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threshold reporting specific difficulty in perceiving speech under difficult acoustic conditions, e.g. in class. Their problems are suggested to be signs of a central auditory processing disorder. Unfortunately there is no standardized speech-in-noise perception test available to investigate Dutch children. We compared the performance of normal 6- and 7-year-old children ( $n = 46$ ) and adults ( $n = 7$ ) in the 'Plomptest', a speech-in-noise test that is often used for audiological examination of Dutch adults. For this study we selected sentences from the Plomptest and slightly adapted the procedure. We found in normal children a mean 5.7 dB ( $\pm 0.5$  dB) shift of the speech-in-noise perception threshold; i.e. the ratio of the sentence level and the level of the noise that is required for 50% recognition score, compared to the adults. These results indicate that young children behave like hearing-impaired adults in listening conditions with noise. The established differences in perception performance have induced us to develop an instrument for investigation of speech-in-noise perception ability in children with an adapted procedure and age-related norms.

### **Experimental otitis media with effusion induced by endotoxin, a preliminary study**

M.J. NELL & J.J. GROTE (Leiden)

This study tested the hypothesis that endotoxin can induce middle-ear inflammation leading to otitis media with effusion (OME). Graded doses of endotoxin (10–100  $\mu\text{g/ml}$ ) from *Salmonella typhimurium* were inoculated transmeatally into the middle-ear cavity of rats until the solution overflowed from the eardrum (approximately 50  $\mu\text{l}$ ). Contralateral ears received pyrogen-free sterile saline or the eustachian tube was obstructed. The middle ears were examined after 1, 2, 4 and 12 weeks by light microscopy and scanning electron microscopy.

All animals that received endotoxin developed an inflammatory reaction in the middle-ear cavity. In the subepithelial layer, vasodilatation and oedema together with infiltration of lymphocytes, macrophages, and polymorphonuclear granulocytes could be seen. The epithelial layer was thickened and there were increased areas covered by ciliary and secretory epithelium. This reaction was most prominent in the first 2 weeks. Four weeks after inoculation there was a decrease of ciliary epithelium and after 12 weeks the epithelium had changed into a cobblestoned appearance. There was no clear endotoxin concentration dependent relation with the inflammatory reaction in the middle-ear cavity. Eustachian tube obstruction showed the same inflammatory reaction as seen due to endotoxin inoculation. Control ears inoculated with pyrogen-free sterile saline did not show any inflammatory reaction in the middle-ear cavity.

These findings indicate that endotoxin may be responsible for the production of middle-ear effusion and inflammatory changes in the middle ear.

### **Assessment of tumour invasion of the mandible: a comparison of different imaging techniques**

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In tumours of the floor of mouth approaching the mandible and those of the retromolar trigone, assessment of the status of the mandible is of importance in selecting between a segmental or marginal resection of the mandible. Apart from the dental status and related height of the mandible, this choice is influenced by the clinical judgement on invasion, as well as on the findings at imaging. This retrospective study in 29 patients compares the accuracy of panoramic X-ray, CT and MR in assessing invasion of the mandible. Six mandibles had erosion, 12 had marrow invasion and 11 were intact at histopathology. It was found that MR had the highest sensitivity (94%) but a low specificity (73%) with three of 11 intact mandibles interpreted as positive. Furthermore, MR often overestimated the extent of tumour invasion. CT and OPG on the other hand had a lower sensitivity (64% res. 63%) and a higher specificity (89% res. 90%). CT accuracy can probably be increased by adjusting imaging parameters. In conclusion: negative CT or OPG findings do not exclude invasion whereas MR had more false positives and frequently overestimated the extent of tumour invasion. Clinical examination will stay the most important modality to assess the mandible.

### **The treatment of otitis media with effusion in infants**

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G.J. VAN DER WILT & G.J. VAN DER LEM (Nijmegen,  
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The aim of this project is to study the effect of early screening and treatment with ventilation tubes on hearing, otomicroscopic findings, language development, cognitive development and quality of life of infants with otitis media with effusion (OME). All children born in 1996, who are living in one of the seven participating departments in the east of the Netherlands are invited to the Ewing screening. Children who failed the third Ewing screening (expected number 1200) will be referred to an otolaryngology clinic for diagnosis. The parents of children who suffer with bilateral long-lasting OME for 4–6 months are invited to participate in the trial. The children will be randomized into two groups: in one group ( $n = 100$ ) children will be treated with ventilation tubes, in the other group ( $n = 100$ ) children will receive no treatment. Both groups will be tested before group allocation and 6 months and 12 months afterwards for audiologic and tympanometric findings, language, speech and cognitive devel-

opment and quality of life. Another purpose of this study is to assess the cost effectiveness of treatment with ventilation tubes versus watchful waiting. Furthermore, information of the regular management of OME will be collected to make recommendations for implementing the results of the trial.

### **Detection of aneuploidy in squamous cell carcinoma of the head and neck by using cytological brushes**

J. VELTMAN, A. HOPMAN, F. BOT, F. RAMAEKERS & J. MANNI (Maastricht)

The detection of malignant cells in a brush specimen is interesting for the analysis of areas that are difficult to biopsy but also for screening in chemoprevention studies. Several markers for malignancy are known, one of these is aneuploidy.

In this study brush specimens of 19 HNSCC patients were taken both from the tumour area and several clinically normal areas. Also a biopsy was available from the tumour area of 12 patients. Fluorescence *In Situ* Hybridization (FISH) with probes for the centromeric regions of chromosome 1 and 7 was performed on isolated nuclei both from the brush specimen and the biopsy. Next to that DNA flow cytometry was performed on isolated nuclei of the biopsies. Cytospins of the brush specimens were stained according to Papanicolaou-protocol.

The results of this study show that 15 of the 19 brush specimens contain more than 5% aneuploid cells (79%). The comparison with DNA-analysis on the biopsies verifies that if a tumour is aneuploid this can be detected in the brush specimen. At this moment the brush specimens of the normal areas are being analysed for the presence of malignant cells, these might indicate the risk for the development of second primary tumours.

### **Acute upper airway obstruction in children with epiglottitis or croup: complications due to endotracheal intubation**

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*Objectives.* To evaluate the complications of endotracheal intubation in children with upper airway obstruction due to epiglottitis or croup.

*Methods.* During a 5-year period (1991–1995) all patients with epiglottitis or croup were reviewed to determine the complications of endotracheal intubation, especially upper airway obstruction due to granulomas.

*Results.* Thirty-three patients were reviewed. In 17 children (mean age 2.5 years) with epiglottitis the mean duration of intubation was 4.0 days (3–5). No complications were seen. In 16 patients (mean age 2.3 years) with croup the mean duration of intubation until the first extubation was 8.1 days (1–15 days). Elective extubation was performed if an airleak was present or after 7 days without airleak but in the absence of fever and obvious secretion. Reintubation was not necessary in 10 children (62.5%). In this group the mean duration of intubation was 6.4 days (1–12). In six patients (37.5%) reintubation was necessary because of severe upper airway obstruction due to granulomas. Mean duration of intubation until the first extubation was 10.8 days (6–19). There seems to be a difference in duration of intubation between these two groups with croup, however it is not significant ( $P > 0.1$ ). All the patients with granulomas could be successfully extubated after microlaryngeal surgery, with a mean intubation period of 35.3 days (21–47).

*Conclusion.* Endotracheal intubation in children with epiglottitis revealed no complications, where as endotracheal intubation in children suffering from croup showed a high incidence (37.5%) of granulomas.