Brainstem potentials

Auditory stem potentials (BERA, Brainstem Evoked Responses Audiometry, BAEP, Brainstem Auditory Evoked Potentials, ABR, Auditory Brainstem Response) belong to objective hearing examination. This method is used to determine the hearing threshold and to examine the auditory pathway, i.e. to exclude a retrocochlear lesion. The response of the auditory nerve and subcortical centers to acoustic stimulation is measured. BERA is often used to screen the hearing of newborns and infants and determine whether they are suitable candidates for a cochlear implant. [1][2][3]

Principle

When the brainstem is stimulated by a sound signal, electrical potentials are formed.

Execution

Tones are fed to the examinee's headphones, and electrical activity is recorded with electrodes attached to the examinee's head. Each ear is examined separately.

The result of the examination is a curve on which 5 waves are distinguished:

- wave I – action potential VIII. cranial nerve (nervus vestibulocochlearis);
- wave II – nucleus cochlearis (and n. VIII);
- wave III – ipsilateral superior olivaris nucleus;
- wave IV – nucleus or axons of the lemniscus lateralis;
- wave V – inferior colliculus. [3]

Factors that affect the BERA result:

- age, gender, frequency and intensity of sound irritation,...

The BERA result is not affected by barbiturates or general anesthesia. Disorders of the peripheral vestibular system do not affect the BERA result.[3]

Links

Related links

- Hearing
- Hearing examination
- Audiometry
- Otoacoustic emissions
- Steady state evoked potensials
- Classification of hearing disordears
- Hearing loss

External links

- ENT examination (https://patient.info/doctor/ear-nose-and-throat-examination)
- ENT examination (Oxford Academic) (https://academic.oup.com/book/29603/chapter/249393581)

References

1. KABELKA, Z. *Screening sluchu* [online]. [cit. 2012-01-30]. <http://www.fnmotol.cz/screening-sluchu.html/?pracoviste=6>.
2. MYŠKA, P. Postižení sluchu v dětském věku. *Pediatrie pro praxi* [online]. 2007, y. -, vol. 2, p. 92-94, Available from <http://www.pediatriepropraxi.cz/pdfs/ped/2007/02/06.pdf>.
3. EVANS, A B. *Clinical Utility of Evoked Potentials : Brainstem Auditory Evoked Potentials* [online]. Medscape, ©2012. [cit. 2012-09-03]. <https://emedicine.medscape.com/article/1137451-overview>.