

MENINGITIS-RELATED DEAFNESS

Severe sensorineural deafness is a common complication of bacterial meningitis, particularly in children. The problem commonly occurs after childhood pneumococcal middle ear infections. The deafness may be single sided or affecting both ears, of variable severity, and is easily overlooked as the child may be severely affected in other ways, making hearing assessment difficult in the post-infection period, especially in the very young infant.

Whilst in many cases the loss of hearing is due to damage to the receptor hair cells of the inner ear the problem may be complicated in other ways. Severe inner ear infection may result in progressive scarring or bony obliteration of the inner ear. In some cases the auditory nerve may be damaged (neuropathy), or the auditory pathways of the brain damaged. Indirectly, general loss of intellect, loss of muscular or sensory abilities, or other specific brain functions may cause complex problems. Complicating this further, psychological, family or social influences may also be troublesome.

Management of the affected child therefore demands prompt and effective management. Because of the risk of progressive inner ear damage, physicians are very aware of the threat, and otological appraisal is undertaken at the earliest possible time. Other assessments for developmental delay, neurological, ophthalmological and other aspects are also expedited.

The outlook therefore depends on not only the degree of deafness, but whether the problem is unilateral, bilateral, due to hair cell or more advanced inner ear/ auditory nerve or brain damage, and also the presence of other non-hearing pathology, whether bodily, psychological or social/family.

Evaluation of hearing will include audiology, CT and MRI. Pure tone audiology and assessments of speech discrimination assess the unaided communication, or the potential for hearing aids. Otoacoustic emission assessments reflex testing and electrocochleography help determine hair cell damage from auditory nerve pathology. CT and MRI scans check for cochlear obliteration and neural/brain damage. Neurological, general medical, psychological and other health appraisals may also be required.

Management will depend on the degree of hearing and other afflictions. Lesser hear losses generally respond well to hearing aids, but more advanced losses may indicate cochlear implantations. Such cases will be managed as medical emergencies to head off the risk of irreversible cochlear obliteration that may preclude implantation. Simultaneous bilateral implantation may be optimal.

Unilateral profound losses are commonly managed by cochlear implantation, as these implants are greatly beneficial in heading off the disability of unilateral deafness (head shadow, direction finding, stereo effect, hearing in noise and binaural summation).

"Silverton Place"

101 Wickham Terrace
Brisbane Qld 4000

P: 07 38397677 F: 07 38325723

Other Locations

Beenleigh

Sunnybank

Mt Ommaney

Caboolture

If cochlear obliteration is present, and the other ear is normal, a CROS (contralateral routing of sound) aid may be used to eliminate “head shadow” – the dead zone of approximately 30° out from the deaf ear. The aid transmits sound from a deaf side receiver to an aid in the better ear. A BiCROS variemat combines with an air conduction aid in the better ear if the latter is partially deaf.

Alternatively, a bone conduction implant may be used (Med El Bonebridge or Cochlear BAHA). As with the CROS aid, these eliminate the dead zone, but don't provide the fuller experience that the CI achieves. However, the quality of sound from the CROS/Bone conduction devices is superior to the CI. A rule of thumb suggests the use of a CI in recent, younger, or uncomplicated cases, the other devices in delayed, complicated or older patients.

In summary, deafness should be excluded as quickly as possible in post-meningitic patients. Delay may lead to major difficulties. However, technology may now be of great benefits to most of those meningitis cases affected by hearing loss.

“Silverton Place”
101 Wickham Terrace
Brisbane Qld 4000
P: 07 38397677 F: 07 38325723

Other Locations

Beenleigh

Sunnybank

Mt Ommaney

Caboolture