

## Abstract Selection

**Orbitozygomatic infratemporal approach to lateral skull base tumors.** Lee J. P., Tsai M. S., Chen Y. R. Department of Neurosurgery, Provincial Tao-Yuan Hospital, Taiwan, ROC. *Acta Neurologica Scandinavica* (1993) May, Vol. 87 (5), pp. 403–9.

An orbitozygomatic infratemporal approach for the removal of large neoplasms involving the lateral skull base is described. This approach, involves a unilateral frontotemporal incision extended inferiorly to the neck, a lateral facial flap reflected anteriorly. Transsection of the zygoma is followed by its reflection inferolaterally with the temporalis muscle. This exposure provides excellent visualization of both the intradural and extradural aspects of the anterior portion of the cavernous sinus, allowing an aggressive resection of neoplasms in this region. Experience with this procedure in the management of 15 patients is reported here. There was one post-operative death due to pneumonia and septicemia. The morbidities included wound infection, meningitis, CSF leakage and cranial nerve palsy. All the surviving patients, are living independently and have returned to their previous occupations. Author.

**Predictive value of P300 event-related potentials compared with EEG and somatosensory evoked potentials in non-traumatic coma.** De Giorgio C. M., Rabinowicz A. L., Gott P. S. Department of Neurology, University of Southern California School of Medicine, Los Angeles 90033. *Acta Neurologica Scandinavica* (1993) May, Vol. 87 (5), pp. 423–7.

Developments in ethical decision making are increasing demand for more accurate predictions of outcome in coma. New neurophysiologic tests are needed to improve the ability to predict awakening as well as poor outcome. We have recently reported that the P300 event-related potential (P300) correlates with awakening and depth of nontraumatic coma. In this companion study, the predictive value of the P300 was compared with median nerve somatosensory evoked potentials (SEP) and EEG in 20 patients in non-traumatic coma. We also evaluated the predictive value of a simplified grading scale for both the EEG and SEP (the USC SEP scale and USC EEG scale). The presence of a P300 was significantly associated with higher Glasgow coma scores (GCS) and awakening. Severe abnormalities of the somatosensory evoked potentials significantly correlated with the absence of awakening and a low GCS. Moderate abnormalities of the SEP were significantly associated with awakening and higher GCS scores. The EEG was significantly associated with GCS score and severe abnormalities of the EEG were predictive of the absence of awakening and very low GCS scores. The data indicates that the P300 and SEP are more effective than the EEG in predicting awakening, and that the SEP and EEG are more effective than the P300 in predicting poor outcome. We conclude that, in addition to EEG and SEP, the P300 should be considered in the prognostic evaluation of patients in nontraumatic coma. Further, simplified scales for the EEG and SEP are predictive of depth of coma and outcome. Author.

**Nasal secretion of the ozone scavenger uric acid.** Peden D. B., Swiersz M., Ohkubo K., Hahn B., Emery B., Kaliner M. A. Department of Pediatrics, School of Medicine, University of North Carolina-Chapel Hill 27599-7310. *American Review of Respiratory Diseases* (1993) August, Vol. 148 (2), pp. 455–61.

Uric acid, an important scavenger of ozone, has been identified as the major low molecular weight antioxidant in baseline and cholinergically induced nasal secretions. The purpose of this study was to determine the specific tissue source of uric acid in airway secretions. The secretion of uric acid is increased by cholinergic stimulation and correlates closely with the secretion of lactoferrin (a nasal glandular protein), suggesting that submucosal glands are involved. Indeed, nasal turbinate tissue was found to contain uric acid. However, careful analysis of nasal turbinate tissue failed to reveal the presence of xanthine oxidase, the enzyme responsible for uric acid synthesis. These data suggest that uric acid might be taken up secondarily by glands from plasma. This possibility was strengthened by

the observation that lowering the plasma urate level with probenecid concomitantly lowered urate secretion. These findings are consistent with the hypotheses that the principal source of uric acid in nasal secretions is plasma and that uric acid is taken up, concentrated, and secreted by nasal glands. Author.

**The expanded forehead flap for nasal reconstruction.** Apesos J., Perofsky H. J. Division of Plastic and Reconstructive Surgery, Kettering Medical Center, Wright State University, Dayton, OH 45429. *Annals of Plastic Surgery* (1993) May, Vol. 30 (5), pp. 411–6.

A three-year experience using forehead tissue expansion for nasal reconstruction is presented. The series includes seven expansions in six patients with different degrees of nasal loss due to either cancer, trauma, or avascular necrosis. Balloon tissue expansion minimizes the well-known limitations and drawbacks found in using forehead flaps for nasal reconstruction. Technique, timing, and sequencing of procedures are discussed and compared with those of other authors. The complications of tissue expansion are few, but obtaining a satisfactory nasal reconstruction requires multiple operations over a period of time. A learning curve is necessary due to inadequate previous experience and new developments in tissue expanders. The results obtained were possible due to the excellent tissue provided by forehead expansion. Author.

**Correlations between presbycusis and extrinsic noxious factors.** Rosenhall U., Sixt E., Sundh V., Svanborg A. Department of Audiology and Otolaryngology, Sahlgrenska Hospital, Goteborg, Sweden. *Audiology* (1993) July-August, Vol. 32 (4), pp. 234–43.

As part of the longitudinal gerontological and geriatric population study of 70-year-olds in Goteborg, Sweden, the possible correlation between presbycusis and extrinsic factors affecting health in elderly persons was investigated. Participants from one cohort (F 01) were studied longitudinally at ages 70, 75, 79 and 85 years, and from another cohort (F 06) at age 70 years. A weak correlation between hearing loss and smoking, alcohol abuse and head trauma was found for men and between hearing loss and intake of pharmaceutical agents (especially salicylates) for women. Author.

**Viability and quantitative dermofluorometry of experimental arterialized and non-arterialized venous flaps.** Suzuki Y., Isshiki N., Ishikawa K., Koyama H. Department of Plastic Surgery, Kyoto University, Japan. *British Journal of Plastic Surgery* (1993) June, Vol. 46 (4), pp. 273–8.

In an attempt to predict venous flap viability, uptake and excretion of fluorescein dye injected intravenously was followed quantitatively at 10 min intervals on flaps on the surface of rabbit ears, with the use of a fiberoptic dermofluorometer. This instrument is a reliable indicator of circulation in non-arterialized or arterialized venous flaps, as it is in conventional flaps. This work shows that arterialized venous flaps are more reliable and have a larger skin territory than non-arterialized ones. Survival of the arterialized venous flap can be attributed primarily to the blood circulation, while the non-arterialized venous flap relies for its survival on both blood circulation and plasmatic inhibition from the bed as well. Author.

**Nasopharyngeal carcinoma: local control by megavoltage irradiation.** Lee A. W., Law S. C., Foo W., Poon Y.F., Chan D. K., O. S. K., Tung S. Y., Cheung F. K., Thaw M., Ho J. H. Institute of Radiology and Oncology, Queen Elizabeth Hospital, Kowloon, Hong Kong. *British Journal of Radiology* (1993) June, Vol. 66 (786), pp. 528–36.

This is a retrospective analysis of the long-term local control in 4128 patients with non-disseminated nasopharyngeal carcinoma treated solely by megavoltage irradiation during the years 1976–1985. The T-stage distribution according to Ho's classification was T1 37 per cent, T2 14 per cent and T3 49 per cent. Different fractionation schedules had been employed at different periods, and the median dose to the primary target was equivalent to 65 Gy by time dose

fractionation calculation. In eight per cent (344) of patients the tumour failed to regress completely after the basic course, but 89 per cent (148/167) of those suitable for salvage with additional irradiation eventually attained complete local remission. The cumulative incidence of local failure was 24 per cent (five per cent persistence, 19 per cent recurrence). The 10-year actuarial local failure-free survival was 67 per cent. While patients with T2 and T3a tumours achieved local control comparable to T1, those with T3c-d had the poorest control (with highest incidence of persistence and advanced recurrence). T-stage adjusted analyses suggested a significant trend of dose-response: the odds ratios for local failure were 1.16 and 1.86, respectively, when patients given 60–63 Gy and 55–59 Gy were compared with those given 64 Gy or above ( $p$  value = 0.0018). Patients treated during 1981–1985 achieved higher local failure-free survival than those treated during 1976–1980 (75 per cent versus 70 per cent at five years,  $p$  value = 0.0013). The possible attributes are studied, and ways for future optimization of treatment discussed. Author.

**Case report: congenital fistula between the submandibular gland and the oropharynx.** McFerran D. J., Phillips R. R. Whittington Hospital, Highgate Hill, London, UK.

*British Journal of Radiology* (1993) June, Vol. 66 (786) pp. 561–2. Congenital salivary fistulae are rare and may be associated with abnormalities of the branchial apparatus or arise from aberrant or accessory salivary tissue. Previous case reports have documented cutaneous fistulae. We report a case of a salivary fistula between the submandibular gland and the oropharynx and discuss a possible embryological basis for the abnormality. Author.

**Jet lag and motion sickness.** Nicholson A. N., Pascoe P. A., Spencer M. B., Benson A. J. Royal Air Force Institute of Aviation Medicine, Farnborough, Hampshire UK. *British Medical Bulletin* (1993) April, Vol. 49 (2), pp. 285–304.

Jet lag. Present day aircraft operating round northern and southern latitudes cross time zones at almost the same rate as the earth rotates, and it is these rapid transmeridian transitions that lead to the syndrome commonly referred to as jet lag. On arrival at their destination, individuals find themselves out of synchrony with the social and time cues of their new environment and, until they adapt, may experience symptoms such as malaise, gastrointestinal disturbance, loss of appetite, tiredness during the day and poor sleep. The severity and exact nature of the problems vary with the direction of travel and the number of time zones crossed, and some people react more unfavourably to intercontinental travel than others. Clearly, with increasing numbers of passengers undertaking such journeys, there is considerable interest in strategies to reduce the immediate effects of jet lag or to facilitate acclimatization. Motion sickness is a generic term which embraces seasickness, airsickness, carsickness, space sickness etc, names that identify the provocative environment or vehicle. It is a normal reaction of humans to exposure to certain motion stimuli that occur during passive transportation. Author.

**Screening for cancer of the aerodigestive tract.** Smart C. R. *Cancer* (1993) August 1, Vol. 72 (3 Suppl), pp. 1061–5.

In the United States, cancer of the oral cavity is the only region of the aerodigestive tract that lends itself to routine screening of the asymptomatic population older than 50 years. Although the incidence and mortality rate for oral cancer is nearly double that of cancer of the cervix (30 300 versus 13 500 and 7950 versus 4400, respectively), conducting a pelvic examination and Pap smear appears more acceptable than looking in the mouth. The inspection of the oral cavity should be part of every physical examination in the dentist's or the physician's office, particularly in patients older than 50 years who are heavy users of tobacco and alcohol. Ninety per cent of all squamous cell cancers arise from the floor of the mouth, the ventrolateral aspect of the tongue, and the soft palate complex. The detection rate is increased from approximately one per 1000 in asymptomatic individuals older than 50 years to one per 200 in high-risk smokers and drinkers and to one in seven for individuals once treated for oral cancer. Screening detects earlier stage cancers, for which treatment results in higher survival rates. While no randomized screening trials with a mortality end-point have been conducted (or are likely), there is evidence that population-based case-fatality rates are lower in races treated with earlier stages of oral cancer. This evidence is of little solace when the majority of patients are diagnosed with advanced disease when symptoms appear, rather than through screening at an earlier stage when asymptomatic. In one study, 94 per cent of patients with oral cancer were seen by a doctor

within the previous year. The average oral cancer patient had 10.7 physician encounters within three years of the diagnosis. In the United States, the early detection of cancers of the larynx and esophagus should be based upon early symptoms rather than on screening. A routine oral screening examination should be a part of every physical examination by a doctor or a dentist. It will detect earlier cancers and save lives. Author.

**Polymerase chain reaction-based restriction fragment length polymorphism analysis of the short arm of chromosome 3 in primary head and neck squamous carcinoma.** El-Naggar A. K., Lee M. S., Wang G., Luna M. A., Goepfert H., Batsakis J. G. Department of Pathology, University of Texas M. D. Anderson Cancer Center, Houston 77030. *Cancer* (1993) August 1, Vol. 72 (3), pp. 881–6.

**BACKGROUND.** Deletion or loss of heterozygosity (LOH) at the polymorphic loci on the short arm of chromosome 3 has been reported in a large number of renal cell, small cell lung, non-small cell lung, and cervical carcinomas, suggesting the presence of one or more putative tumor suppressor genes at chromosome 3p. Similar studies in primary head and neck carcinoma are lacking. **METHODS.** To investigate the possibility of chromosome 3p deletions, the authors applied a polymerase chain reaction (PCR)-based, restriction fragment length polymorphism analysis, in conjunction with conventional Southern blot techniques, to DNA samples of matched normal mucosa and head and neck squamous cell carcinomas from 18 patients. The authors also assessed the merit of the PCR-based assay as a rapid screening tool, particularly in assaying limited tissue samples. **RESULTS.** Constitutional heterozygosity at the polymorphic loci varied in the 18 normal samples that the authors studied: 12 at the D3F15S2 locus (on telomeric 3p21), seven at the D3S32 locus (on centromeric 3p21), and 9 at the THRB locus (on 3p24). In 18 matched carcinoma specimens, LOH (deletion) was observed at D3S32 in 0 of seven, at D3F15S2 in nine of 12 (75 per cent), and at THRB in three of nine cases (33 per cent). **CONCLUSIONS.** The results of the PCR-based assay and Southern blotting were completely concordant in all specimens the authors studied. This study indicates that deletion at 3p is a frequent abnormality in primary head and neck carcinoma and that the most common deletion region is telomeric to D3S32. The authors also observed an apparent correlation among poor histologic differentiation, DNA aneuploidy, and 3p deletions. Most poorly and moderately differentiated and aneuploid carcinomas manifested the 3p deletion. Therefore, the authors suggest an association between deletion at 3p and aggressive biologic behavior. Author.

**Postirradiation sarcoma of the head and neck.** Mark R. J., Bailet J. W., Poen J., Tran L. M., Calcaterra T. C., Abemayor E., Fu Y. S., Parker R. G. Radiation Medical Group, San Diego, California. *Cancer* (1993) August 1, Vol. 72 (3), pp. 887–93.

**BACKGROUND:** With improvement in survival after cancer treatment, it is becoming increasingly important to study treatment-related morbidity and mortality. Sarcoma can develop in the irradiated field after radiation therapy. The authors performed a study to estimate the risk, and compared the risk of sarcoma after radiation therapy with that of other treatment modalities used against cancer. **METHODS.** Between 1955 and 1988, 229 patients with sarcoma of the head and neck were seen at the University of California, Los Angeles (UCLA), Medical Center. Of these, 13 (six per cent) had a previous history of radiation therapy to the head and neck. **RESULTS.** Radiation doses were known in 10 of 13 patients and ranged from 30 to 124.4 Gy. The latency time from radiation therapy to the development of postirradiation sarcoma (PIS) ranged from three months to 50 years, with a median of 12 years. More than 2000 patients have received radiation therapy to the head and neck for various conditions at the UCLA Medical Center since 1955. **CONCLUSIONS.** The authors conclude that most head and neck sarcomas are not radiation related and that the risk of PIS after head and neck irradiation for other diseases is low. From a review of the literature comparing mortality risks of chemotherapy, general surgery, and anesthesia, the risk of PIS appears no worse. Given the large number of patients who can be cured or receive palliation with radiation therapy, concern about PIS should not be a major factor influencing treatment decisions in patients with cancer. Author.

**Prospective evaluation of the prognostic significance of evoked potentials in acute basilar occlusion.** Krieger D., Adams H. P., Rieke K., Schwarz S., Forsting M., Hacke W. Department of Neurology, University of Heidelberg, FRG. *Critical Care Medicine* (1993) August, Vol. 21 (8), pp. 1169–74.



**OBJECTIVE:** To establish valid prognostic parameters in patients with acute basilar artery occlusive disease. **DESIGN:** A prospective study. **SETTING:** Neurocritical care unit at the University of Heidelberg. **PATIENTS:** Twenty-three patients (12 male, 11 female; 32 to 69 yrs of age, median 54) with acute basilar occlusions. **INTERVENTIONS:** Angiography, brainstem auditory and somatosensory evoked potentials. **MEASUREMENTS AND MAIN RESULTS:** Clinical and electrophysiologic data were obtained before angiography and thrombolytic therapy. Outcome was classified according to a slightly modified Glasgow Outcome Scale at discharge from the intensive care unit (ICU). Level of consciousness was determined in four classes: awake ( $n = 4$ ); somnolence ( $n = 7$ ); stupor ( $n = 4$ ); and coma ( $n = 8$ ). Bilateral recordings of brainstem auditory and somatosensory evoked potentials were ranked in three categories: normal; one side normal; and both sides abnormal. Of 23 sets of evoked potential recordings, brainstem auditory evoked potentials were normal in seven patients, one side abnormal in four patients, and both sides abnormal in 12 patients. Somatosensory evoked potentials were normal in eight patients, one side abnormal in eight patients, and both sides abnormal in seven patients. A combination of both evoked potential modalities demonstrated normal results in three patients, one side abnormal recordings in six patients, and both sides abnormal findings in 14 patients. Outcome was ranked in three groups: five individuals had a good recovery or moderate disability; two patients remained severely disabled; and 16 patients persisted either in a locked-in state or died. Statistical analysis using Fisher's exact test demonstrated a significant correlation between the initial brainstem auditory evoked potential findings and outcome ( $P < 0.005$ ), while for the initial somatosensory evoked potentials a significant correlation with outcome was not identified ( $p = 0.089$ ). All patients with normal brainstem auditory and somatosensory evoked potential findings did well, whereas all patients with bilateral (both sides) abnormal brainstem auditory evoked potential and bilateral abnormal somatosensory evoked potential remained locked-in or died. **CONCLUSION:** Initial brainstem auditory evoked potential and somatosensory evoked potential testing are valid prognostic parameters on which to base therapeutic decisions in patients with acute basilar occlusion. Author.

**Individual susceptibility to noise-induced hearing loss: an old topic revisited.** Henderson D., Subramaniam M., Boettcher F. A. Department of Communicative Disorders and Sciences, State University of New York, Buffalo. *Ear and Hearing* (1993) June, Vol. 14 (3), pp. 152–68.

The wide range in susceptibility to noise-induced hearing loss has intrigued researchers and hearing conservationists alike. Some of these differences in variability have been attributed to various intrinsic factors such as eye color, gender, age, etc. However, a review of controlled research shows that the influence of these intrinsic variables is relatively small and cannot explain the wide range of hearing loss observed in demographic studies. Furthermore, uncontrolled variables or unrecognized drug and noise interaction may obscure the relation between noise exposure and hearing loss. With the growing understanding of the physiology of the auditory system, new possibilities are emerging that may explain the range of susceptibility. A review of the role of acoustic reflex effectiveness, cochlear efferent function, and history of noise exposure provide a perspective for future strategies in predicting susceptibility to noise-induced hearing loss. Author.

**Speech recognition in noise by children with minimal degrees of sensorineural hearing loss.** Crandell C. C. Callier Center for Communication Disorders, University of Texas, Dallas. *Ear and Hearing* (1993) June, Vol. 14 (3), pp. 210–6.

It is well recognized that the acoustical environment in a classroom is an important variable in the psychoeducational achievement of hearing-impaired children. To date, however, there remains a paucity of information concerning the importance of classroom acoustics for children with minimal degrees of sensorineural hearing loss (SNHL). The present investigation examined the effects of commonly reported classroom signal to noise ratios (+6, +3, 0, -3 and -6 dB) on the sentence recognition of 20 normal-hearing children and 20 children with minimal degrees of SNHL (i.e. pure-tone averages of 15–30 dB HL through the speech frequency range). Results indicated that children with minimal degrees of SNHL obtained poorer recognition scores than normal-hearing children across most listening conditions. Moreover, the performance decrement between the two groups increased as the listening environment became more adverse. Educational implications of these data, such as acoustical

modification of the classroom and/or the utilization of frequency modulation sound field amplification systems, are discussed. Author.

**Monitoring therapeutic efficacy of decompressive craniotomy in space occupying cerebellar infarcts using brain-stem auditory evoked potentials.** Krieger D., Adams H. P., Rieke K., Hacke W. Department of Neurology, University of Heidelberg, FRG. *Electroencephalography and Clinical Neurophysiology* (1993) July-August, Vol. 88 (4), pp. 261–70.

Brain-stem auditory evoked potentials (BAEPs) have been used to gauge effects of brain-stem dysfunction in humans and animal models. The purpose of this study was to evaluate the usefulness of BAEP in monitoring patients undergoing decompressive surgery of the posterior fossa for space occupying cerebellar infarcts. We report on serial BAEP recordings in 11 comatose patients with space occupying cerebellar infarcts undergoing decompressive craniotomy. BAEP studies were performed within 12 h after admission, 24 h following surgery and prior to extubation. BAEP signals were analyzed using latency determination and cross-correlation. Following surgery, nine patients regained consciousness; two patients persisted in a comatose state and died subsequently. BAEP interpeak latency (IPL) I–V assessed prior to surgery exceeded normal values in all patients in whom it could be reliably measured ( $n = 9$ ). Following decompressive surgery BAEP wave I–V IPL normalized in five patients, but remained prolonged despite dramatic clinical improvement in four patients. We prospectively computed the coefficient of cross-correlation (MCC) of combined ipsilateral BAEP trials after right and left ear stimulation. In all patients increasing MCC was associated with clinical improvement. Unchanging or decreasing MCC indicated poor outcome. We conclude that serial BAEP studies are an appropriate perioperative monitoring modality in patients with space occupying cerebellar infarcts undergoing decompressive surgery of the posterior fossa. Our study suggests advantages of cross-correlation analysis to an objective signal processing strategy; relevant information can be extracted even if BAEP wave discrimination is impossible due to severe brainstem dysfunction. Author.

**Voluntary contraction of middle ear muscles: effects on input impedance, energy reflectance and spontaneous otoacoustic emissions.** Burns E. M., Harrison W. A., Bulen J. C., Keefe D. H. Department of Speech and Hearing Sciences, University of Washington, Seattle 98195. *Hearing Research* (1993) May, Vol. 67 (1–2), pp. 117–27.

Two types of measurements were performed on a subject able to voluntarily contract her middle ear muscles (MEM). First, wideband measurements (0–11 kHz) of middle ear input impedance and energy reflectance were obtained when the subject was relaxed and when she contracted her MEM. The changes in impedance observed with voluntary MEM contraction were similar to those reported in the literature for acoustically-elicited MEM contractions. The energy reflectance increased for frequencies below about 4 kHz. Second, the effects of voluntary MEM contraction on the frequencies and levels of spontaneous otoacoustic emissions (SOAEs) were measured and compared to effects evoked by contralateral acoustic stimulation. Effects on SOAEs appear to be a more sensitive indicator of MEM activity than changes in impedance, and the effects due to voluntary MEM contraction were qualitatively similar to those evoked by contralateral acoustic stimulation. These results suggest that in subjects with normally-functioning middle ears, only some effects on otoacoustic emissions caused by contralateral stimuli whose levels are below the contralateral acoustic reflex threshold can be unequivocally attributed to the action of cochlear efferents. The temporal aspects of SOAE frequency shifts caused by voluntary contraction of MEM show that voluntary contraction fatigues rapidly over a time period of tens of seconds. Author.

**Re-irradiation of laryngeal carcinoma—techniques and results.** Wang, C. C. McIntyre, J. Department of Radiation, Oncology, Massachusetts General Hospital Cancer Center, Boston 02114. *International Journal of Radiation, Oncology, Biology and Physics* (1993) August 1, Vol. 26 (5), pp. 783–5.

**PURPOSE:** Occasionally in the long-term survivors of early carcinoma of the larynx, following radiation therapy a second carcinoma may arise from the previously irradiated larynx. Traditionally, management of such lesions is by non-radiation means in the belief that a further full course of radiation therapy is not possible and may exceed the tolerance of the normal laryngeal structures. Unfortunately, surgical treatment of the second carcinoma is often

either total or partial laryngectomy which may not be acceptable to the patients and therefore radiation therapy is used as an alternative. **METHODS AND MATERIALS:** This paper presents our experience in re-irradiation of laryngeal carcinomas arising from the previously irradiated larynx. As of October 1992 a total of 20 patients were available for evaluation. Most patients had Stage I and II laryngeal carcinoma and received high doses of re-irradiation ranging from 60 to 70 Gy either by conventional or accelerated hyperfractionation schemes. **RESULTS:** The five-year actuarial local control and survival rates were 60 to 93 per cent, respectively. The majority of the survivors had relatively normal and functional larynges. Those who failed locally had total laryngectomy without significant postoperative complications. **CONCLUSION:** With this information the radiation tolerance of laryngeal structures is found to be much higher than commonly believed and re-irradiation for early carcinoma of the larynx is possible and proved to be a useful alternative to surgery and laryngectomy is therefore reserved for failure. The techniques of re-irradiation will be discussed. Author.

**Computed tomography evaluation of neck node metastases from nasopharyngeal carcinoma.** Sham, J. S., Cheung, Y. K., Choy, D., Chan, F. L., Leong, L. Department of Radiotherapy and Oncology, University of Hong Kong. *International Journal of Radiation, Oncology Biology and Physics* (1993) August 1, Vol. 26 (5), pp. 787–92.

**PURPOSE:** To study the role of computed tomography in the pre-therapy evaluation of nasopharyngeal carcinoma. **METHODS AND MATERIALS:** The computed tomography of 119 new patients of nasopharyngeal carcinoma were evaluated independent of clinical findings for neck node metastases, and then compared with clinical findings. Contrast enhanced axial scans were obtained at 5 mm intervals with the infraorbitomeatal line parallel to the gantry. Scans were obtained from the supra-sellar cistern to the C5 or C6 vertebra for the evaluation of the base of skull, nasopharynx, paranasopharyngeal space and the upper and mid neck. **RESULT:** The present study confirmed the disparity of nodal extent documented by clinical palpation and computed tomography. Of the 37 patients who have no clinically palpable node (N0), computed tomography showed nodal involvement in 11 (29.7 per cent) of them, and they were up-staged from N0 to N1. Computed tomography showed multiple or bilateral nodes in seven (58.3 per cent) of the 12 patients with AJC N1 disease and they were hence up-staged to N2. All together, there were 28 (23.5 per cent) patients who have no computed tomography evidence of nodal involvement by tumor. In agreement with clinical experience, the most commonly involved nodal groups were the upper internal jugular and upper spinoaccessary, followed by the lateral retropharyngeal. The percentage of nodes which were not clinically palpable was roughly the same for different regions (15–30 per cent), except, as expected, that all the retropharyngeal nodes were not palpable. The risk of harboring retropharyngeal node was proportional to the size of the largest node in the ipsilateral neck. **CONCLUSION:** A significant proportion of patients with clinically negative neck (N0) or AJC N1 disease will be upstaged by computed tomography, thus supporting its routine use in pre-therapy evaluation of nasopharyngeal carcinoma. Author.

**Retrospective analysis of patients with nasopharyngeal carcinoma treated during 1976–1985: survival after local recurrence (see comments).** Lee, A. W., Law, S. C., Foo, W., Poon, Y. F., Cheung, F. K., Chan, D. K., Tung, S. Y., Thaw, M., Ho, J. H. Institute of Radiology and Oncology, Queen Elizabeth Hospital, Kowloon, Hong Kong. *International Journal Radiation, Oncology, Biology and Physiology* (1993) August 1, Vol. 26 (5), pp. 773–82. Comment in: *International Journal of Radiation, Oncology, Biology and Physics* (1993) August 1, 26 (5): 903; discussion 907.

**PURPOSE:** To study the value of re-irradiation, the overall survival and pattern of failures for patients with nasopharyngeal recurrence. **METHODS AND MATERIALS:** All the 891 patients with local recurrence following radiotherapy for nasopharyngeal carcinoma during 1976–1981 were retrospectively analyzed. Only 70 per cent of them had local failure alone at the time of detection, and the T-stage distribution (by Ho's system) was 31 per cent rT1, 16 per cent rT2, 51 per cent rT3, and one per cent rT?. Seven hundred and six (79 per cent) patients had been re-irradiated with various techniques and doses. Among those who failed, 50 had further irradiation. **RESULTS:** The overall 5- and 10-year actuarial cancer-specific survival rates were 14 per cent and 9 per cent, respectively. Patients with rT3 disease had the worst prognosis. Successful local salvage was achieved in 32 per cent of those re-irradiated (26 per cent of the

whole series). The highest control rate was achieved by those treated with external radiotherapy to 60 Gy (equivalent) or above. Only 8/50 patients responded to the third course of radiotherapy. The cumulative incidence of late post-re-irradiation sequelae was 24 per cent and the treatment mortality rate 1.8 per cent. Besides local failure, 54 per cent had regional relapse and/or distant metastasis. Thus, only 16 per cent of recurrent patients were totally disease-free at final assessment. **CONCLUSION:** The overall prognosis for patients with nasopharyngeal recurrence was grave. High dose re-irradiation could achieve successful local salvage in a substantial number of patients with early recurrence, but late complications did occur. Furthermore, high incidence of failure at other sites was observed. Author.

**The management of the clinically positive neck as part of a larynx preservation approach.** Armstrong, J., Pfister, D., Strong, E., Heimann, R., Kraus, D., Polishook, A., Zelefsky, M., Bosl, G., Shah, J., Spiro, R., *et al.* Department of Radiation, Oncology, Brachytherapy Service, Memorial Sloan-Kettering Cancer Center, NYC, NY 10021. *International Journal of Radiation, Oncology, Biology and Physics* (1993) August 1, Vol. 26 (5), pp. 759–65.

**PURPOSE:** For patients with squamous cell carcinoma of the head and neck with palpable neck node metastases, the standard management of the neck usually involves neck dissection and postoperative neck irradiation. A strategy of larynx preservation with induction chemotherapy and radiation therapy has been utilized for patients with locally advanced resectable cancer of the larynx, hypopharynx, and oropharynx. For patients treated in this non-surgical manner for the primary site, the optimal management of the clinically positive neck has not been clarified. To determine whether response to induction chemotherapy could help to select patients in whom neck dissection could be omitted in favor of definitive radiation therapy alone, we have analyzed our prospective larynx preservation experience. **METHOD AND MATERIALS:** Between 1983–1989, 80 patients were entered onto larynx preservation protocols involving one to three cycles of cisplatin based chemotherapy followed by radiation therapy with or without neck dissection. There were 54 patients with clinically positive necks to treatment, of whom 44 per cent (24/54) had a complete response, and of whom 20 per cent (11/54) had a partial response to chemotherapy in the neck. In 22 of these 35 patients with clinically positive necks who achieved a major neck response to chemotherapy, radiation therapy (median 66 Gy) was used as the only subsequent treatment of the neck. **RESULTS:** At a median follow-up of 25 months (range 7–83 months), neck control for this subset is 91 per cent (20/22). Neck failure occurred in 20 per cent (1/5) of patients with a partial response to chemotherapy treated without neck dissection and 6 per cent (1/17) of node positive with a complete response. **CONCLUSION:** These results suggest that patients with clinically palpable cervical nodal metastases who have a complete response to chemotherapy and receive high dose radiation therapy have excellent neck control and may not need neck dissection. Further experience will be required to confirm these preliminary data and to determine if patients who achieve a partial response in the neck after induction chemotherapy can be treated with radiation therapy without neck dissection. Author.

**Topical levocabastine compared with orally administered terfenadine for the prophylaxis and treatment of seasonal rhinoconjunctivitis.** Sohoel, P., Freng, B. A., Kramer, J., Poppe, S., Rebo, R., Korsrud, F. R., Garud, O., Woxen, O. J., Olsen, A. K. Bogstadveien O-N-H Klinik, Oslo, Norway. *Journal of Allergy and Clinical Immunology* (1993) July, Vol. 92 (1 Pt 1), pp. 73–81.

**BACKGROUND:** This study was designed to compare the efficacy and tolerability of a new topical (nasal spray and eye drops) H1-receptor antagonist, levocabastine, with that of orally administered terfenadine for the prophylaxis and treatment of seasonal allergic rhinoconjunctivitis. **METHODS:** A total of 115 patients with documented birch pollen allergy were enrolled in this randomized, double-blind, double-dummy, parallel-group trial. Treatment was initiated immediately before the birch pollen season started and continued for a total of eight weeks. Xylometrazoline (Otrivin) nasal spray was permitted as rescue medication. **RESULTS:** the investigator's evaluation of symptoms showed similar effects for levocabastine and terfenadine. Both the patients' and the investigator's global evaluations of ocular and nasal symptoms disclosed a somewhat higher percentage of good or excellent results for levocabastine, but the differences were not statistically significant. Visual analog scale ratings from the patients' diaries showed better results for levocabastine. Levocabastine was significantly more effective



than terfenadine in relieving sneezing, rhinorrhea, lacrimation, itch, and burning sensation ( $P < 0.05$ ). For some symptoms, levocabastine was significantly more effective than terfenadine on days when the pollen count was high. There were no statistically significant differences in the use of rescue medication or in the incidence of adverse reactions reported in each treatment group. **CONCLUSIONS:** In the present study topical levocabastine was frequently more effective than orally administered terfenadine for the treatment of seasonal allergic rhinoconjunctivitis. Both drugs were well-tolerated. Author.

**Aqueous beclomethasone dipropionate in the treatment of ragweed pollen-induced rhinitis: further exploration of 'as needed' use.** Juniper, E. F., Guyatt, G. H., Archer, B., Ferrie, P. J. Department of Clinical Epidemiology, McMaster University Medical Center, Hamilton, Ontario, Canada. *Journal of Allergy and Clinical Immunology* (1993) July, Vol. 92 (1 Pt 1), pp. 66–72.

**BACKGROUND:** The objective of this study was to compare regular and 'as required' (prn) use of aqueous beclomethasone dipropionate nasal spray (Beconase AQ nasal spray) in the treatment of ragweed pollen-induced rhinitis and to examine possible predictors of unsatisfactory symptom control in the group of patients who used it on a prn basis. **METHODS:** Sixty adults with ragweed pollen-induced rhinitis, who had participated in previous hay fever studies or who responded to media notices, were enrolled in the study. The study design was a randomized, unblinded, parallel group comparison between regular use (400 micrograms daily) and prn use of Beconase AQ spray during the six weeks of the ragweed pollen season. Patients recorded daily symptoms and medication use in diaries. The Rhinoconjunctivitis Quality of Life Questionnaire was administered, and patient satisfaction with symptom control was assessed at clinic visits. **RESULTS:** Symptoms and quality of life tended to be better in the regular group, but differences were not statistically significant. Twenty-seven per cent of patients in the prn group reported unsatisfactory control of symptoms; they experienced significantly worse symptoms and quality of life than the remainder of the prn group and used significantly more Beconase. No obvious predictors of unsatisfactory control were identified. Patients who achieved satisfactory control in the prn group had symptom and quality of life scores that were very similar to those of the regular group. **CONCLUSIONS:** Most patients can use Beconase AQ as needed successfully for the treatment of hay fever, but there may be an apparently unpredictable minority who do not achieve satisfactory symptom control or quality of life with this approach and who require regular treatment. Author.

**Double-blind trial of a heated nasal aerosol in the treatment of perennial allergic rhinitis.** Oppenheimer, J., Buchmeier, A., Nelson, H. S. Department of Medicine, National Jewish Center for Immunology and Respiratory Medicine, Denver 80206. *Journal of Allergy and Clinical Immunology* (1993) July, Vol. 92 (1 Pt 1), pp. 56–60.

**BACKGROUND:** The effect of heated, moisturized air, delivered at 40 L/min and 43°C, on allergic rhinitis was evaluated in two studies. **METHODS:** In the first study patients with chronic nasal symptoms and long-term exposure to a perennial allergen to which they were sensitive underwent one week of baseline observation and one week of treatment with either heated or room temperature moisturized air for changes in nasal symptoms and nasal blockage index and by a global evaluation by the subjects at the end of the treatment period. In the second study subjects with a documented history of grass or weed pollen allergic rhinitis underwent titrated nasal pollen challenges immediately after treatment with either heated or room temperature moisturized air. The outcome was assessed by the end point of the nasal challenge and change in blockage index at the end point. **RESULTS:** In both models there was no significant difference in the response between those treated with heated and those treated with room temperature moisturized air. **CONCLUSION:** This study did not demonstrate any evidence of a therapeutic effect of heated, moisturized air in the treatment of allergic rhinitis. Author.

**Chronic hyperplastic sinusitis: association of tissue eosinophilia with mRNA expression of granulocyte-macrophage colony-stimulating factor and interleukin-3.** Hamilos, D. L., Leung, D. Y., Wood, R., Meyers, A., Stephens, J. K., Barkans, J., Meng, Q., Cunningham, L., Bean, D. K., Kay, A. B., *et al.* Department of Medicine, National Jewish Center for Immunology and Respiratory Medicine, Denver, CO 80206. *Journal of Allergy and Clinical Immunology* (1993) July, Vol. 92 (1 Pt 1), pp. 39–48.

**BACKGROUND:** We investigated the association among tissue eosinophilia, cellular infiltration, and cytokine mRNA expression in chronic hyperplastic sinusitis (CHS). **METHODS:** Percutaneous biopsies of the maxillary sinuses and nasal polyps were performed in 12 adult patients (six men and six women) of whom seven were non-allergic and 11 were asthmatic. Tissues were compared with biopsy specimens from the inferior and middle turbinates of normal control subjects. **RESULTS:** Histologically, an eosinophil-predominant inflammatory infiltrate was seen in 10 of 12 patients, whereas a mild to moderate neutrophilic infiltrate was seen in four of 12 patients. As determined by immunocytochemistry, diseased tissues and normal control tissues differed significantly in terms of the number of activated (EG2+) eosinophils ( $p = 0.005$ ) but not in terms of CD3+ or CD4+ T lymphocytes, elastase-positive neutrophils or CD68+ macrophages. The number of eosinophils did not correlate with that of any other cell type. By in situ hybridization, CHS tissues showed significantly higher numbers of granulocyte-macrophage colony-stimulating factor (GM-CSF) and interleukin (IL)-3 mRNA-positive cells than normal control tissues ( $p = 0.002$  and  $0.0005$ , respectively) per high-powered field. There was a significant correlation between the number of infiltrating EG2+ eosinophils and cells that expressed mRNA for GM-CSF ( $r = 0.60$ ,  $p = 0.041$ ) or IL-3 ( $r = 0.69$ ,  $p = 0.013$ ). Furthermore, epithelial cells did not show detectable mRNA expression for GM-CSF or IL-3. No significant correlation was found between IL-5 mRNA expression and infiltrating EG2+ eosinophils in diseased tissues. However, the IL-5 density was significantly higher in the five patients with CHS who had positive allergy skin test results than in the seven patients with negative skin test results ( $p = 0.017$ ) or in normal control subjects. **CONCLUSIONS:** Our data support a role for GM-CSF and IL-3 in the eosinophilia characteristic of CHS and show that IL-5 mRNA expression is not a prominent feature of nonallergic inflammation. The cellular sources of GM-CSF and IL-3 in CHS remain to be definitively determined. Author.

**Substance P, calcitonin gene-related peptide, and vasoactive intestinal peptide increase in nasal secretions after allergen challenge in atopic patients.** Mosimann, B. L., White, M. V., Hohman, R. J., Goldrich, M. S., Kaulbach, H. C., Kaliner, M. A. Allergic Diseases Section, National Institute of Allergy and Infectious Diseases, Bethesda, MD 20892. *Journal of Allergy and Clinical Immunology* (1993) July, Vol. 92 (1 Pt 1), pp. 95–104.

**BACKGROUND:** There is suggestive evidence that neuropeptides participate in allergic reactions. Substance P (SP) and calcitonin gene-related peptide (CGRP) are released by sensory nerves, whereas vasoactive intestinal peptide (VIP) is released mainly by parasympathetic nerves. Both sets of nerves are thought to be stimulated by allergic inflammation. The aim of this study was to assess nasal secretions to determine whether SP, CGRP, and VIP were increased after allergen challenge. **METHODS:** Eight patients with allergic rhinitis were challenged nasally with 1 mg histamine or increasing doses of allergen. Nasal lavages were collected into a cocktail of protease inhibitors in order to restrict neuropeptide degradation. Radioimmunoassay for SP, CGRP, and VIP were performed on each sample. **RESULTS:** All patients had immediate clinical reactions to both histamine and allergen challenges, and seven patients experienced a later allergic reaction. After histamine challenge, SP and CGRP did not increase significantly above baseline in the nasal lavages, whereas VIP did ( $P < 0.02$ ). In contrast, SP, CGRP, and VIP all significantly increased immediately after allergen challenge and returned to baseline within two hours. At the clinical peak of the late allergic reaction, SP, but not CGRP or VIP, was increased slightly but significantly ( $P < 0.01$ ). **CONCLUSIONS:** Thus SP, CGRP and VIP are found in nasal secretions after allergen challenge, which confirms that neuropeptides are released in human beings during allergic reactions. The selective stimulation of VIP secretion by histamine challenge suggests that histamine-induced cholinergic reflexes induce the release of VIP. These data support the suggestion that neuropeptides may be partly responsible for some of the nasal symptoms of allergy. Author.

**Influence of nasal airflow and resistance on nasal dilator muscle activities during exercise.** Connel, D. C., Fregosi, R. F. Department of Exercise and Sport Sciences, University of Arizona Health Sciences Center, Tucson 85721. *Journal of Applied Physiology* (1993) May, Vol. 74 (5), pp. 2529–36. Our purpose was to assess the separate effects of nasal airflow and resistance on the activity of the nasal dilator (alae nasi (AN)) muscles. Nasal airflow and the AN electromyogram were recorded

at rest and during progressive-intensity exercise at 60, 120, and 150–180 W in 10 healthy subjects who breathed nasally under all conditions. The activity of the AN muscles increased linearly as a function of the increase in nasal minute ventilation evoked by progressive-intensity exercise ( $r = 0.99$ ,  $P < 0.002$ ). Reciprocal changes in nasal airflow and resistance were produced by surreptitious substitution of 12–15 breaths of 79 per cent He-21 per cent O<sub>2</sub> for air at rest and during exercise. The switch to He-O<sub>2</sub> decreased airway resistance (anterior rhinomanometry) by approximately 30 per cent at rest and 40–60 per cent during exercise. He-O<sub>2</sub> did not change nasal flow or AN activities significantly under resting conditions. In contrast, He-O<sub>2</sub> increased nasal flow and decreased the AN electromyogram by 25–50 per cent during exercise ( $P < 0.05$ ). The results suggest that AN muscle activities during nasal breathing are regulated by mechanisms that track airway resistance or the level of flow turbulence. The increase in AN activities during exercise probably helps ensure nasal airway patency in the face of the considerable collapsing pressures that prevail under these conditions. Author.

**Event-related potentials in Parkinson's disease: a 12-month follow-up study.** Rumbach, L., Tranchant, C., Viel, J. F., Warter, J. M. Service de neurologie, CHU Jean Minjoz, Besançon, France. *Journal of the Neurological and Sciences* (1993) June, Vol. 116 (2), pp. 148–51.

Auditory event-related potentials were recorded using the oddball paradigm in 26 patients with Parkinson's disease, all treated with L-Dopa. The latency of the P3 wave was significantly greater than in an age-matched controls, and was also correlated with the disease duration, but not with scores on two scales measuring cognitive deficit. One year later, when treatment with a dopaminergic agonist, bromocriptine 20–30 mg/day, had been added to the therapeutic regimen, N2 and P3 latencies had increased, whereas several clinical parameters had improved. Thus a longer P3 latency does not seem to be linked to a global cognitive deficit. The use of neuropsychological tests exploring more limited tasks should show the prospective utility of event-related potentials in Parkinson's disease. Author.

**Maxillary sinus augmentation: histomorphometric analysis of graft materials for maxillary sinus floor augmentation.** Moy, P. K., Lundgren, S., Holmes, R. E. Department of Oral and Maxillofacial Surgery, University of California, Los Angeles. *Journal of Oral and Maxillofacial Surgery* (1993) August, Vol. 51 (8), pp. 857–62.

This study used histomorphometric analysis to quantitate the bone composition of four different sinus grafting materials biopsied at the time of implant installation. The study consisted of five patients in whom eight bone biopsies were obtained from seven grafted sites. The grafting materials consisted of hydroxylapatite (HA) granules mixed with cortical chin bone, HA mixed with demineralized bone powder, HA alone, and cortical chin bone alone. Histomorphometry was performed using backscattered scanning electron microscopy images and a computerized image analysis system. The biopsy cores yielded 46 sections from which a total of 255 fields, measuring 2.0 mm × 2.0 mm each, were imaged and analyzed. The biopsy cores contained 44.4 per cent bone after grafting with HA granules and chin bone, 59.4 per cent bone after grafting with chin alone, 20.3 per cent bone after grafting with HA granules alone, and 4.6 per cent bone after grafting with HA granules and demineralized bone

powder. The small number of biopsies did not permit analysis of statistical significance. However, this study demonstrated the feasibility of correlating mineralized tissue composition of different sinus grafting materials with clinical outcome after dental implant installation. Author.

**Infant malnutrition affects cortical auditory evoked potentials.** Flinn, J. M., Barnet, A. B., Lydick, S., Lackner, J. Department of Psychology, George Mason University, Fairfax, VA 22030. *Perceptual and Motor Skills* (1993) June, Vol. 76 (3 Pt 2), pp. 1359–62. Auditory evoked potentials (AEPs) to click and name stimuli were recorded for 23 malnourished infants on admission to and 17 on discharge from hospital, together with those from age-matched controls. The number of peaks on the AEPs and the amplitude were examined. The malnourished infants' AEPs to click stimuli differed from the controls' on admission but not on discharge. The malnourished infants had smaller AEP amplitudes to name than to click stimuli on discharge while the controls did not. The data show that cortical AEPs in infants are affected by malnutrition. Author.

**Effects of nicotine on the human nasal mucosa.** Greiff, L., Wollmer, P., Erjefalt, I., Andersson, M., Pipkorn, U., Persson, C. G. Department of Otorhinolaryngology, University Hospital of Lund, Sweden. *Thorax* (1993), June, Vol. 48 (6), pp. 651–5.

**BACKGROUND**—Topical application of nicotine and stimulation of tachykinin containing sensory nerves have been shown to produce mucosal exudation of plasma and derangement of the epithelial lining in guinea pig and rat airways. If this occurred in man these effects might contribute to the pathogenesis of airway disease. This study, performed in healthy volunteers without atopy, examined whether nicotine affects the plasma exudation response and the mucosal absorption permeability of the human nasal airway. **METHODS**—The acute effects of increasing topical doses of nicotine (0.08–2.0 mg) were examined ( $n = 8$ ) on nasal symptoms (pain), mucosal exudation of plasma (albumin), mucosal secretion of mucin (fucose), and mucosal exudative responsiveness (histamine induced mucosal exudation of albumin). A separate placebo controlled study was carried out to determine whether frequent applications of the high dose of nicotine (2.0 mg given eight times daily for nine days) had any deleterious effects on the airway mucosa detectable as altered responses to histamine challenge. Both mucosal exudation of plasma ( $n = 12$ ) and mucosal absorption of chromium-51 labelled EDTA ( $n = 8$ ) were thus examined in nasal airways exposed to both nicotine and histamine. **RESULTS**—Nicotine caused nasal pain and produced dose dependent mucosal secretion of fucose but failed to produce any mucosal exudation of albumin. The exudative responsiveness to histamine was, indeed, decreased when the challenge was performed immediately after administration of acute doses of nicotine, whereas the responsiveness was unaffected when histamine challenges were carried out during prolonged treatment with nicotine. The nasal mucosal absorption of <sup>51</sup>Cr-EDTA in the presence of histamine did not differ between subjects receiving either placebo or nicotine treatment for nine days. **CONCLUSIONS**—The results indicate that nicotine applied to the human airway mucosa produces pain and secretion of mucin, but inflammatory changes such as mucosal exudation of plasma and epithelial disruption may not be produced. Neurogenic inflammatory responses, which are so readily produced in guinea pig and rat airways, may not occur in human airways. Author.