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Vestibular modifications in deaf children after sequential implantation

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Intorduction: An early acquired or congenital absence of sensory input of the vestibule will lead to severe delayed posturomotor milestones. Previous studies have proven modifications and even complete ipsilateral loss of vestibular function after unilateral cochlear implantation.

Aim: The objective of this study was to evaluate whether sequential cochlear implantation has an impact on vestibular function.

Methods: Retrospective study was done from January 2012 to January 2015 including 26 patients. The first stage consisted of determining the vestibular status of 26 hearing impaired children who were candidates for a second cochlear implant. Three months after contralateral implantation we reevaluated the vestibular function of the same patients. The vestibular evaluation consisted of multiple tests for canal and otolith function. A complete clinical vestibular evaluation was performed, including the head thrust test. This was followed by an instrumental assessment composed of the classic bicaloric test and vestibular evoked myogenic potentials testing with tone bursts.

Results: A high prevalence of vestibular dysfunction (69%) was found in our group of unilaterally implanted children. Three patients had a unique functional vestibule at the not yet implanted ear. Vestibular evoked myogenic potentials responses stayed present in 15 of the 19 patients with a VEMP-response before contralateral implantation. Results of the caloric test changed for 6 patients after contralateral implantation.

Conclusions: After contralateral implantation nearly 40% of our patients manifested modifications of their vestibular status. Intrasubject comparison of bicaloric and vestibular evoked myogenic potentials testing before and after contralateral cochlear implantation showed that canal function was better preserved than saccular function. Seeing the high prevalence of vestibular dysfunction in our test group of unilateral implanted children, sequential implantation must be preceded by a vestibular assessment to prevent complete bilateral vestibular areflexia and its potential consequences. Presence of hyporeflexia at the yet-to-be implanted ear seems to be a situation particularly at risk

Biography

Benoit Devroede received his Medical degree in 1998 from the Free University of Brussels, Belgium and has accomplished his ENT Residency at the Academic Medical Centre of this University (Erasmus Hospital). He is Head of the Vestibular Evaluation Department at the University Children's Hospital Brussels. His clinical and research interests include Otoneurology and Laryngotracheal stenosis treatment in children.

Inge Pauwels has a Masters Degree in Audiology and Speech Therapy from Ghent University and is head of the Audiology department at the University Children's Hospital Brussels. Since 2012 they have developed a Vestibular Evaluation Department for young children in this hospital and their first research was recently published in *European Annals of Otorhinolaryngology*

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