

Vestibular Function Assessment following Cochlear Implantation Using Rotatory Chair Testing

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Abstract:

Purpose: Study aimed to assess short- and long-term impact of unilateral cochlear implantation in children on the angular vestibulo-ocular reflex using rotatory chair test. *Methods:* two groups; A (early post-operative evaluation) and B (later on evaluation) were included, each consisted of 23 cochlear implant candidates' children with unilateral implant surgeries were performed in El-Galaa Hospital, Cairo, Egypt. They were assessed by rotatory chair test; sinusoidal harmonic acceleration paradigm. Three parameters: average gain, asymmetry, and phase results of each group were compared with the manufacturer's norms and with each other. Further analysis by comparing each group implanted side specific gain results with the same group non-implanted side specific gain and with the other group implanted side specific gain results. *Results:* group A versus norms showed only significant differences in average gain and phase at 0.02 Hz and 0.01 Hz test frequencies respectively. But three parameters in group B showed no significant differences when compared with norms. Comparing results of both groups relieved significant differences only in average gain at 0.02 Hz and in phase at both 0.01 Hz and 0.04 Hz. Comparing specific gain results for both sides of group A showed significance at 0.32 Hz test frequency, while those of group B showed no significant differences. Analysis of implanted sides gain results of both groups showed differences at 0.16 Hz and 0.32 Hz. *Conclusion:* bilateral restoration and improvement of angular vestibulo-ocular reflexes after unilateral cochlear implantation was reported with long term assessment by rotatory chair test.

Keyword: Angular vestibulo-ocular reflex, VOR, Vestibular system, Lateral semicircular canal, neural plasticity