by sound conditioning is restricted to the cochlea exposed to conditioning sound, suggesting that conditioning protection is mediated primarily by the changes that occur locally within the conditioning cochlea. This animal model, with unilateral external ear canal occlusion during sound conditioning, is useful for studies of the mechanisms of conditioning protection. Author.

Differential diagnosis of type 2 neurofibromatosis: molecular discrimination of NF2 and sporadic vestibular schwannomas. Wu, C. L., Thakker, N., Neary, W., Black, G., Lye, R., Ramsden, R. T., Read, A. P., Evans, D. G. University Department of Medical Genetics and Regional Genetics Service, St Mary's Hospital, Manchester, UK. *Journal of Medical Genetics* (1998) December, Vol. 35 (12), pp. 973–7.
Patients who present with unilateral vestibular schwannomas either at a young age or with additional features of type 2 neurofibromatosis (NF2) are at risk of developing bilateral disease and transmitting a risk of neurogenic tumours to their offspring. We have identified 15 patients from a series of 537 with unilateral vestibular schwannomas who also had one or more of the following: other tumours (10/15), features of NF2 (three/15), or a family history of neurogenic tumours (five/15). No germline NF2 mutations were detected and in seven of nine cases where tumour material was available for analysis a germline mutation in the NF2 gene has been excluded. Although a possibility of gonosomal mosaicism still exists, exclusion tests for the offspring are now possible. We suggest a general strategy, based on analysis of tumour DNA, for distinguishing sporadic and familial cases of tumours caused by two hit mechanisms. Application of this strategy suggests that most instances of unilateral vestibular schwannoma which do not fulfil criteria for NF2 represent chance occurrences. Author.

Middle ear adenocarcinoma with intracranial extension. Case report. Paulus, W., Romstock, J., Weidenbecher, M., Huk, W. J., Fahlbusch, R. Department of Neuropathology, University of Erlangen Medical School, Germany. werner.paulus@uni-muenster.de. *Journal of Neurosurgery* (1999) March, Vol. 90 (3), pp. 555–8.
Middle ear adenocarcinoma is a very rare, locally invasive neoplasm assumed to arise from the middle ear mucosa. Although endolymphatic sac tumour (aggressive papillary middle ear tumour) and jugulotympanic paraganglioma may show brain invasion, intracranial extension of histologically confirmed middle ear adenocarcinoma has not been previously reported. The authors describe a 53-year-old man who suffered from otalgia and tinnitus for more than 10 years and from neurological deficits for one year due to a large temporal bone tumour that invaded the temporal lobe. A combined neurosurgical and otolaryngological resection was performed. Pathological analysis revealed a low-grade adenocarcinoma of a mixed epithelial-neuroendocrine phenotype, which showed a close histological similarity to, and topographical relationship with, middle ear epithelium. The authors conclude that middle ear adenocarcinoma belongs to the spectrum of extracranial tumours that have possible local extension to the brain. Author.

Usefulness of heavily T2-weighted magnetic resonance imaging in patients with cerebellopontine angle tumours. Kumon, Y., Sakaki, S., Ohue, S., Ohta, S., Kikuchi, K., Miki, H. Department of Neurological Surgery, Ehime University School of Medicine, Japan. *Neurosurgery* (1998) December, Vol. 43 (6), pp. 1338–43.
OBJECTIVE: Heavily T2-weighted magnetic resonance imaging (MRI) has been reported to be useful for the diagnosis of lesions of the inner ear or its central connections. We evaluated the usefulness of heavily T2-weighted MRI in 18 patients with cerebellopontine angle tumours. METHODS: The lesions were acoustic neuromas in 14 patients and meningiomas in four patients. The findings of heavily T2-weighted MRI were compared with those of three-dimensional T1-weighted gradient field echo

MRI. RESULTS: An accurate description of the situation of the tumour in the internal auditory canal (IAC) was possible, because the inner ear was clearly shown on the heavily T2-weighted magnetic resonance images. We could therefore detect the acoustic neuromas located at the fundus of the IAC and the meningiomas growing into the IAC. The residual tumour in the IAC can be shown postoperatively. It was difficult to demonstrate these findings using three-dimensional T1-weighted gradient fiield echo MRI because of the poor presentation of the petrous bone structures. The lower cranial nerves and the VIIth and VIIIth cranial nerves were more clearly demonstrated by heavily T2-weighted MRI than by three-dimensional T1-weighted gradient field echo MRI. Using heavily T2-weighted MRI, the VIIth and VIIIth cranial nerves of th lesion side were demonstrated in half of the patients with acoustic neuromas smaller than 2.5 cm. CONCLUSION: We conclude that heavily T2-weighted MRI is useful to detect the relationship among the tumour, the IAC, the inner ear, and the surrounding cranial nerves. Author.

A stepwise approach to the diagnosis and treatment of hereditary hearing loss. Tomaski, S. M., Grundfast, K. M. Department of Surgery, Tripler Army Medical Center, Honolulu, Hawaii, USA. *Pediatric Clinics of North America* (1999) February, Vol. 46 (1), pp. 35–48.

What To Do Do suspect a genetic cause in all cases of hearing loss. Do develop a working knowledge of common types of HHI that you may draw on to aid in diagnosis. Do think of HHI when the audiogram reveals a hearing loss with a 'cookie bite' configuration. Do refer the infant to a geneticist in cases where you suspect a syndromic HHI, a nonsyndromic HHI, and in cases of 'cryptogenic' hearing loss where an underlying HHI may be present. Often, the associated symptoms are subtle and best detected by a professional who deals with these issues on a daily basis. Do get the infant or family plugged into an audiologist or otolaryngologist and speech pathologist who will preferably work as a team to maximize aural rehabilitation and ensure serial follow-up. It is never too early to fit a child with hearing aids. Do refer to the HHIRR center at Boys Town. Do refer to the correct 'deaf' organization or 'blind-deaf' organization. Do think about working up other siblings or family members. Do keep in mind that some members of the 'deaf society' may regard deafness as an alternative lifestyle and may not be amenable to their child's referral for additional workup and aural rehabilitation. What Not To Do Do not assume the child is deaf and nothing can be done. Do not wait until the child is older to refer to an otolaryngologists, speech therapist, and audiologist. Do not order a sonogram. Do not order a temporal bone CT scan on newborns. Do not forget about other siblings who may have a similar pathology. Do not forget that some forms of HHI can present beyond infancy. The pediatrician is the front line and can play a major role in the diagnosis, workup, and treatment of HHI. Armed with the proper degree of suspicion, careful elicitation of family history, meticulous physical examination, evaluation of the audiogram, and adequate fund of knowledge of common types of genetic deafness, the pediatrician can make a timely diagnosis and appropriate referrals. This avoids delay in detection of significant hearing impairment and the associated lack of essential skills in speech, language, and social interaction. No child is too young to have some type of hearing assessment. Early detection and intervention are best done with a multidisciplinary team approach with a neonatalogist or pediatrician, audiologist, speech therapist, and otolaryngologist. In the future, blood tests using genetic probes may be available to screen for many types of HHI. Author.

Chronic otitis media with effusion. Daly, K. A., Hunter, L. L., Giebink, G. S. University of Minnesota, Otitis Media Research Center, Department of Otolaryngology, University of Minnesota School of Medicine, Minneapolis, USA. *Pediatrics in Review* (1999) March, Vol. 20 (3), pp. 85–93.

Chronic OME, which arises from a complex series of inflammatory events in the middle ear, affects approximately five per cent to 30 per cent of children. The mean duration of MEE is 16 to 20 weeks during the first two years of life. This condition is diagnosed best with pneumatic otoscopy and tympanometry. The risk of chronic OME is increased by environmental factors and characteristics of the child, including disease history. Approximately 70 per cent of MEE are culture-positive, with approximately 50 per cent of these yielding S pneumoniae, H influenzae, or M catarrhalis. However, antibiotic treatment of acute otitis media and OME has only a minimal effect on the long-term resolution of MEE. Research has shown that 70 per cent of children who have chronic OME suffer mild-to-moderate hearing loss, so a child who has bilateral MEE for three months should undergo hearing evaluation. If the child has hearing impairment, referral to an otolaryngologist for myringotomy and tympanostomy tube insertion is a treatment option that the AHCPR recommends after four months of effusion with hearing loss. Sequelae of chronic OME include deficient expressive language and poorer attention skills due to the temporary hearing loss associated with OME, high-frequency sensorineural hearing loss, tympanic membrane atrophy, perforation, retraction, atelectasis, and cholesteatoma. Author.

Detectability of cochlear, acoustic nerve and brainstem potentials in a group of 'normal' preterm newborns recorded with insert earphone. Cornacchia, L., Del Prete, A. Audiology Unit, Lecco Hospital, Italy. *Scandinavian Audiology* (1998), Vol. 27 (4), pp. 213–7.

Thirty-four 'normal' preterm newborns were tested at 40 weeks postconceptional age. To separate electromagnetic artifacts from cochlear potentials and subsequent auditory brainstem responses, a test was given using an insert earphone at 90, 70, 50, 30 dB nHL. The detectability of receptor potentials, waves I, III, V, as a function of stimulus intensity is described: at 90 dB nHL exclusively, we could always identify these peaks because of the better morphological distinctiveness of each potential. When trying to evaluate the acoustic pathway in premature newborns, we suggest that brainstem response audiometry should be performed at 90 dB nHL with an insert earphone. Author.

Clinical evaluation of a portable digital hearing aid with narrow-band loudness compensation. Hidaka, N., Kawase, T., Takahashi, S., Suzuki, Y., Ozawa, K., Sakamoto, S., Sasaki, N., Hirano, K., Ueda, N., Sone, T., Takasaka, T. Department of Otorhinolaryngology, Tohoku University School of Medicine, Sendai, Japan. hi00@cc.tohoku.ac.jp. *Scandinavian Audiology* (1998), Vol. 27 (4), pp. 225–36.

A new portable digital hearing aid referred to as CLAIDHA (Compensate for Loudness by Analyzing Input-signal Digital Hearing Aid), which employs frequency-dependent amplitude compression based on narrow-band loudness compensation, was clinically evaluated in 159 subjects with hearing loss. The results of speech tests revealed better intelligibility compared with the subject's own hearing aids; the advantage of using CLAIDHA in daily life was also indicated by the results of a questionnaire completed by the subjects. In about 64 per cent of the subjects with a flat, gradually sloping type of hearing loss, CLAIDHA was satisfactorily adopted for daily use. However, in the subjects with a steeply sloping type of hearing loss and subjects with losses mainly at high and low frequencies, with near-normal mid-frequency hearing, this loudness compensation scheme seems to be slightly less effective. Author.