

8th Global Summit on
**OTOLARYNGOLOGY:
ENT SURGERY**
July 18-19, 2019 | Valencia, Spain

OTOLARYNGOLOGY 2019



POSTER

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REHABILITATION OF THE HEARING IMPAIRED INFANTS

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Background: The auditory rehabilitation and assessment of the early communication skills of the hearing impaired (HI) infants are quite challenging. The aim of this study was to confirm the effective method and value of the early auditory rehabilitation. Additionally, the communicative skills of the infants were compared with the chronological age (CA) and the hearing age (HA) which reflected the periods of hearing sounds by amplification system and appropriate rehabilitation.

Methods: Recently developed the Korean Auditory, language and cognitive rehabilitation for infants (KARI) program was applied as a method of rehabilitation. The contents were composed of the evaluation materials, parent education and counseling materials and professional guidelines. The case studies of 12 infants from 1 to 24 months old were performed and evaluated with sequenced language scale for infants (SELSI), MacArthur-Bates communicative development inventories (M-B CDI), Communication and symbolic behavior scales developmental profile (CSBS DP). The effect of the KARI program was further examined comparing the developmental progress between HA and CA of the 19 HI and 21 normal hearing infants.

Results: After applying KARI program, the scores were enhanced in all evaluation tools with the statistical significance ($p < 0.05$). SELSI scores in receptive and expressive languages increased from 19.76 to 26.76 and from 16.28 to 22.16. The scores of M-B CDI was enhanced from 6.1 to 18.8 in vocabulary expression, from 85.6 to 121.7 in vocabulary comprehension and from 20.3 to 30.8 in gesture and play. CSBS DP scores increased from 32.36 to 38.89. Also in the comparison between HA and CA for HI group, the scores of HA were significantly better for all the materials ($p < 0.05$) except the production score of M-B CDI.

Conclusion: The auditory rehabilitation was proved to be effective in enhancing communicative skills for facilitating developmental progress for the HI infants.

BIOGRAPHY

Jiyeong Yun has received her Bachelor's Degree at the Hallym University, Republic of Korea (ROK). She is a master student in audiology at the Graduate School of Hallym University. She participated in the global training on age-friendly services and institutes at University of Texas Arlington, USA in January of 2016 and speech-hearing program at John A Burns School of Medicine, University of Hawaii in February of 2019. Currently, she is working as a teaching assistant and honored as a scholarship student of Brain Korea 21 programs for leading universities and students. She has participated for the investigation of Korean version of 'Listen, Learn and Talk' and 'Adult cochlear implant home-based auditory training manuals' of Cochlear Ltd., and is now involved in several research papers such as "A Case study of KARI, early communication skills of children and phonological development" in Korean infants from 4 through 24 months.

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ACCEPTED ABSTRACTS

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PASIREOTIDE, A SOMATOSTATIN ANALOGUE AS NOVEL TREATMENT FOR HEARING LOSS

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Sensory hair cells in the inner ear are the primary receptors of auditory signals and hair cells degeneration is the primary event in most cases of hearing loss. Gentamicin is a widely used antibiotic for the treatment of gram-negative bacterial infections; although, its use often results in significant and permanent hearing loss. Strategies to overcome the apparently irreversible loss of hair cells in mammals are crucial for hearing protection. Here author report that the somatostatin analogue pasireotide protects mouse cochlear hair cells from gentamicin damage using a well-established *in vitro* gentamicin-induced hair cell loss model, and that the otoprotective effects of pasireotide are due to Akt up-regulation via PI3K-Akt signal pathway activation. They demonstrate active caspase signal in Organ of Corti explants exposed to gentamicin and show that pasireotide treatment activates survival genes, reduces caspase signal and increases hair cell survival. The neuropeptide somatostatin and its selective analogues have provided neuroprotection by activating five somatostatin receptor (SSTR1-SSTR5) subtypes. Pasireotide has high affinity for SSTR2 and SSTR5 and addition of SSTR2- and SSTR5-specific antagonists lead to a loss of protection. The otoprotective effects of pasireotide were also observed in a gentamicin-injured animal model. *In vivo* studies showed that 13 days of subcutaneous pasireotide application prevents gentamicin-induced hair cell death and permanent hearing loss in mice. Auditory brainstem response analysis confirmed the protective effect of pasireotide, and they found a significant threshold shift at all measured frequencies (4, 8, 16, 24 and 32 kHz). Together, these findings indicate that pasireotide is a novel otoprotective peptide acting via the PI3K-Akt pathway and may be of therapeutic value for hair cell protection from ototoxic insults.



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INHIBITION OF NFAT IN COMBINATION WITH ANTIOXIDANTS PROVIDES AUDITORY HAIR CELL PROTECTION FROM AMINOGLYCOSIDE TOXICITY

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Aminoglycosides generate free radicals within the inner ear, resulting in permanent damage to sensory cells and neurons, followed by hearing loss. Decreasing aminoglycoside-induced reactive oxygen species (ROS) production was shown to be beneficial. Based on author's previous study, preventing nuclear factor of activated T cells (NFAT) nuclear accumulation preserves auditory hair cells from gentamicin toxicity. They addressed hair cell protection from two angles by using NFAT inhibitor 11R-VIVIT and one of the well-described antioxidants L-carnitine (LCAR) or N-acetylcysteine (NAC). Organs of Corti (OCs) from 5-day old mice were exposed to gentamicin +/- 11R-VIVIT, NAC or LCAR *in vitro*, followed by phalloidin based detection and counting of hair cells. Combined treatment with 11R-VIVIT and LCAR in the presence of gentamicin resulted in higher protection compared to single component culture treatment. 11R-VIVIT combined with NAC provided practically full protection (>98%) of the hair cells compared to single component treatment in the presence of gentamicin. Relative gene expression determined by qPCR revealed decrease in Casp9 after exposure to 11R-VIVIT and increase Hmox1 after exposure to NAC, compared to gentamicin treated OC cultures. In a caspase assay, combination of 11R-VIVIT and LCAR when compared to single component treatments was shown to be less effective in decreasing apoptotic signals than the 11R-VIVIT combined with NAC. Similar results were observed on heme oxygenase-1 western blot signals, where NAC combination showed to be more effective than LCAR. Selective NFAT inhibition by 11R-VIVIT appears to be a good strategy in preventing hair cell damage caused by gentamicin. L-carnitine and N-acetylcysteine with their ROS reducing properties could contribute to the observed synergistic effectiveness with 11R-VIVIT through decrease of ROS induced NFAT translocation. Our data suggest that combined approach of NFAT inhibition together with the presence of antioxidant like N-acetylcysteine could be promising in the treatment and/or prevention of hearing loss.



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MISMATCH NEGATIVITY IN CHILDREN

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The Mismatch Negativity (MMN) evaluation is a promising procedure to assess objectively the ability of auditory discrimination. The objective was to characterize the latency and amplitude values of MMN in children with normal auditory thresholds. Children between 5 and 11 years old participated in the present study. All participants underwent acoustic immittance measurements and tonal and vocal audiometry. The MMN was recorded with the MASBE ATC Plus system (Contronic, Pelotas, RS and Brazil). The frequent stimulus was 1,000 Hz and the rare stimulus was 2,000 Hz in 80 dBHL. The stimuli were presented in both ears separately. Results for the female group are the mean latencies and amplitude of MMN were 177.3ms and 5.01 μ V in the right ear (RE) and 182.4ms and 5.39 μ V in the left ear (LE). In the male group, the mean latencies were 194.4ms in the RE and 183.6ms in the LE, with an amplitude of 5.11 μ V in the RE and 5.83 μ V in the LE. There was no statistically significant difference between ears ($p=0.867$ latency and $p=0.178$ - amplitude), age ($p > 0.20$) and the gender of the participants ($p > 0.05$). The findings are known in national and international literature.



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ENDOSCOPIC TYMPANOPLASTY- A STUDY OF 50 CASES

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This study is aimed to evaluate the role of endoscope in the management of dry central perforation of tympanic membrane. Total 50 patients underwent endoscopic tympanoplasty, during January 2017 to December 2018 at APOLLO ENT Hospital Barmer, Rajasthan. In this study, there was 96% graft take up rate with endoscopic approach. The endoscopic approach have following advantages over microscopic approach: Operation time; post-operative pain level; better cosmetic results; better surgical view with minimal incision; high success rate of graft take up; better post-operative hearing improvement and avoids end aural vertical and post auricular incisions. Thus endoscopic tympanoplasty can be a good alternative of microscopic tympanoplasty. The average time taken for each endoscope assisted tympanoplasty was around 60-70 minutes.

