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Slow cortical responses in cochlear implant recipients

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The adjustment and fitting of cochlear implant (CI) speech processors is based on the knowledge of the lower and upper limits (T- and C-level) for the electrical stimulus strength. These data are usually acquired from subjective classification of the patient. In case of non-reliable patient responses, objective methods are necessary. Especially for the estimation of correct T-levels, auditory evoked potentials (AEP) can be applied, since they allow the determination of response threshold in a frequency-specific manner. From the AEP of different latencies, the late cortical responses can be registered nearly without artifact contamination. They have been examined in patients equipped with different CI-systems. In all cases, clear responses and a clearly discernible thresholds transition could be detected. Making use of acoustical stimulation in free sound field, the subjective hearing threshold and the T-levels of electrical stimulation can be verified. Based on the fact that the late responses are generated in the primary auditory cortex, their assessment allows a nearly integral functional control of the aided hearing system. At least in juvenile and adult patients no problems arise from maturation or attentional effects. The applicability in young children remains to be explored.

Literatur:

Hoth S (1998) Die Messung später elektrisch evozierter Potentiale des auditorischen Systems bei CI-Patienten. HNO 46: 739-747