

suppressed the bone hyperplasia and the narrowing of pneumatic space in the middle ear cavity more clearly than the mucosa-eliminated control group. The mucosal gas exchange function was also found to be good in the cell sheet-transplanted group. These results suggested that post-transplanted middle ear cavity was not only morphologically but also functionally similar to the normal middle ear cavity. Nasal mucosal epithelial cell-sheet was confirmed to be useful as an effective graft material after middle ear surgery and hopefully become a novel therapy in the future.

Postoperative regeneration of the middle ear mucosa and pneumatization of the middle ear cavity are of great importance after middle ear surgery. This study developed a new method to transplant autologous nasal mucosal epithelial cell-sheets into the damaged middle ear cavity. The aim of this study was to evaluate postoperative healing after the transplantation of the cell sheets in rabbits. Rabbit nasal mucosal epithelial cell-sheets were fabricated from a temperature-responsive culture dish and transplanted into the damaged middle ear of rabbit, which was surgically created. The healing of middle ears was evaluated with histological methods and computed tomography findings at 8 weeks after transplantation. Functional evaluation was performed by measuring the maximum middle ear total pressure reflecting a trans-mucosal gas exchange function. Two control groups were used: the normal control group and the mucosa-eliminated control group. Transplantation of nasal mucosal epithelial cell-sheets suppressed the bone hyperplasia and the narrowing of pneumatic space in the middle ear cavity more clearly than the mucosa-eliminated control group. The mucosal gas exchange function was also found to be good in the cell sheet-transplanted group. These results suggested that posttransplanted middle ear cavity was not only morphologically but also functionally similar to the normal middle ear cavity. Nasal mucosal epithelial cell-sheet was confirmed to be useful as an effective graft material after middle ear surgery and hopefully become a novel therapy in the future.

doi:10.1017/S0022215116003790

## Basic research on the otological fields (N775)

**ID: 775.3**

### Novel biomarker to detect perilymph leakage, CTP (Cochlin tomo-protein, an isoform of Cochlin)

Presenting Author: **Tetsuo Ikezono**

Tetsuo Ikezono<sup>1</sup>, Han Matsuda<sup>2</sup>, Tomohiro Matsumura<sup>3</sup>, Shinnichi Usami<sup>4</sup>, Mamoru Suzuki<sup>5</sup>, Kaoru Ogawa<sup>6</sup>, Yasuhiro Kase<sup>7</sup>

<sup>1</sup>Saitama Medical University Faculty Of Medicine, The PLF Study Group, Japan, <sup>2</sup>Department of Otorhinolaryngology, Saitama Medical University Faculty Of Medicine, The PLF Study Group, Japan, <sup>3</sup>Department of Biochemistry & Molecular Biology, Nippon Medical School, <sup>4</sup>Department of Otorhinolaryngology, Shinshu University, the Genetic And Anomalous Ear Diseases Study Group, Japan, <sup>5</sup>Department of

Otorhinolaryngology, Tokyo Medical University, the Peripheral Vestibular Disorder Research Committee, Japan, <sup>6</sup>22. Department of Otorhinolaryngology, Keio University, the Acute Severe Hearing Loss Study Group, Japan, <sup>7</sup>Department of Otorhinolaryngology, Saitama Medical University Faculty Of Medicine

**Learning Objectives:** Perilymphatic fistula (PLF) is an abnormal connection between the inner and middle ear. A procedure for obtaining definite proof of a PLF remains elusive, and methods of diagnosis remain controversial. CTP is a novel biochemical marker that allows a definitive diagnosis of the etiology of PLF-related hearing loss and vestibular disorders. The science of PLF will be discussed in this talk.

**Introduction:** Numerous biomarkers for dizziness and hearing loss has been suggested including autoantibodies, inflammatory cytokines, CRP. Among these, CTP (Cochlin tomo-protein, an isoform of Cochlin), perilymph specific protein, is a novel and unique biomarker. We have reported a biochemical test for perilymph leakage detecting CTP in middle ear lavage (MEL, lavaging the middle ear cavity using 0.3 ml saline).

**Methods:** Recently we could establish a highly reliable ELISA-kit to detect CTP. The Japanese PLF diagnosis criterion is now based on the visual identification of the fistula (not a leakage) and/or detecting CTP. With a help of private clinical test enterprise (SRL inc.) in Japan, CTP test is widely available nationwide, in 170 hospitals.

Diagnostic Accuracy of the test is very high. If there is 2ul of leaked perilymph in the MEL, the test is positive. The diagnostic performance of the test has a high reliability, and the AUC in ROC analysis was greater than 0.90.

**Results:** The pattern of hearing loss of CTP positive PLF cases varies, including sudden onset, progressive, fluctuating or recurrent. In some patients with positive CTP test, dizziness is their chief complaint not hearing loss.

**Conclusions:** What We Could Learn from the CTP Test in hearing loss and/or dizzy patients. We believe CTP test will give the answer to the long-standing debate about the existence of PLF.

doi:10.1017/S0022215116003807

## Basic research on the otological fields (N775)

**ID: 775.4**

### Molecular mechanisms and fundamental therapies for a mouse model of Gjb2-related deafness

Presenting Author: **Katsuhisa Ikeda**

Katsuhisa Ikeda  
Juntendo University Faculty of Medicine