

Cochlear Implants and Children with Vestibular Impairments

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Contemporary Concepts in Pediatric Vestibular Assessment and Management

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Question	Answer
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1. The current study showed ____ of children with profound bilateral SNHL displayed severe or complete impairment of vestibular end-organ function.
 - a. 10%
 - b. 35%
 - c. 50%
 - d. 70%
2. Which syndromic genetic cause of SNHL has the highest prevalence of vestibular dysfunction?
 - a. CHARGE syndrome
 - b. Waardenburg syndrome
 - c. Type 1 Usher syndrome
 - d. Pendred's syndrome
3. Name cochleovestibular anomalies that can result in hearing loss with coexisting vestibular impairments.
 - a. Isolated enlarged vestibular aqueduct
 - b. Incomplete partitioning defects (types I–III)
 - c. Common cavities
 - d. All of the above
4. The progressive vestibular dysfunction seen in cochleovestibular anomalies may be evidenced by acute-onset severe vertigo, lasting days to weeks and is at times mistaken for _____.
 - a. Meniere's disease
 - b. Otosclerosis
 - c. Vestibular neuritis
 - d. A & C
 - e. All of the above

5. Give a reason for the likely near-total absence of vestibular function in children with CHARGE syndrome.
 - a. The absence of the posterior labyrinth, which comprises the vestibule, the saccule, and the semicircular canals.
 - b. The progressive nature of the hearing loss
 - c. The associated visual impairment
 - d. The malformation of the cochlea

6. Congenital CMV infection is estimated to affect 0.4 to 2.3% of live births in the United States, and up to ____ of those are asymptomatic at birth.
 - a. 15%
 - b. 30%
 - c. 65%
 - d. 90%

7. Congenital CMV can result in _____.
 - a. Balance disturbances, including walking at a later age
 - b. SNHL
 - c. Neurodevelopmental disabilities
 - d. All of the above

8. For children with ototoxic injuries, vertiginous symptoms are the most common impairment, with Aminoglycosides the most common category of antibiotic agents that lead to ototoxicity.
 - a. True
 - b. False

9. Children with unilateral SNHL receive diminished unilateral auditory and balance information and are therefore likely suffering from multisensory loss which affects _____.
 - a. Attention and learning
 - b. Reading comprehension, and school performance
 - c. Smell and taste
 - d. A & B
 - e. All of the above

10. The act of cochlear implantation can cause injury to the vestibular system. Name potential mechanisms by which surgically induced injuries to the labyrinth may occur.
 - a. Introduction of blood into the inner ear
 - b. High-speed drilling within the temporal bone
 - c. Induction of a serious labyrinthitis due to opening of the membranous labyrinth
 - d. Mechanical injury due to the insertion of the electrode array
 - e. All of the above

11. Electrode insertion can lead to mechanical disruption of inner ear structures. Involvement of the scala vestibuli as a result of damage to the osseous spiral lamina or basilar membrane in the cochlear basal turn correlated strongly with vestibular end-organ damage.
 - a. True
 - b. False

12. Name screening assessments that can be applied in the busy clinical setting to screen for Vestibular Impairment in Children with SNHL.
- Speech assessment
 - Review of motor milestones
 - Assessment of balance and horizontal canal function.
 - A & C
 - B & C
13. Bilateral vestibular loss carries with it several clinical safety concerns. Name the concerns that should be relayed to patients and their parents.
- The loss of hearing that can result in being run over by a motor vehicle
 - The loss appetite that can result in anorexia
 - The potential for loss of spatial orientation when swimming under water as well as in the dark, that can result in drowning
 - All of the above
14. Vestibular dysfunction is the largest patient-related factor contributing to CI failure identified to date.
- True
 - False
15. There is mounting evidence suggesting that the vestibular system also plays a role in neurocognition including _____
- perceptual and visuospatial ability
 - memory
 - executive function
 - All of the above
16. Balance function is the product of multisensory information and is primarily made up, although not limited to sensory input from _____.
- The visual, vestibular, and proprioceptive systems
 - The auditory, visual and tactile systems
 - The tactile, visual and vestibular systems
 - None of the above