

toward TM regeneration in the chronic TM perforation model. Complete regeneration resulting in an intact TM occurred in 43.8% of chronically perforated animals; healing was dependent on perforation size in that small lesions (<50% area) were resolved in 66.7% of cases. Our study suggests that latent TM stem cells could be potential regulators of regeneration, which provides a new insight into this clinically important process and a potential target for new therapies for chronic otitis media and other eardrum injuries.

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### Population-based studies in otologic epidemiology (N813)

#### ID: 813.1

#### Increased Risk of Depression in Patients with Cholesteatoma: A Nationwide Study

Presenting Author: **Chin-Lung Kuo**

Chin-Lung Kuo<sup>1</sup>, An-Suey Shiao<sup>2</sup>, Wei-Pin Chang<sup>3</sup>

<sup>1</sup>HsinChu Armed Forces General Hospital,

<sup>2</sup>Taipei Veterans General Hospital, <sup>3</sup>Taipei Medical University

*Learning Objectives:* Cholesteatoma is a locally invasive condition; however, a comorbidity of depressive disorder could be a risk factor of systemic morbidity and mortality. A relationship between cholesteatoma and depressive disorder has been observed in clinical practice; however this link has not been firmly established in the literature. To the best of our knowledge, this is the first study to demonstrate a prospective link between cholesteatoma and subsequent depressive disorder within a three-year followup. Clinicians should keep this critical but neglected issue in mind and carefully investigate the possibility of subsequent psychological problems among cholesteatoma patients.

*Objective:* Cholesteatoma is a locally invasive condition; however, a comorbidity of depression could be a risk factor of systemic morbidity and mortality. A relationship between cholesteatoma and depression has been observed in clinical practice; however this link has not been firmly established in the literature. This study sought to estimate the risk of developing depressive disorder (DD) following diagnosis with cholesteatoma.

*Methods:* In the study, we analyzed data from the Longitudinal Health Insurance Database of Taiwan. A total of 599 patients newly diagnosed with cholesteatoma between 1997 and 2007 were included with a comparison cohort of 2,995 matched non-cholesteatoma enrollees. Each patient was followed for 3 years to identify the subsequent development of DD. Cox proportional hazard regression analysis was performed to compute adjusted 3-year hazard ratios.

*Results:* Of the 3,594 patients in the sample, 20 individuals (3.3%) from the cholesteatoma cohort, and 52 (1.7%) from the comparison cohort were subsequently diagnosed with DD during the 3-year follow-up. The incidence of DD per

thousand person-years was approximately twice as high among patients with cholesteatoma (11.32) as among those without cholesteatoma (5.85). After adjusting for potential confounders, patients with cholesteatoma were 1.99 times (95% CI = 1.18–3.34,  $P = 0.010$ ) more likely to suffer from DD within 3 years compared to those without cholesteatoma.

*Conclusions:* This is the first study to demonstrate a link between cholesteatoma and subsequent DD within a three-year followup. We suggest that clinicians keep this critical but neglected issue in mind and carefully investigate the possibility of subsequent psychological problems among cholesteatoma patients.

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### Population-based studies in otologic epidemiology (N813)

#### ID: 813.2

#### Epidemiology of Pediatric Otitis Media with Effusion in Taiwan

Presenting Author: **Mao-Che Wang**

Mao-Che Wang

Taipei Veterans General Hospital

*Learning Objectives:* By using the population based database NHIRD, we can accurately report the epidemiology of pediatric otitis media with effusion with ventilation tube insertions as a surrogate. We can also conduct studies to find out risk factors and prevention methods for pediatric otitis media with effusion by using the population based database NHIRD.

*Introduction:* Otitis media with effusion is a very common pediatric otologic problem. We try to report the epidemiology of pediatric otitis media with effusion and common comorbidities by using ventilation tube insertions as a surrogate.

*Methods:* We retrieved study objects from Taiwan National Health Insurance Research Databank (NHIRD). We analyzed characteristics and comorbidities of all children received ventilation tube insertion from July, 2000 to December 2009. We also analyzed the recurrent pattern by following the year 2000 and 2001 birth cohort for 8 or 9 years.

*Results:* From July, 2000 to December 2009, 11042 ventilation tube insertions were done in Taiwan. For all children received ventilation tube insertion, the mean age of tube insertion was  $5.4 \pm 3.3$  years. Thirty six percent of them had concurrent adenoidectomy, 15.4% with cleft palate, 7% with Down syndrome. For 2000 and 2001 birth cohort, 1755 (0.393%) children received ventilation tube insertions and 111 (6.3%) had tube reinsertions before 8 or 9 years old.

*Conclusion:* We have around 1200 children received ventilation tube insertions in Taiwan, and a good portion of them had comorbidities such as cleft palate, Down syndrome.

Six point seven percent of children may have tube reinsertions.

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### Population-based studies in otologic epidemiology (N813)

**ID: 813.3**

#### Sudden sensorineural hearing loss: evidence from Taiwan

Presenting Author: **Chuan-Song Wu**

Chuan-Song Wu

*Department of Otolaryngology, Taipei City Hospital, Taipei, Taiwan. College of Science and Engineering, Fu-Jen Catholic University, New Taipei City, Taiwan. Graduate School of Business Administration, Fu-Jen Catholic University, New Taipei City, Taiwan.*

**Learning Objectives:** Using the The National Health Insurance research Database to explore the risks of sudden hearing loss in Taiwan.

Taiwan's National Health Insurance program was implemented in March 1995. The National Health Insurance research Database contains registration files and original claim data for reimbursement. The databases are provided to researchers in Taiwan for study proposes. The Taiwan National Health Research Institute has validated the representativeness of the LHID2000 relative to the whole population of NHI enrollees in terms of gender distribution. In addition, several studies have demonstrated the high validity of the data taken from the NHI programme.

Possible causes of SSNHL may include viral or bacterial infection, circulatory disturbance in the area of the anterior inferior cerebellar artery, acoustic tumor, peri-lymphatic fistula, environment, diet or weather. SSNHL is also occasionally preceded by a common cold or upper respiratory tract infection, as reported in patients with vestibular neuritis or Ménière's disease.

We find that for the period under examination, gender-specific incidence rates per 100,000 of the population were 8.85 for males, and 7.79 for females, and that there was an increase in age-specific SSNHL incidence with age. After adjusting for seasonality, months and trends, there is no significant relationship between monthly SSNHL incidence rates and weather conditions. There is indeed a relationship between physician and hospital characteristics and the LOS for SSNHL patients. Risk of sudden sensorineural hearing loss did not increase following a recent herpes zoster attack. Male patients with SSNHL had a higher proportion of prior OSA than non-SSNHL-diagnosed controls. There was an association between AMI and prior SSNHL.

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### Population-based studies in otologic epidemiology (N813)

**ID: 813.4**

#### Risk of Sudden Sensorineural Hearing Loss in Stroke Patients: A 5-year Nationwide Investigation of 44,460 Patients

Presenting Author: **Nancy Chang**

Nancy Chang<sup>1</sup>, Chin-Lung Kuo<sup>2</sup>, An-Suey Shiao<sup>3</sup>

<sup>1</sup>Taipei Veterans General Hospital,

<sup>2</sup>Department of Otolaryngology, Hsinchu Armed Force Hospital, <sup>3</sup>Department of Otolaryngology, Taipei Veterans General Hospital

**Learning Objectives:** Post-stroke sudden sensorineural hearing loss (SSNHL) can hinder communication between patients and healthcare professionals, thereby restricting participation in rehabilitation programs and limiting improvements in physical performance. However, the relationship between stroke and SSNHL remains unclear. This study employed a nationwide population-based dataset to investigate the relationship between stroke and SSNHL.

**Objective:** Post-stroke sudden sensorineural hearing loss (SSNHL) can hinder communication between patients and healthcare professionals, thereby restricting participation in rehabilitation programs and limiting improvements in physical performance. However, the relationship between stroke and SSNHL remains unclear. This study employed a nationwide population-based dataset to investigate the relationship between stroke and SSNHL.

**Methods:** The Taiwan Longitudinal Health Insurance Database was used to compile data from 11,115 stroke patients and a comparison cohort of 33,345 matched non-stroke enrollees. Each patient was followed for 5 years to identify new onset SSNHL. Stratified Cox proportional-hazard regression analysis was used to examine the association of stroke with subsequent SSNHL.

**Results:** Among the 44,460 patients, 66 patients (55,378 person-years) from the stroke cohort and 105 patients (166,586 person-years) from the comparison cohort were diagnosed with SSNHL. The incidence of SSNHL was approximately twice as high among stroke patients than among non-stroke patients (1.19 and 0.63/1000 person-years, respectively). Stroke patients had a 71% increased risk of SSNHL, compared to non-stroke patients (adjusted hazard ratio (HR) = 1.71, 95% CI = 1.24–2.36). We also observed a remarkable increase in risk of SSNHL in stroke