

Vestibular (Balance) Disorders in Children with Hearing Loss



What Does the Vestibular System Do?

The vestibular system is responsible for tracking motion and orientation of the head. This information, along with input from our eyes and sense of touch, is sent to the brain to interpret the position of the body. When all areas function together normally, the human body has good balance. A vestibular organ is located on each side of the head sharing fluid with the cochlea (organ of hearing). If hearing is affected, then the vestibular system can also be affected on one or both sides.

Incidence and Causes of Balance Issues

Research shows an incidence of 20 – 70 % of children with sensorineural hearing loss also have balance issues. Prevalence increases with severity of hearing loss. Children with profound degree of hearing loss are more likely to have balance issues than a child with mild degree of hearing loss.

The following are known causes of vestibular dysfunction in the pediatric population with hearing loss:

- Otitis media (common ear infection)
- Large vestibular aqueduct syndrome
- Idiopathic congenital hearing loss
- Common syndromes associated with hearing loss: Usher, Waardenburg, Pendred, and Alport
- Cytomegalovirus (CMV)
- Hearing loss caused by meningitis
- Abnormal anatomy of the vestibular organ
- Acquired post-surgery (cochlear implantation)

Symptoms of Vestibular Dysfunction

Symptoms can be congenital (born with) or acquired. Clumsiness and frequent falling are common. Vertigo (spinning sensation that can last seconds to days) may be experienced. Young children unable to verbally express “spinning” may cling to parents, have difficulty sleeping, or have no desire to stand. Rhythmic eye movements (nystagmus) may be observed when these symptoms occur.

Developmental delays in head control, unsupported sitting, standing, walking, and hopping may also indicate issues with the vestibular system. Delayed fine and gross motor development and vision problems can be associated with abnormal balance. Children may also have difficulties with reading.

Decline in balance skills can be observed in children with progressive hearing loss. Concern for changes in balance should be discussed with the managing physician, to coordinate any indicated referrals to other healthcare specialists.

Vestibular Function Testing

Available tests to assess balance in the pediatric population may vary depending on the patient’s age and physical ability. The vestibular evaluation may include assessment of visual acuity, detailed questionnaires about the patient’s vestibular development, or specific tests using goggles and placing the patient in different positions. The managing physician will determine which tests are required based on the child’s symptoms and medical history.

Management and Treatment

Vestibular habilitation or rehabilitation therapy can help correct the dysfunction or help the patient develop compensation techniques to minimize symptoms. This type of therapy is usually provided by a physical or occupational therapist. Therapy is typically initiated at 3-4 years of age. This age range is an important time for developing balance skills. Failure to start therapy may delay development/improvement of vestibular skills. To manage vestibular function, monitoring of ongoing vestibular development or deterioration of balance skills is strongly advised.

Resources:

Vestibular Disorder Association:

<http://vertigo.org>

American Balance Institute:

http://dizzy.com/education_foundation.htm

Cincinnati Children's Hospital:

<https://www.cincinnatichildrens.org/service/a/audiology/programs-services/additional>

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Acknowledgement: This handout was created by the Audiology Department at Cardon Children's Medical Center, 1400 S. Dobson Rd., Mesa, AZ 85202.