

# 7<sup>th</sup> International Symposium on Meniere's Disease and Inner Ear Disorders

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AUDITORIUM ANTONIANUM - Viale Manzoni, 1 - Roma



## Features sound processor settings in patients after ABI

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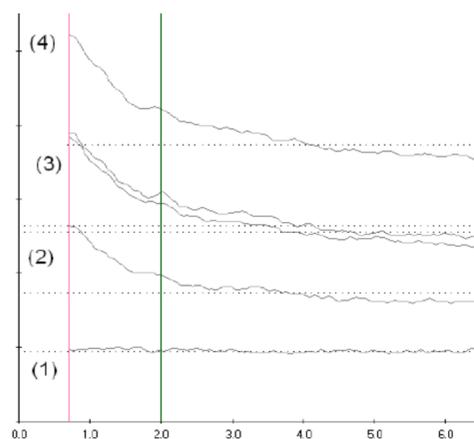
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### Introduction

Introduction: In some cases, patients with bilateral deafness is impossible or inappropriate conduct cochlear implantation (in case of damage or auditory nerve aplasia, aplasia or significant ossification of the cochlea). For these patients, the auditory brainstem implant is created (ABI), which allows to stimulate the cochlear nucleus of the brain stem. In Russia the first 3 operations auditory brainstem implantation took place in December 2014 in cooperation with the Research Institute of St. Petersburg ENT, RNHI them. prof. AL Polenova, neurosurgical Clinic Fulda. In all the cases Concerto device (Medel, Austria) was implanted. All the patients underwent ABI on the right side, which was preconditioned by the more convenient localisation of the right cerebellum lobe.

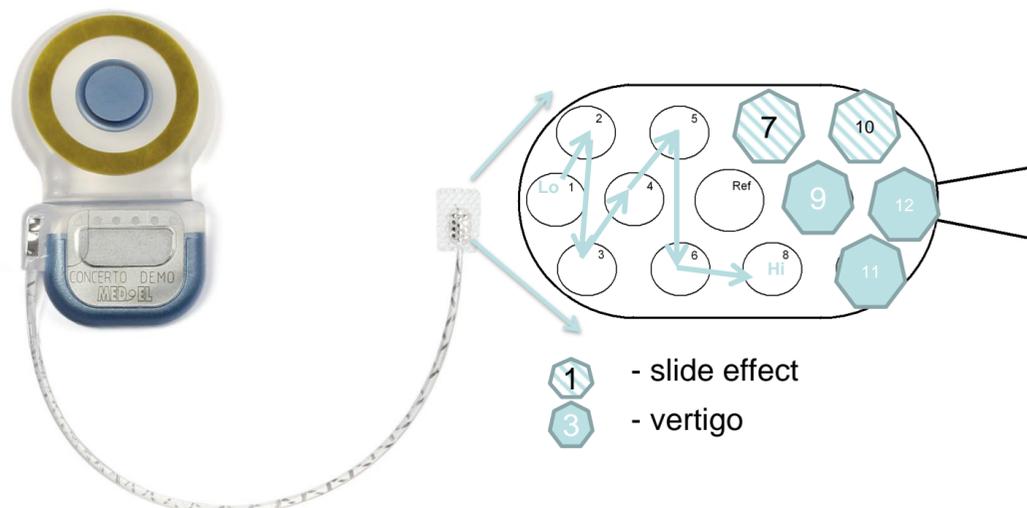
### Results

Results: During the operation, determined by the localization of the electrode array in the ventral cochlear nucleus by registering brainstem potentials to electrical stimulation (eABR) that have been registered in only one adult patient with neurofibromatosis 2. The second patient with neurofibromatosis 2 and a child with a cochlear aplasia eABR register failed.

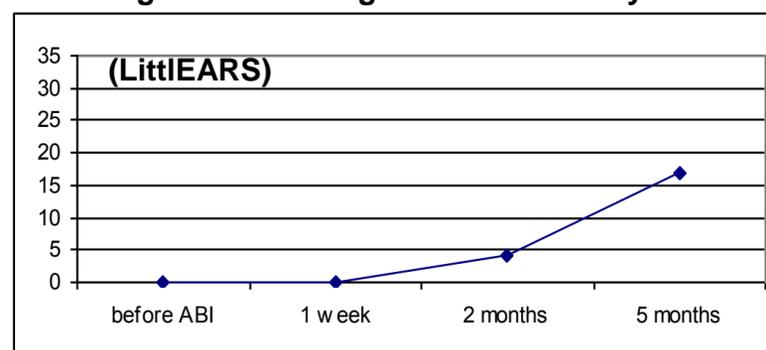


Connecting the processor ABI conducted in 1.5 months after operation. In adult patients, setting the parameters of electrical stimulation was carried out on their subjective feelings using scales assess the strength of the auditory and auditory sensations, as well as the patient's reactions to sounds and observations Speech-Language Pathologists. First connect the processor ABI the child was held in intensive care. In the future, the correction settings from the stimulation of the child conducted by behavioral reactions and observations Speech-Language Pathologists. During stimulation of individual electrodes, patients have no auditory sensations - vestibular, and other vegetative reactions. Electrodes, causing persistent side feeling increasing level of incentives were subsequently disabled. As a result, one patient 8 were activated electrodes in the 2<sup>nd</sup> - 6 electrodes child - 7 electrodes.

One of the adults observed inverted perception of pitch in the stimulation of the low- and high-frequency electrode, which is also taken into account when configuring the processor.



### Progress in hearing and vocal activity



### A Conclusion

Conclusion: The development of auditory brainstem implant will allow for the rehabilitation of patients with hearing loss caused by not only the pathology of the inner ear and overlying part of the auditory pathway (aplasia of the auditory nerve, neurofibromatosis type 2, trauma of the inner ear and auditory nerve).

### Reference

- Bayazit YA, Kosaner J, Cicek Cinar B et al. Methods and Preliminary Outcomes of Pediatric Auditory Brainstem Implantation. *Ann Otol Rhinol Laryngol* 2014.
- Colletti L, Colletti G, Mandala M, Colletti V. The Therapeutic Dilemma of Cochlear Nerve Deficiency: Cochlear or Brainstem Implantation? *Otolaryngol Head Neck Surg* 2014.
- Matthies C, Brill S, Varallyay C et al. Auditory brainstem implants in neurofibromatosis Type 2: is open speech perception feasible? *J Neurosurg* 2013. [Epub ahead of print]
- Lim HH, Lenarz T. Auditory midbrain implant: Research and development towards a second clinical trial. *Hear Res* 2015; 322: 212-23.
- Straka MM, McMahon M, Markovitz CD, Lim HH. Effects of location and timing of co-activated neurons in the auditory midbrain on cortical activity: implications for a new central auditory prosthesis *J Neural Eng* 2014; 11 (4).

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