The Journal of Laryngology and Otology
August 1993, Vol. **107**, pp. 759–764

Abstract Selection

Effect of age and bolus variables on the coordination of the glottis and upper esophageal sphincter during swallowing. Ren, J., Shaker, R., Zamir, Z., Dodds, W. J., Hogan, W. J., Hoffmann, R. G. Medical College of Wisconsin Dysphagia Institute, Milwaukee. *American Journal of Gastroenterology* (1993) May, Vol. 88 (5), pp. 665–9.
We studied 1) the effect of age and bolus variables on a) the coordination of deglutitive vocal cord adduction and upper esophageal sphincter (UES) relaxation and b) the duration of deglutitive vocal cord adduction; 2) the effect of the presence of a manometric catheter across the UES on the deglutitive glottal function; and 3) the temporal relationship between deglutitive vocal cord closure and swallow-induced apnea. We studied 10 young (23 ± 2 yr) and 10 healthy elderly (73 ± 2 yr) volunteers by concurrent videoendoscopy, UES manometry, respirography, and submental surface electromyography. In both groups the onset of vocal cord adduction preceded the onset of UES relaxation, deglutitive apnea, and submental electromyogram swallowing signal. In both groups, bolus volume and temperature did not have any significant effect on the duration of deglutitive vocal cord adduction. In both young and elderly volunteers, water swallows, compared with dry swallows, significantly shortened the interval between the onset of deglutitive vocal cord adduction and the onset of UES relaxation. In conclusion, coordination between deglutitive glottal and UES function, as well as the duration of deglutitive vocal cord adduction, is preserved in the elderly. Bolus volume and temperature do not have a modulatory effect on the duration of vocal cord closure, but water swallow shortens the interval between the onset of glottal closure and UES relaxation. This shortened interval may contribute to the safety of the airway during swallowing of liquid volumes. Author.

Attempts to eradicate methicillin-resistant Staphylococcus aureus from a long-term-care facility with the use of mupirocin ointment. Kauffman, C. A., Terpenning, M. S., He, X., Zarins, L. T., Ramsey, M. A., Jorgensen, K. A., Sottile, W. S., Bradley, S. F. Division of Infectious Diseases, Department of Veterans Affairs Medical Center, Ann Arbor, Michigan 48105. *American Journal of Medicine* (1993) Apr, Vol. 94 (4), pp. 371–8.
PURPOSE: To assess the impact of the use of mupirocin ointment on colonization, transmission, and infection with methicillin-resistant Staphylococcus aureus (MRSA) in a long-term-care facility. PATIENTS AND METHODS: All 321 residents of a Veterans Affairs long-term-care facility from June 1990 through June 1991 were studied for MRSA colonization and infection. MRSA-colonized patients received mupirocin ointment to nares in the first seven months and to nares and wounds in the second five months. The effect of mupirocin use on MRSA colonization and infection was monitored. All S. aureus strains isolated were tested for the development of resistance to mupirocin. RESULTS: A total of 65 patients colonized with MRSA received mupirocin ointment. Mupirocin rapidly eliminated MRSA at the sites treated in most patients by the end of one week. Weekly maintenance mupirocin was not adequate to prevent recurrencies—40 per cent of patients had recurrence of MRSA. Overall, MRSA colonization in the facility, which was 22.7 per cent ± 1 per cent prior to the use of mupirocin, did not change when mupirocin was used in nares only (22.2 per cent ± 2.1 per cent), but did decrease to 11.5 per cent ± 1.8 per cent when mupirocin was used in nares and wounds. Although colonization decreased, roommate-to-roommate transmission and MRSA infection rates, low to begin with, did not change when mupirocin was used. Mupirocin-resistant MRSA strains were isolated in 10.8 per cent of patients. CONCLUSIONS: Mupirocin ointment is effective at decreasing colonization with MRSA. However, constant surveillance was required to identify patients colonized at admission or experiencing recurrence of MRSA during maintenance treatment. Long-term use of mupirocin selected for mupirocin-resistant MRSA strains. Mupirocin should be saved for use in outbreak situations, and not used over the long term in facilities with endemic MRSA colonization. Author.

Bone dysplasia, midface hypoplasia, and deafness: three new patients and review of the literature. Kaariainen, H., Barrow, M., Hennekam, R. Department of Medical Genetics, University of Helsinki, Finland. *American Journal of Medical Genetics* (1993) Apr 15, Vol. 46 (2), pp. 223–7.
We report on three unrelated patients with a syndrome of sensorineural deafness (3/3), midface hypoplasia (3/3), disproportionate shortness with short limbs (3/3), cleft palate or bifid uvula (3/3), and lack of high myopia (3/3). This brings the number of reported patients with this condition to 11. Different names such as oto-spondylomegaepiphyseal dysplasia (OSMED) or the Insley-Astley syndrome have been used. We propose the name 'syndrome of bone dysplasia, midface hypoplasia, and deafness' which lists the three main manifestations of the condition. Author.

A case-control study of carcinomas of the nose and paranasal sinuses in the woollen textile manufacturing industry. Magnani, C., Comba, P., Ferraris, F., Ivaldi, C., Meneghin, M., Terracini, B. Cancer Epidemiology Unit, University of Torino, Italy. *Archives of Environmental Health* (1993) Mar–Apr, Vol. 48 (2), pp. 94–7.
A population-based case-control study was conducted in Biella, which is located in northwestern Italy, to investigate the reported association between sinonasal carcinomas and woollen fabrics production. The study included 33 cases diagnosed during 1976–88 (14 adenocarcinomas, 11 epidermoid carcinomas, three other specified carcinomas, one unspecified carcinoma, and four cases without histologic confirmation) and 131 controls. No association was found with smoking. As reported previously, excess risks were observed in wood and furniture workers (odds ratio (OR) = 4.4, 95 per cent confidence interval (95 per cent CI) = 1.41–13.4) and in the leather industry (OR = 3.5, 95 per cent CI = 0.6–20.3). Odds ratios in the wood and furniture industry were 22.0 (95 per cent CI = 4.4–124.0) for adenocarcinomas and 0.9 (95 per cent CI = 0.4–8.3) for epidermoid carcinomas. No association was found with the woollen textile or garment industries (OR = 0.8, 95 per cent CI = 0.2–2.8), nor with farming, construction, metal works, and transport. Odds ratios for the textile industry did not vary with length of exposure or histologic type. Power for detecting an odds ratio of 3.0 at the 95 per cent level of significance was 40 per cent. Author.

Progressive hearing loss in hard-of-hearing children. Levi, H., Tell, L., Feinmesser, M. Speech and Hearing Centre, Hadassah University Hospital, Jerusalem, Israel. *Audiology* (1993), Vol. 32 (2), pp. 132–6.
A group of 92 children with bilateral sensorineural hearing loss has been followed up over a period of up to 15 years from the time that an initial reliable audiogram was obtained. This group was studied in order to determine the frequency of occurrence of progressive hearing loss and the relationship of the progressive to the presumed etiology of hearing loss. Progression of hearing loss was demonstrated in 21 children out of the 92 children studied. This progression of hearing loss was either bilateral or unilateral, and no evident relationship could be found between the presumed etiology of hearing loss and its progressivity. Author.

Structure of perceived handicap in middle-aged males with noise-induced hearing loss, with and without tinnitus. Hallberg, L. R., Johnsson, T., Axelsson, A. Department of Psychology, University of Goteborg, Sweden. *Audiology* (1993), Vol. 32 (2), pp. 137–52.
By using a modified stepwise regression analysis technique, the structure of self-perceived handicap and tinnitus annoyance in 89 males with noise-induced hearing loss was described. Handicap was related to three clusters of variables, reflecting individual, environmental, and socioeconomic aspects, and 60 per cent of the variance in self-perceived handicap was explained by the representatives of these clusters: i.e. 'acceptance of hearing problems', 'social support related to tinnitus' and 'years of education'. Tinnitus had no impact

of its own on self-perceived handicap and only a modest portion (36 per cent) of the variance in tinnitus annoyance was explained by 'sleep disturbance' and 'auditory perceptual difficulties'. Author.

Lympho-epithelial cysts: a maxillofacial surgeon's perspective. Smyth, A. G., Ward-Booth, R. P. West Midlands Regional Plastic and Jaw Surgery Unit, Wordsley Hospital, Stourbridge. *British Journal of Oral and Maxillofacial Surgery* (1993) Apr, Vol. 31 (2), pp. 120–3.
Cervical swellings are referred to Oral and Maxillofacial Surgeons and may subsequently be diagnosed as lympho-epithelial cysts. The clinical presentation of such swellings appears to differ from that seen in other specialties also treating these cysts in that a larger proportion of lympho-epithelial cysts presenting to our specialty are infected, which complicates the diagnosis and also the subsequent management. We present our recent experience of five patients who underwent excision of a lympho-epithelial cyst, all of which were infected on initial presentation and four of which were associated with concurrent ipsilateral dento-alveolar infection. The fifth case presented with rapid development of a cervical swelling in the immediate post-natal period. As these cysts contain abundant lymphoid tissue as an integral part of the lymph drainage system of the head and neck, we propose that the management of an infected lympho-epithelial cyst should include a full clinical and radiographic examination of the oral cavity for a possible focus of infection and indeed any patient awaiting surgery for a non-infected cyst would benefit from an examination of the mouth and treatment of any sites of chronic infection. Author.

Parathyroid carcinoma presenting with a brown tumour of the mandible in a young man. Masson, E. A., MacFarlane, I. A., Bodmer, C. W., Vaughan, E. D. Department of Medicine, University of Liverpool. *British Journal of Oral and Maxillofacial Surgery* (1993) Apr, Vol. 31 (2), pp. 117–9.
A 27-year-old man presented to his dentist with a swelling in his lower jaw. Histology revealed this to be a brown tumour associated with primary hyperparathyroidism and severe but asymptomatic hypercalcaemia. A large parathyroid adenoma was removed and the serum calcium fell to normal. Hypercalcaemia recurred and re-exploration of the neck revealed parathyroid metastases in cervical lymph nodes. A modified radical neck dissection was performed and he has remained normocalcaemic on Vitamin D analogues for two years. Bone disease of the mandible is a very rare presentation of primary hyperparathyroidism. The diagnosis of parathyroid malignancy is often difficult histologically, and the optimum treatment is uncertain. Author.

CT-dacryocystography for nasolacrimal duct obstruction following paranasal sinus surgery. Massoud, T. F., Whittet, H. B., Anslow, P. Department of Neuroradiology, Radcliffe Infirmary, Oxford. *British Journal of Radiology* (1993) Mar, Vol. 66 (783), pp. 223–7.
Nasolacriminal duct obstruction and consequent epiphora is a complication that may develop in some patients following paranasal sinus surgery. We describe the technique of CT-dacryocystography which entails contrast injection of the lacrimal system and simultaneous computed tomography (CT) scanning of the facial structures. This technique provides concurrent information regarding obstruction of the nasolacrimal duct and the presence of disease recurrence or persistence in the adjacent paranasal sinuses. The role of CT-dacryocystography prior to endoscopic dacryocystorhinostomy is discussed briefly. Author.

Sensitivity of human squamous cell carcinoma of the larynx to fractionated radiotherapy. Rezvani, M., Fowler, J. F., Hopewell, J. W., Alcock, C. J. Research Institute (University of Oxford), Churchill Hospital, Headington, UK. *British Journal of Radiology* (1993) Mar, Vol. 66 (783), pp. 245–55.
Data obtained for the response of tumours from two multicentre clinical trials of the British Institute or Radiology have been combined and studied. Both trials involved patients with laryngopharyngeal carcinoma. There were 734 patients in the first trial, recruited between 1965 and 1975, and 611 patients in the second trial, recruited between 1975 and 1985. Observed survival and tumour-free rates for all patients are calculated. T-class and the nodal status of the patient at the start of the treatment were important factors in the determination of both observed survival and tumour-free rates. Overall treatment time was an important factor in determining the recurrence of tumour. The longer the overall treatment time the greater was the chance of tumour recurrence. The linear-quadratic (LQ) model was used in the analysis of the tumour recurrence data for a large group of patients with laryngeal tumours without nodal involvement. A small alpha/beta ratio of 0.94 Gy was obtained for T3 tumours while that of T2 tumours was negative, −10.5 Gy. The value for T1 tumours was higher at 23 Gy. However, use of the LQ model with a time component increased the alpha/beta ratios to 26.0 ± 27.20 Gy, 18.0 ± 12.33 Gy and 13.38 ± 5.40 Gy for T1, T2 and T3 tumours, respectively. The time component, the gamma/alpha ratios, for these tumours were 0.15 ± 0.27 Gy/day, 0.81 ± 0.18 Gy/day and 0.76 ± 0.15 Gy/day, respectively. Author.

Squamous metaplasia of the bronchial mucosa and its relationship to smoking. Peters, E. J., Morice, R., Benner, S. E., Lippman, S., Lukeman, J., Lee, J. S., Ro J. Y., Hong, W. K. Department of Medical Specialties, University of Texas M.D. Anderson Cancer Center, Houston. *Chest* (1993) May, Vol. 103 (5), pp. 1429–32.
We performed flexible fiberoptic bronchscopy (FFB) on 106 heavy cigarette smokers. Six bronchial biopsy specimens, obtained from the carina and five major bronchi, were screened for squamous metaplasia. Individual biopsy specimens were sectioned into 4-microns sections, and a metaplasia index (MI), or percentage of sections containing squamous metaplasia, was determined. Metaplasia was noted at one or more biopsy sites in 66 of 99 subjects (seven were excluded from the analysis). Twenty-five per cent of the subjects showed metaplasia at three or more biopsy sites, and one subject had metaplasia on all six biopsy specimens. The presence of squamous metaplasia varied from 40.4 per cent in the right lower lobe to 15.3 per cent in the left upper lobe. The subjects were grouped into simple categories based on the number of packs smoked per day and the pack-year history of smoking. Subjects who smoked more than two packs per day (n = 11) had the highest MI (37.4 ± 4.9 per cent, mean ± SEM). Fifty-seven subjects smoked more than one pack per day but fewer than or equal to two packs per day , and they had a mean MI of 22.3 ± 2.9 per cent. Subjects who smoked one pack per day or less (n = 31) had a mean MI of only 12.9 ± 2.8 per cent. The MI of those who smoked more than two packs per day was significantly greater than the MI of those who smoked one pack per day or less ($p <$ or = 0.003). While the MI varied from 12.9 ± 3.5 per cent in subjects who had smoked less than 20 pack-years to a maximum of 29.1 ± 4.5 per cent in those who had smoked greater than 60 pack-years, no statistically significant difference was detected between these two groups. Thus, we conclude that heavy tobacco use is associated with important alterations of bronchial mucosa. Furthermore, the intensity of tobacco use (packs per day) rather than the number of pack-years appears to be the more important factor in promoting squamous metaplasia of the bronchial mucosa. Author.

The detection of nasopharynx carcinoma in technetium-99m (V) dimercaptosuccinic acid SPECT imaging. Kao, C. H., Wang, S. J., Wey, S. P., Shen, L. H., Ting, G., Yeh, S. H. Department of Nuclear Medicine, Taichung Veterans General Hospital, Taiwan, Republic of China. *Clinical Nuclear Medicine* (1993) Apr, Vol. 18 (4), pp. 321–3.
Twenty-seven patients (24 men, three women; ages: 39–74 years) were diagnosed as having squamous cell carcinoma of the nasopharynx (NPC) as confirmed by pathologic findings of biopsies. In addition, three of the 27 patients had metastases to neck lymph nodes. The results of 2–4 hour SPECT images of the head and neck after intravenous injection of 15–20 mCi of Tc-99m (V) DMSA were compared with normal Tc-99m (V) DMSA images and CT of heads and necks. The results showed that of the 27 NPC cases, none of the patients had a significant uptake of Tc-99m (V) DMSA. However, in the three cases complicated with metastases of neck lymph nodes, the metastatic lesions could be detected by Tc-99m (V) DMSA. Our results challenge previous reports in which carcinomas of the head and neck were detected by Tc-99m (V) DMSA. The tumour-seeking agent Tc-99m (V) DMSA is not a good choice for the detection of NPC among malignancies of the head and neck. Author.

The prevalence of paranasal sinus disease in HIV infection and AIDS on cranial MR Imaging. Chong, W. K., Hall-Craggs, M. A., Wilkinson, I. D., Paley, M., Grant, A., Miller, R., Harrison, M. J. MRI Unit, Middlesex Hospital, London. *Clinical Radiology* (1993) Mar, Vol. 47 (3), pp. 166–9.
Sinusitis poses a difficult clinical challenge in the management of patients with AIDS because of high rates of relapse and the association with unusual pathogens. To determine the prevalence and sev-

erity of sinus disease in this group we prospectively analyzed the condition of the paranasal sinuses shown on cranial MR scans of 156 patients referred for the investigation of suspected intracranial pathologies. These included 104 HIV seropositive patients, including 93 with an AIDS-defining diagnosis (CDC IV). Forty-two scans were performed on age-matched controls. The scans were timed to control for seasonal variations in sinus disease and were interpreted by two radiologists who were blinded to the clinical and serological status of the patients. Severe mucosal disease (more than one sinus showing >75 per cent obliteration) or moderate mucosal disease (only one sinus showing > 75 per cent obliteration) was seen in 15.1 per cent (14/93) patients with AIDS and none of the 42 controls ($\chi^2 = 6.73$, $p<0.01$). The mean maximum mucosal thickness in patients with AIDS was significantly greater than the control group ($p<0.001$) and also significantly greater than in seropositive patients who had not had an AIDS-defining diagnosis (CDC II/III) ($p = 0.006$). Paranasal sinus mucosal abnormalities seen on MRI are greater in prevalence and severity in patients with AIDS and about one in seven would be expected to have at least one sinus largely obliterated. Author.

Factors in the development of a training program for use with tactile devices. Galvin, K. L., Cowan, R. S., Sarant, J. Z., Blamey, P. J., Clark, G. M. Department of Otolaryngology, University of Melbourne, Australia. *Ear and Hearing* (1993) Apr, Vol. 14 (2), pp. 118–27.

A review of the literature suggests that, in order to maximize the benefits available through a tactile device, it must be accompanied by an effective and adaptive training program. There are a number of factors to consider in the design of such a training program, including the type of tasks and response formats to include, the amount of training, subject motivation and device use, the characteristics of the potential user population, the specific device to be used and the type of information it provides, and the evaluation procedures to be followed. The type and saliency of the information provided by a particular tactile device are highlighted as the most important yet neglected consideration in designing a training program. The training program used with the University of Melbourne's multiple-channel electrotactile device is presented to show how these important factors may be addressed, to indicate the flexibility required in a training program, and to provide a general framework on which researchers may base the development of programs for other tactile devices. Author.

Electrical stimulation of the auditory nerve: the effect of electrode position on neural excitation. Shepherd, R. K., Hatsushika, S., Clark, G. M. Department of Otolaryngology, University of Melbourne, Parkville, Victoria, Australia. *Hearing Research* (1993) Mar, Vol. 66 (1), pp. 108–20.

Histological studies have shown that the Melbourne/Cochlear electrode array lies along the outer wall of the scala tympani and is therefore some distance from the residual VIIIth nerve elements. In order to investigate the influence of electrode position on neural excitation we systemically varied the position of the electrode array within the cat scala tympani while recording electrically evoked auditory brainstem responses (EABRs). Using both normal hearing and long-term deafened animals, we observed significant reductions in EABR thresholds as the electrode array was moved from the outer wall towards the modiolus. Further threshold reductions were observed when the array was placed underneath the osseous spiral lamina (OSL) close to the peripheral dendrites. These changes were independent of the bipolar inter-electrode separation, and were observed over a wide range of cochlear pathologies varying from normal to a moderate spiral ganglion cell loss. Interestingly, the one animal exhibiting extensive neural loss showed no correlation between EABR threshold and electrode position. There was also a general decrease in the gradient of the EABR input-output function as the electrode array was moved closer to the neural elements. This was, however, only statistically significant when the electrode was positioned adjacent to the peripheral dendrites. Significant reductions in EABR threshold were also observed as the inter-electrode spacing of the bipolar electrodes was increased. The gradient of the EABR input-output function also increased with increasing inter-electrode spacing, although again, this was only significant when the electrode array was positioned close to the neural elements. The present results indicate that the optimum placement of a Melbourne/Cochlear electrode array is adjacent to the peripheral dendrites. However, such a site would be difficult to achieve in practice while minimizing insertion trauma. An array lying adjacent to the modiolus would be a safe alternative while ensuring a significant reduction in threshold compared with the existing site (outer wall). This placement should result in more localized neural excitation patterns, an increase in the number of bipolar electrodes available, together with an increase in their dynamic range. These changes may lead to further improvements in speech perception among cochlear implant patients. Author.

Evaluation of the dose for postoperative radiation therapy of head and neck cancer: first report of a prospective randomized trail (see comments). Peters, L.J., Goepfert, H., Ang, K. K., Byers, R. M., Maor, M. H., Guillamondegui, O., Morrison, W. H., Weber, R. S., Garden, A. S., Frankenthaler, R. A., *et al.* Department of Radiotherapy, University of Texas M.D. Anderson Cancer Center, Houston 77003. *International Journal of Radiation, Oncology, Biology and Physics* (1993) Apr 30, Vol. 26 (1), pp. 3–11.

Comment in: *International Journal of Radiation, Oncology, Biology and Physics* (1993) Apr 30; 26(1): 181–2.

PURPOSE: This study was designed to determine in a prospective randomized trial the optimal dose of conventionally fractionated postoperative radiotherapy for advanced head and neck cancer in relation to clinical and pathologic risk factors. METHODS AND MATERIALS: Between January 1983 and March 1991, 302 patients were enrolled on the study. This analysis is based on the first 240 patients entered through September 1989, of whom 221 (92 per cent) had AJC Stage III or IV cancers of the oral cavity, oropharynx, hypopharynx, or larynx. The patients were stratified by postulated risk factors and randomized to one of three dose levels ranging between 52.2 Gy and 68.4 Gy, all given in daily doses of 1.8 Gy. Patients receiving > 57.6 Gy had a field reduction at this dose level such that boosts were only given to sites of increased risk. RESULTS: The overall crude and actuarial two-year local-regional recurrence rates were 25.4 per cent and 26 per cent, respectively. Patients who received a dose of < or = 54 Gy had a significantly higher primary failure rate than those receiving > or = 57.6 Gy ($p = 0.02$). No significant dose response could be demonstrated above 57.6 Gy except for patients with extracapsular nodal disease in the neck in whom the recurrence rate was significantly higher at 57.6 Gy than at > or = 63 Gy. Analysis of prognostic factors predictive of local-regional recurrence showed that the only variable of independent significance was extracapsular nodal disease. However, clusters of two or more of the following risk factors were associated with a progressively increased risk of recurrence: oral cavity primary, mucosal margins close or positive, nerve invasion, > or = two positive lymph nodes, largest node > 3 cm, treatment delay greater than six weeks, and Zubrod performance status > or = 2. Moderate to severe complications of combined treatment occurred in 7.1 per cent of patients; these were more frequent in patients who received > or = 63 Gy. CONCLUSION: With daily fractions of 1.7 Gy, a minimum tumour dose of 57.6 Gy to the whole operative bed should be delivered with a boost of 63 Gy being given to sites of increased risk, especially regions of the neck where extracapsular nodal disease is present. Treatment should be started as soon as possible after surgery. Dose escalation above 63 Gy at 1.8 Gy per day does not appear to improve the therapeutic ratio. author.

Management of inverted papilloma of the nasal cavity and paranasal sinuses: importance of radiation therapy (see comments). Hug, E. B., Wang, C. C., Montgomery, W. W., Goodman, M. L. Department of Radiation, Oncology, Massachusetts General Hospital, Boston 02114. *International Journal of Radiation, Oncology, Biology and Physics* (1993) Apr 30, Vol. 26 (1), pp. 67–72. Comment in: *International Journal of Radiation, Oncology, Biology and Physics* (1993) Apr 30; 26 (1): 187; Discussion 189.

PURPOSE: Locally advanced inverted papilloma and inverted papilloma associated with squamous cell carcinoma are at high risk of local failure due to limitations of surgical resection resulting in repeat surgical procedures. The role of adjuvant radiation therapy is poorly defined. This study reviews a single institution experience of radiation therapy in the management of this disease. METHODS AND MATERIALS: Between 1977 and 1990 25 patients were treated at the Massachusetts General Hospital and the Massachusetts Eye and Ear Infirmary with radiation therapy for inverted papilloma (seven patients) and inverted papilloma associated with squamous cell carcinoma (18 patients) of the nasal cavity and paranasal sinuses. All patients presented with locally advanced invasive tumours; five of seven with inverted papilloma had previous resections and four of 18 with associated squamous cell carcinoma had history of prior surgical excisions of inverted papilloma only (three patients) or

inverted papilloma with squamous cell carcinoma in situ (one patient). Sixteen patients underwent radiation treatment following gross total resection, eight patients after subtotal tumour resection and one patient was inoperable by local invasion and received radiation therapy alone. RESULTS: Local control was achieved in six of seven patients with inverted papilloma only and one patient required additional resection for persistent disease. Of 18 patients with associated squamous cell carcinoma, 17 were locally controlled after radiation therapy and one had persistent tumour. One patient failed locally three years after treatment. With a mean observation time of 4.8 years (range: 0.5–12.9 years) all seven (100 per cent) patients with inverted papilloma only and 15 of 18 (83 per cent) patients with associated invasive carcinoma are alive and without evidence of disease. Three patients with inverted papilloma associated with squamous cell carcinoma died, two patients as a result of their disease (one patient with persistent disease, one patient after local failure) and one patient of intercurrent disease. No failure in either regional lymph nodes or at distant sites was recorded. In the majority of cases radiation therapy was well-tolerated. CONCLUSIONS: Combined radiation therapy and surgery can offer excellent long-term control and should be considered in patients with history of recurrent disease, in the presence of suspected residual disease, after incomplete resection or for unresectable lesions. Patients with associated squamous cell carcinoma have a more aggressive course, however radiation therapy still has the prospect of permanent disease-free survival in patients who achieve local control. Author.

Influence of location and extent of surgical resection on survival of patients with glioblastoma multiforme: results of three consecutive radiation therapy oncology group (RTOG) clinical trials. Simpson, J. R., Horton, J., Scott, C., Curran, W. J., Rubin, P., Fischbach, J., Isaacson, S., Rotman, M., Asbell, S. O., Nelson, J. S., Weinstein, A. S., Nelson, D. F. Washington University; Albany Medical College; Radiation Therapy Oncology Group; Fox Chase/University of Pennsylvania; University of Rochester; Latter Day Saints Hospital; Columbia Presbyterian; SUNY/Brooklyn; Albert Einstein/N. Div. and Armed Forces Institute Pathology. *International Journal of Radiation, Oncology, Biology and Physics* (1993) Vol. 26, pp. 239–244.

PURPOSE: The influence of tumour site, size, and extent of surgery on the survival of patients with glioblastoma multiforme treated on three consecutive prospectively randomized Radiation Therapy Oncology Group trials employing surgery and irradiation plus or minus chemotherapy was studied. METHODS AND MATERIALS: Six hundred and forty-five patients with a diagnosis of glioblastoma multiforme on central pathological review were analyzed for survival with respect to known prognostic factors, that is, age and Karnofsky Performance Status, as well as extent of surgery, site, and size. Surgical treatment consisted of biopsy only in 17 per cent, partial resection in 64 per cent, and total resection in 19 per cent. Tumours were located in frontal lobe in 43 per cent, temporal lobe in 28 per cent and parietal lobe in 25 per cent. Maximum tumour diameter as determined on computed tomography or magnetic resonance imaging scans was less than 5 cm for 38 per cent, between 5–10 cm for 56 per cent and greater than 10 cm for 6 per cent of patients. The extent of surgical therapy was the same for tumours greater than five or greater than 10 cm, whereas total resection was more often performed for tumours less than 5 cm. The extent of surgery did not appear to vary with age or site. RESULTS: Patients undergoing total resection had a median survival of 11.3 months compared to 6.6 months for patients with a biopsy only. A significant difference in median survival was also found for partial resection versus biopsy only treatment (10.4 vs. 6.6 months). There was no difference in survival for the different tumour sizes. Patients with frontal lobe tumours survived longer than those with temporal or parietal lobe lesions (11.4 months, 9.1 months, and 9.6 months, respectively) ($p = 0.01$). A Cox multivariate model confirmed a significant correlation of age, Karnofsky Performance Status, extent of surgery, andprimary site with survival. The best survival rates occurred in patients who had at least three of the following features: <40 years of age, high Karnofsky Performance Status, frontal tumours, and total resection (17 months median). CONCLUSION: We conclude that biopsy only yields inferior survival to more extensive surgery for patients with glioblastoma multiforme treated with surgery and radiation therapy.

Why shorter half-times of repair lead to greater damage in pulsed brachytherapy. Fowler, J. F. Departments of Human Oncology and Medical Physics, University of Wisconsin-Madison, K4/336, Comprehensive Cancer Centre, 600 Highland Avenue, Madison, WI 53792, USA. *International Journal of Radiation, Oncology, Biology and Physics* (1993) Vol. 26, pp. 353–56.

PURPOSE: Pulsed Brachytherapy consists of replacing continuous irradiation at low-dose rate with a series of medium dose-rate fractions in the same overall time and to the same total dose. For example, pulses of 1 Gy given every 2 hr or 2 Gy given every 4 hr would deliver the same 70 Gy in 140 hr as continuous irradiation at 0.5 Gy/hr. If higher dose-rates are used, even with gaps between the pulses, the biological effects are always greater. Provided that dose rates in the pulse do not exceed 3 Gy/hr, and provided that pulses were given as often as every 2 hr, the inevitable increases of biological effect are no larger than a few per cent (of biologically effective dose or extrapolated response dose). However, these increases are more likely to exceed 10 per cent (and thus become clinically significant) if the half-time of repair of sublethal damage is short (less than 1 hr) rather than long. This somewhat unexpected finding is explained in detail here. METHODS AND MATERIALS: The rise and fall of Biologically Effective Dose (and hence of Relative Effectiveness, for a constant dose in each pulse) is calculated during and after single pulses, assuming a range of values of T½, the half-time of sublethal damage repair. The area under each curve is proportional to Biologically Effective Dose and therefore to log cell kill. RESULTS: Pulses at 3 Gy/hr do yield greater biological effect (dose × integrated Relative Effectiveness) than lower dose-rate pulses or continuous irradiation at 0.5 Gy/hr. The contrast is greater for the short T½ of 0.5 hr than for the longer T½ of 1.5 hr. CONCLUSION: More biological damage will be done (compared with traditional low dose rate brachytherapy) in tissues with short T½ (0.1–1 hr) than in tissues with longer T½ values.

The effect of BAY u 3405, a thromboxane receptor antagonist, on prostaglandin D2-induced nasal blockage. Johnston, S. L., Smith, S., Harrison, J., Ritter, W., Howarth, P. H. Immunopharmacology Group, Southampton General Hospital, UK. *Journal of Allergy and Clinical Immunology* (1993) Apr, Vol. 91(4), pp. 903–9.

BACKGROUND: Nasal lavage and challenge studies in allergic rhinitis implicate prostaglandin (PG) D2 in the genesis of nasal blockage. PG D2 is known to act via at least two receptors, the thromboxane prostanoid receptor and the PG D2 prostanoid (DP) receptor; the lower airway effects are mediated chiefly by the TP receptor. The receptor involved in the genesis of PG D2-induced nasal blockage is unknown. BAY u 3405 is a potent selective competitive TP receptor antagonist, which inhibits the lower airway response to PG D2, and shifts the dose-response curve to the right by up to 16-fold. METHODS: The efficiency of a single oral dose of 20 mg of BAY u 3405 was examined in comparison with PG D2 nasal insufflation in a randomized, double-blind, placebo-controlled crossover study, with objective measurement of nasal resistance by active posterior rhinomanometry. RESULTS: BAY u 3405 afforded no protection against PG D2-induced nasal blockage. CONCLUSIONS: This suggests that PG D2-induced nasal blockage may be mediated by the DP receptor rather than the TP receptor and that TP receptor antagonists are unlikely to be of benefit in the treatment of allergic rhinitis. In vivo investigation with specific potent DP receptor antagonists is awaited. Author.

Central auditory neurophysiology of a sound-producing fish: the mesencephalon of Pollimyrus isidori (Mormyridae). Crawford, J. D. Parmly Hearing Institute, Loyola University, Chicago, IL 60626. *Journal of Comparative Physiology* (A) (1993) Mar, Vol. 172(2), pp. 139–52.

This paper describes the auditory neurophysiology of the mesencephalon of P. isidori, a sound-producing mormyrid fish. Mormyrids have a specialized pressure-sensitive auditory periphery, and anatomical studies indicate that acoustic information is relayed to the mesencephalic nucleus MD. Fish were stimulated with tone bursts and clicks, and responses of MD neurons were recorded extracellularly. Auditory neurons had best frequencies (BF) and best sensitivities (BS) that fell within the range of frequencies and levels of the natural communication sounds of these fish. BSs were in the range of 0 to −35 dB (re. 1.0 dyne/cm^2). Many of the neurons were tuned (Q10 dB: 2–6), and had BFs in the range of 100–300 Hz where the animal's sounds have their peak energy. A range of different physiological cell types were encountered, including phasic, sustained, and complex neurons. Some of the sustained neurons showed strong phase-locking to tones. Many neurons exhibited non-monotonic rate-level functions. Frequencies flanking the BF often caused

a reduction in spontaneous activity suggesting inhibition. Many neurons showed excellent representation of click-trains, and some showed a temporal representation of inter-click-intervals with errors less than 1 ms. Author.

Direct inoculation of food as the cause of an outbreak of group A streptococcal pharyngitis. Farley, T. A., Wilson, S. A., Mahoney, F., Kelso, K. Y., Johnson, D. R., Kaplan, E. L. Epidemiology Section, Louisiana Department of Health and Hospitals, New Orleans 70160. *Journal of Infectious Diseases* (1993) May, Vol. 167 (5), pp. 1232–5.
An investigation was conducted of a food-related outbreak of group A streptococcal pharyngitis following an elementary school banquet. Of 166 surveyed banquet attendees, 71 (43 per cent) reported outbreak-associated pharyngitis, and 21 (88 per cent) of 24 tested attendees had evidence of group A streptococcus (GAS) in the throat. Attendees who ate macaroni and cheese were three times more likely to develop pharyngitis than those who did not ($^{66}/_{132}$ (50 per cent) vs. $^{5}/_{30}$ (17 per cent), $p = 0.002$). None of the food handlers had GAS recovered by throat culture. However, the cook who prepared the macaroni and cheese had a hand wound; a wound culture grew GAS with the same T agglutination pattern and M- and/or opacity factor type as that of all available GAS strains from ill attendees. Under laboratory conditions, macaroni and cheese supported rapid growth of the outbreak-associated strain of GAS. To the authors' knowledge, this is the first documented foodborne outbreak of GAS pharyngitis in which the only apparent source of contamination was a food handler's skin lesion. Author.

Usher syndrome type I associated with bronchiectasis and immotile nasal cilia in two brothers. Bonneau, D., Raymond, F., Kremer, C., Klossek, J. M., Kaplan, J., Patte, F. Departement de Genetique Medicale, Centre Hospitalier Universitaire, Poitiers, France. *Journal of Medical Genetics* (1993) Mar, Vol. 30 (3), pp. 253–4.
Usher syndrome type I is an autosomal recessive disease characterized by congenital sensorineural deafness, involvement of the vestibular system, and progressive visual loss owing to retinitis pigmentosa. Here we report the association of this disease with bronchiectasis, chronic sinusitis, and reduced nasal mucociliary clearance in two sibs and we suggest Usher syndrome type I could be a primary ciliary disorder. Author.

Preservation of hearing in surgery for acoustic neuromas. Glasscock, M. E., Hays, J. W., Minor, L. B., Haynes, D. S., Carrasco, V. N. Department of Neurosurgery, Vanderbilt University, Nashville, Tennessee. *Journal of Neurosurgery* (1993) Jun, Vol. 78 (6), pp. 864–70.
Preservation of hearing was attempted in 161 cases of histologically confirmed acoustic neuroma removed by the senior author between January 1, 1970, and September 30, 1991. There were 136 patients with unilateral tumours; 22 patients had bilateral tumours (neurofibromatosis two) and underwent a total of 25 procedures. Hearing was initially preserved in 35 per cent of patients with unilateral tumours and in 44 per cent of those with bilateral tumours. Results are reported in terms of pre- and postoperative pure tone average and speech discrimination scores. Surgical access to the tumour was obtained via middle cranial fossa and suboccipital approaches. The latter has been used more often over the past five years because of a lower associated incidence of transient facial paresis. Persistent postoperative headaches have been the most common complication following the suboccipital approach. The results of preoperative brain-stem auditory evoked response (BAER) studies were useful in predicting the outcome of hearing preservation attempts. Patients with intact BAER waveform morphology and normal or delayed latencies had a higher probability of hearing preservation in comparison to those with abnormal preoperative BAER morphology. Author.

The efficacy of oral cotrimoxazole in the treatment of otitis externa in general practice. Yelland, M. J. Department of Social and Preventive Medicine, University of Queensland, Inala. *Medical Journal of Australia* (1993) May 17, Vol. 158 (10), pp. 697–9.
AIM: A double-blind, randomized clinical trial was conducted in Queensland general practices to evaluate the efficacy of oral doses or trimethoprim-sulfamethoxazole (cotrimoxazole) as an adjunct to Kenacomb ointment in the treatment of acute diffuse otitis externa. METHOD: One hundred and five patients with otitis externa agreed to enter the trial; 13 of these had bilateral otitis externa. Six symptoms and signs of otitis externa were rated on a scale of one (none) to five (severe) and then the scores were averaged to give an index of severity. Swabs from all infected ears were cultured and then the patients were treated with Kenacomb ointment. Patients were randomly assigned to take a five-day course of either oral cotrimoxazole or an oral placebo and were reassessed on Days 2–4 and Days 5–6 after presentation. RESULTS: The mean duration (± standard deviation) of ear pain from the first visit for the cotrimoxazole and placebo groups was 3.1 (± 1.5) days and 3.1 (± 1.7) days respectively. The mean severity indices (± standard deviation) for these groups on presentation were 2.33 (± 0.59) and 2.37 (± 0.57). The respective reductions in these scores by the second visit were 0.72 and 0.69 and by the third visit 1.10 and 1.05. The principle pathogen isolated was Pseudomonas aeruginosa. CONCLUSION: This suggests that oral cotrimoxazole is unlikely to be useful as an adjunct to Kenacomb ointment in the treatment of mild to moderate otitis externa. Author.

Hearing impairment resulting from a pineal region meningioma. DeMonte, F., Zelby, A. S., Al Mefty, O. Department of Neurological Surgery, University of Texas, M.D. Anderson Cancer Centre, Houston. *Neurosurgery* (1993) Apr, Vol. 32 (4), pp. 665–8.
Because of extensive interconnections within the auditory pathways, hearing impairment from a central origin is rare. We describe a patient with a large pineal region meningioma in whom hearing loss was the predominant symptom. The patient promptly recovered hearing after the surgical removal of the tumour. The mechanism of this phenomenon is discussed. Author.

Exclusive breast-feeding for at least four months protects against otitis media. Duncan, B., Ey, J., Holberg, C. J., Wright, A. L., Martinez, F. D., Taussig, L. M. Department of Pediatrics, Steele Memorial Children's Research Centre, Tucson, AZ 85724. *Pediatrics* (1993) May, Vol. 91 (5), pp. 867–72.
OBJECTIVE: This study was designed to assess the relation of exclusive breast-feeding, independent of recognized risk factors, to acute and recurrent otitis media in the first 12 months of life. METHODS. Records of 1220 infants who used a health maintenance organization and who were followed during their first year of life as part of the Tucson Children's Respiratory Study were reviewed. Detailed prospective information about the duration and exclusiveness of breast-feeding was obtained, as was information relative to potential risk factors (socioeconomic status, gender, number of siblings, use of day care, maternal smoking, and family history of allergy). Acute otitis media and recurrent otitis media, defined as three or more episodes of acute otitis media in a six-month period or four episodes in 12 months, were the outcome variables. RESULTS. Of the 1013 infants followed for their entire first year, 476 (47 per cent) had at least one episode of otitis and 169 (17 per cent) had recurrent otitis media. Infants exclusively breast-fed for four or more months had half the mean number of acute otitis media episodes as did those not breastfed at all and 40 per cent less than those infants whose diets were supplemented with other foods prior to four months. The recurrent otitis media rate in infants exclusively breast-fed for six months or more was 10 per cent and was 20.5 per cent in those infants who breast-fed for less than four months. This protection was independent of the risk factors considered. CONCLUSION. These findings suggest that exclusive breast-feeding of four or more months protected infants from single and recurrent episodes of otitis media. Author.

Pharyngitis associated with herpes simplex virus in college students. McMillan, J. A., Weiner, L. B., Higgins, A. M., Lamaparella, V. J. Department of Pediatrics, SUNY Health Science Centre, Syracuse. *Pediatric Infectious Diseases Journal* (1993) Apr, Vol. 12 (4), pp. 280–4.
During a 16-month period patients who presented to the Syracuse University Health Centre with upper respiratory complaints had throat swabs obtained for viral, streptococcal and Mycoplasma pneumoniae cultures. Thirty-five of 613 patients (5.7 per cent) had herpes simplex virus (HSV) isolated. All but two of the HSV isolates were found to be type 1 by immunofluorescent staining. Two HSV-positive patients also grew Group A Streptococcus, one grew M. pneumoniae and three had serum heterophile antibody tests that were positive. On physical examination 25 of the 35 HSV-positive patients had pharyngeal erythema and 14 had pharyngeal exudate. Twelve of these patients had vesicular lesions of the lips, throat or gums associated with their other symptoms. For 29 of the 35 HSV-positive students the primary diagnosis assigned was pharyngitis,

for two the diagnosis was stomatitis and the remainder were assigned a primary diagnosis of upper respiratory infection, pneumonia, bronchitis or dental infection. Thirty-two of the 35 HSV-positive patients were treated with oral antibiotics and seven were treated with oral or topical acyclovir. During the same 16-month period 89 (6.9 per cent) of 1297 students presenting with sore throat were culture-positive for influenza A or B, 30 (2.3 per cent) of 1283 were culture-positive for M. pneumoniae and 169 (2.8 per cent) of the 6016 cultured for Group A Streptococcus were positive. Serum was tested for heterophile antibody in 2438 students, and 257 (10.5 per cent) were positive. Herpes simplex virus is associated with pharyngeal symptoms in college students, and herpes simplex pharyngitis cannot easily be distinguished clinically from other causes of acute pharyngitis in this age group. Author.

Cefpodoxime proxetil vs. penicillin V in pediatric streptococcal pharyngitis/tonsillitis. Dajani, A. S., Kessler, S. L., Mendelson, R., Uden, D. L., Todd, W. M. Department of Pediatrics, Wayne State University School of Medicine, Detroit, MI. *Pediatric Infectious Diseases Journal* (1993) Apr, Vol. 12 (4), pp. 275–9.
This multicentre, randomized, parallel treatment, observer-blinded study was designed to evaluate the safety and efficacy of cefpodoxime proxetil (5 mg/kg twice daily for 10 days) compared with penicillin V (13.4 mg/kg three times daily for 10 days) for treatment of Group A streptococcal pharyngitis and tonsillitis in pediatric patients. Clinical and microbiologic results were evaluated before therapy, during therapy (Study days 3 to 5), at the end of therapy (Study days 14 to 18) and at long term follow-up (Study days 30 to 32). Both drugs were well-tolerated in 578 patients evaluable for safety. Mild gastrointestinal complaints were noted in 6.7 per cent of 386 cefpodoxime-treated patients and in 5.2 per cent of 192 penicillin-treated pateints. In 413 patients evaluable for efficacy, both treatment regimens resulted in comparably favourable clinical outcome; cure rates were 83.8 per cent for 275 cefpodoxime-treated patients and 77.5 per cent for 138 penicillin-treated patients. However, eradication of S. pyogenes at end of therapy was significantly higher with cefpodoxime (93.1 per cent) than with penicillin (81.2 per cent) ($P<0.01$). Cefpodoxime proxetil provides an effective alternative to penicillin V for the treatment of streptococcal pharyngitis and tonsillitis. Author.

Inversion-recovery fast spin-echo MR imaging: efficacy in the evaluation of head and neck lesions. Panush, D., Fulbright, R., Sze, G., Smith, R. C., Constable, R. T. Department of Radiology, Yale University School of Medicine, New Haven, CT 06510. *Radiology* (1993) May, Vol. 187 (2), pp. 421–8.
To compare the efficacies of fast spin-echo (FSE) and inversion-recovery FSE (IRFSE) magnetic resonance (MR) imaging in evaluating head and neck disorders, the authors evaluated 46 lesions in 23 consecutive patients. Twenty-seven lesions were related to neoplasms; 19 lesions resulted from infectious, allergic, or radiation-induced inflammation. Conventional T1-weighted, FSE, and IRFSE images were obtained in all patients. The FSE and IRFSE images were qualitatively compared in an unblinded manner for conspicuity of lesion margins and extent. IRFSE imaging improved conspicuity of 22 lesions (48 per cent) and showed equal conspicuity of 18 (39 per cent). IRFSE imaging proved most useful for small lesions with long T2 relaxation times that were surrounded by fat. IRFSE imaging improved visibility of small optic nerve gliomas, salivary gland inflammation, peripheral nerve tumours, and small lymph nodes. Early changes secondary to spread of tumour across fascial planes were also well visualized with IRFSE sequences. In six lesions (13 per cent) that did not have long T2 relaxation times, the FSE images provided better conspicuity. The authors conclude that by improving conspicuity of small lesions adjacent to or surrounded by fat, IRFSE sequences can supplement FSE sequences in imaging the head and neck. Author.

STAR complexes: febrile illnesses associated with sore throat, arthritis, and rash. Jundt, J. W., Creager, A. H. Department of Rheumatology, Scott and White Clinic, Temple, TX 76508. *Southern Medical Journal* (1993) May, Vol. 86 (5), pp. 521–8.
Between January 1990 and February 1991 we evaluated the cases of 20 patients for a symptom complex consisting of sore throat, elevated temperature, migratory arthritis, and a pruritic urticarial rash (STAR). The patients ranged in age from 3½ to 48 years; most were from central Texas. Duration of illness varied from two weeks to longer than one year. Results of laboratory studies included the following abnormal findings: elevated erythrocyte sedimentation rate, leukocytosis, anaemia, and thrombocytosis. Eleven of 18 (61 per cent) patients had low antinuclear antibody titres. HLA-A2 was noted in eight of 10 (80 per cent) of those tested. Test results were positive in eight cases for IgM antibodies to parvovirus and in six cases for IgM antibodies to rubella, suggesting that these entities may represent an underdiagnosed cause of STAR complex. In six cases no specific cause of disease was found; these cases may be attributable to other infectious agent(s) yet to be identified. Here we present a description of the cases, a discussion of the differential diagnosis, and an evaluation of STAR complex. Author.