

What is Auditory Neuropathy?

Auditory neuropathy is a disorder in which sounds enter the ear normally, but the transmission of the sound from the inner ear to the brain is impaired in some way. It is known to effect children and adults of all ages, but auditory neuropathy is not well understood.

To some people, the perplexing characteristic of auditory neuropathy is that some people who have this disorder may have normal hearing when tested, while other people may have mild or more advanced hearing losses. Most people with auditory neuropathy have problems processing complex sounds like speech, but these poor speech discrimination skills do not always correlate with the patient's hearing test. Put another way, a person with auditory neuropathy may report hearing sounds just fine; however, this person also would report having difficulty understanding what he or she heard.

Where is auditory neuropathy located?

A clear anatomical and physiological explanation of neuropathy is not clear, because the origin of the problem in the body is not fully understood. However, it may involve the inner ear and/or junctures up to and including the brain. It is believed that the hair cells that change mechanical energy to electrical energy in the inner ear may be involved. The neurons between hair cells and the brain also may be involved at one or more junctures. Therefore, a combination of things may form to cause auditory neuropathy.

What causes auditory neuropathy?

We know some causes of auditory neuropathy that place some people at risk; however, a clear correlation of diseases and drugs to auditory neuropathy has not been found. At-risk factors seem to be correlated to certain problems in newborns, such as premature birth, low birth weight, oxygen deprivation, and jaundice. Drugs taken by mothers during pregnancy also may have a significant impact on the formation of auditory neuropathy. Like many other formation anomalies, auditory neuropathy is more prevalent in some families; therefore, it also may have a genetic linkage.



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Identifying auditory neuropathy

Identifying auditory neuropathy involves gaining a full understanding of the patient's

past and current medical history. General health exams are completed, as well as basic audiological examinations. In addition, auditory brainstem response (ABR) and otoacoustic emissions (OAE) tests are performed to differentiate the integrity of different neurological junctures from peripheral (at the ear) to central (at the brain). ABR and OAE testing is done using special equipment and does not require patients to conscientiously respond to sounds like they do when listening to beeps in basic hearing testing. ABR uses small electrodes placed on a person's scalp. OAE uses a complex microphone and sensor probe placed into the ear canal. Neither test is painful.



What is the prognosis for auditory neuropathy?

There's good news and bad news about auditory neuropathy prognosis. Babies who have been diagnosed with auditory neuropathy as newborns may resolve the problem within a year or two. However, many infants do not improve or may even worsen in time. With adults, auditory neuropathy may not change, may fluctuate or may get worse over time.

How is auditory neuropathy treated?

Treating patients with auditory neuropathy is in the development stage. Professionals do not all agree about what constitutes effective treatments and at what point these treatments should be applied. Conventional hearing aids may be used to help patients who suffer from auditory neuropathy, and cochlear implants also have been recommended. Therapeutic interventions to supplement technology interventions may range from intense speech (oral, aural) programs to a mixture of oral/aural and sign language interventions. Unfortunately, there is currently no single test or test battery that has demonstrated the guidance needed to effectively predict the best treatment for people with auditory neuropathy. 💰

REFERENCES

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