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What is the prognostic quality of the electrical acoustic nerve test performed before cochlear implantation for the speech reception obtained after rehabilitation?

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Background:

An important precondition for a successful cochlear implantation is the integrity of the acoustic nerve (N. cochlearis). An examination with a needle electrode placed transtympanically near the promontory and subsequent electrical stimulation of the auditory nerve can investigate its function. It is often discussed, if psychophysical parameters gained before cochlear implantation can predict the scores of speech reception obtained after rehabilitation. Blamey et al. [1] reported a small value of prediction yielded in the estimation of time resolution by means of a gap-detection paradigm. Likewise, the data presented in our work is analysed to seek for a correlation between speech perception with a cochlear implant at 3 or 12 months after implantation and time resolution.

Methods:

The data of 70 postlingually deafened patients were included into this study. The auditory nerve was stimulated by a biphasic pulse train delivered to transtympanic needle electrode, which was placed near the promontory. Auditory nerve function was assessed several weeks before cochlear implantation. Time resolution was measured by means of a gap detection paradigm. The Freiburger monosyllable and number test and the HSM-speech test were conducted three and 12 months after activation of the speech processor. The time resolution was correlated with the score of different sentence tests at different times and the data underwent a statistical analysis.

Results and Conclusions:

Speech reception measures are highly uncorrelated with preoperatively determined time resolution of the auditory nerve. We conclude that a measurement of time resolution by means of a gap detection paradigm and promontory electrical stimulation gives no reliable forecast on the later obtained speech perception outcome with a cochlear implant.

Literatur:

Blamey PJ, Pyman BC, Gordon M, Clark GM, Brown AM, Dowell RC, Hollow RD. Factors predicting postoperative sentence scores in postlinguistically deaf adult cochlear implant patients. *Ann Otol Rhinol Laryngol.* 1992 Apr;101(4):342-8.

