Difficulties with balance

Meningitis can affect the inner ear causing balance and co-ordination difficulties as well as deafness and tinnitus. More information about hearing loss and tinnitus following meningitis is available in a separate factsheet.

Poor balance and instability can be a short term after effect of meningitis and septicaemia because of the toll that the acute illness has taken on the body. As a result, some children who were able to walk before they became ill may go back to crawling. Younger babies whose balance has been affected may take longer to sit unsupported or learn to walk.

If your child has instability which lasts for longer than one week following discharge from hospital, it is possible that the organs of balance in the inner ear have been damaged[1], and it is important to talk to your child's doctor about the possibility of longer term balance difficulties. This can affect as many as 10% of survivors of childhood bacterial meningitis[1].

How we balance

Organs of balance within the inner ear are known as the peripheral vestibular system. This system is made up of structures filled with fluid and sensory hair cells, which send signals to the brain in response to movement. These structures include the semi-circular canals and the vestibule (comprising the utricle and the saccule).

The semi-circular canals can detect and tell the brain whether we are moving our head up and down or from right to left or rotating as when spinning on a swivel chair.

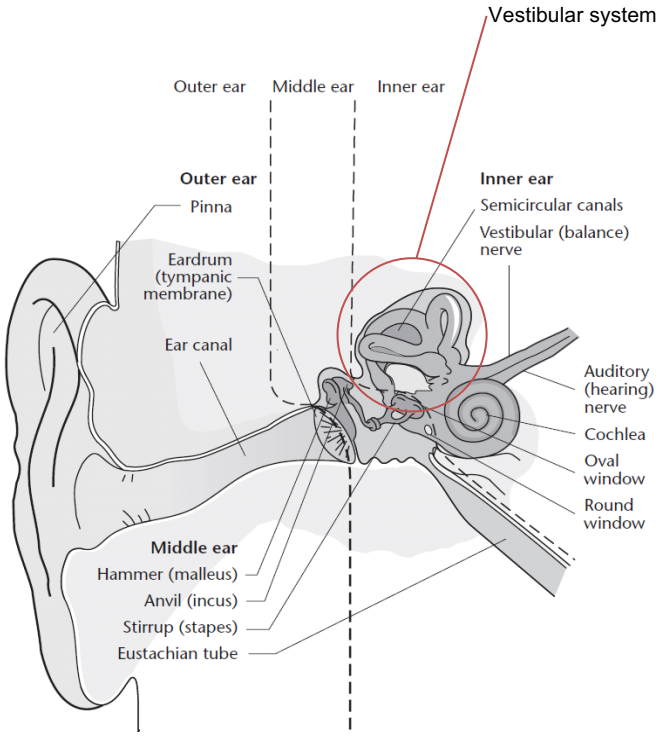

Figure 1: The outer, middle and inner parts of the ear.

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The utricle and the saccule tell the brain when we are moving in a straight line such as when we are standing up or travelling in a car or on a bike. They also tell the brain the position of our head in relation to gravity, for example whether we are sitting up, lying down or leaning back.

The brain works with the vestibular system and other systems in the body to maintain balance. Visual information from the eyes tells the brain where we are in relation to our surroundings, and sensory receptors in our skin, muscles and joints, provide information about the position of our body when we are at rest or in motion.

How balance can be affected by meningitis

Research has shown that impairment of the vestibular system can occur in just the same way as hearing can be damaged by meningitis[1-5]. If the bacteria, bacterial toxins, or chemicals the body produces to fight infection attack the inner ear, they can damage the hair cells of the vestibular canals or the nerve fibres[6],

Damage after meningitis can range in severity from partial vestibular loss to complete vestibular loss. This is much more likely if the child's hearing has also been affected, although it is possible to have vestibular impairment with normal hearing and hearing loss without balance difficulties.

The following things may be signs of damage to the vestibular system[7]:

- Delayed sitting/walking in childhood
- Difficulty learning to ride a bike or to skate
- Impaired balance when balance information from other systems in the body (eyes and skeletal system) is reduced, such as when swimming underwater.
- Poor balance in the dark
- Poor balance in circumstances of conflicting input (e.g. looking over a bridge at moving traffic, or running around a busy playground)
- Poor balance when walking on uneven surfaces
- Dizziness or vertigo (sometimes with nausea) - a sensation of unsteadiness, imbalance, or disorientation in relation to your surroundings.

Help with balance

Following illness many children will recover without any specific help. Children can compensate by relying on other body systems such as eyesight to maintain balance without any need for special therapy. However, it can be helpful to know if a child has balance difficulties because they may need extra support in certain circumstances. For example, for safety reasons some children may need to be supervised whilst swimming in case they become disorientated, and they may also need extra support when learning to ride a bike.

Some children may require physical therapy to help them compensate for the vestibular loss. This can reduce the developmental consequences of impaired balance (such as delayed walking and poor co-ordination) by helping the child compensate more rapidly than if they had not had therapy.

Children experiencing persistent dizziness and vertigo following illness may need quite specific help which can involve medication, physiotherapy, occupational therapy or psychological therapies.

If you are worried that your child has difficulties with balance, speak to your child's GP or paediatrician (if your child is seeing one). It may be helpful to bring a copy of this factsheet with you. Your doctor can refer you to a paediatrician who specialises in audiology, or a specialist balance service for assessment and rehabilitation support if needed.

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