Unsedated Auditory Brainstem Response (ABR) Testing

Otoacoustic Emissions (OAE) Testing

Diagnostic Hearing Testing - From Birth to Adult

Preferred Audiology Care, LLC / 5639 W. Genesee St. Camillus / 315-468-2985

Unsedated Auditory Brainstem Response (ABR) Testing

ABR's are used to test the integrity of the auditory pathway by measuring the hearing nerves' responses to sound. ABR waveforms represent responses from the cochlear nerve and lower brainstem.

ABR's became a standard hearing-screening tool in the 1980's and is offered if a baby fails the hearing screening in the hospital soon after birth. It can also be tested in naturally sleeping infants, resting children, and adults who may not be able to respond during behavioral hearing testing.

The test procedure is painless and noninvasive.

Hearing Threshold Testing

We can test frequency-specific, air and bone-conducted stimuli using new, state-of-the-art 2-channel ABR equipment in sleeping infants to adults.

ABR threshold relates well to behavioral threshold (10 to 20 dB in the high frequencies).

The test may take about an hour for a sleeping infant and sometimes multiple visits due to infant natural sleep habits and approximately 30 minutes for an adult.

ABRs can be used if malingering is suspected.

Neuro-diagnostic Testing

ABRs can be used as a screening tool for vestibular schwannomas (acoustic neuromas). Specificity is around 87%-94% for acoustic neuromas around 1 cm in size and a false-negative rate of about 4%. [1] - Usually occurs when there is a suspicion due to an asymmetric sensorineural hearing loss.

To be used when there is a medical contraindication for MRIs

ABRs are 1/8 the cost of MRI scan

Can be utilized when patients have fear of closed spaces

[1] (Laryngoscope. 1992 Sep; 102(9): 961-4, Acta Otolaryngol 1998 Jul; 1184):501-4, Arch Otolaryngol Head Neck Surg 2001 Jan; 127(1):19-22.

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Otoacoustic Emissions (OAE) Testing

Otoacoustic Emissions (OAEs) are used to test the integrity/motility of the outer hair cells (OHC) in the cochlea. They are a test of function or site of lesion, and not an exact measure of hearing. They typically do not occur in hearing loss of about 30 dB or greater and they can be affected by the status of the middle ear.

OAE Testing on an Adult

OAE's can detect a possible hearing loss of 30 dB or greater

The clinical utility of OAE's have been well documented in the following areas:

Newborn hearing screening – quick, effective, inexpensive means to evaluate outer hair cell function in newborns

Ototoxicity – OAE's can be used to monitor the negative effects of ototoxic medications before they show up on the audiogram.

Tinnitus – OAE's may be abnormal in the frequency region of the tinnitus, indicating possible cochlear damage

Noise induced hearing loss – OAE's can be used to document OHC damage due to occupational or recreational noise exposure. The damage will show on DPOAE's before they show on an audiogram.

Auditory Neuropathy – OAE's can be used with ABR testing to locate site of lesion (normal cochlear function with abnormal eighth nerve or brainstem function). Can also raise red flags regarding use of amplification.

Suspect malingering – OAE's can be used to confirm possible hearing loss if behavioral test results are inconclusive, inconsistent, or unreliable

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