

The child with suspected hearing loss

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This case study is based on the CPG Management of otitis media with effusion in children (page 32-35).

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Case History

An 8-year-old girl was noticed by her parents to be less attentive and she would respond only after being called several times. She had just recovered from an upper respiratory tract infection two weeks before. The parents brought her to see a primary care physician. The patient had no other complaints, and the rest of the history was unremarkable. Physical examination was normal except for the otoscopic findings shown below (Figure 1) Tuning fork tests indicated conductive deafness.



Figure 1. Otoscopic findings

Questions

1. Describe the otoscopic findings (Figure 1)?
2. What is the diagnosis?
3. Which tuning fork tests are helpful in an outpatient setting to assess deafness?
4. How would you manage this patient?
5. What are the indications for referral ?

Answers

1. The tympanic membrane is dull (loss of cone of light). There are air bubbles in the middle ear.
2. Otitis media with effusion.
3. Rinne's and Webers tests.
4. Active observation. Intranasal steroids can be given for a period of up to six weeks in children with concurrent allergic rhinitis or adenoid hypertrophy.
5. Persistent otitis media with effusion for three months will require a referral to an otorhinolaryngologist for consideration of surgical intervention.

Discussion

Otitis media with effusion (OME) is a condition characterised by accumulation of fluid in the middle ear without signs of acute inflammation. It is common in children, with 80% of them having at least one episode of OME by the age of 10 years. The accumulation of fluid in the middle ear results in mild conductive hearing loss and usually occurs bilaterally. Most cases of OME resolve spontaneously, requiring no further treatment. However, resolution failure results in prolonged hearing impairment, which can lead to speech and language delay and poor school performance.

As there is no specific presentation for this disease, it is often under-diagnosed. Mild hearing impairment often goes undetected and therefore any child with suspected hearing impairment has to be investigated for this condition. The suspicion of hearing impairment in children is based on parental

concerns, speech impairment or delay and poor academic performance. OME has also to be ruled out in children with recurrent acute otitis media, acute tonsillitis and nasal congestion.

The diagnosis of OME is based on otoscopy or pneumatic otoscopy. Otoscopic findings include a dull, retracted tympanic membrane, air fluid levels, air bubbles and impaired mobility with pneumatic otoscopy. There are a number of differential diagnoses for conductive hearing loss in children. These include otitis externa, impacted wax, acute otitis media and chronic suppurative otitis media. Diagnosis is readily established based on characteristic otoscopic findings. (Kindly refer to CPG for otoscopic findings.)

Tuning fork tests, the, Rinne's and Webers tests, can be performed on children above the age of 4 years. However, the physician has to be aware that the reliability depends on the ability of the child to understand and complete the tests. A child with bilateral conductive hearing loss will demonstrate a negative Rinne's and a central Webers test.

Audiometry and otorhinolaryngology referral is not indicated at initial presentation as hearing impairment is mild, and most cases of OME resolve spontaneously. The exception to this is if there are structural or functional effects of the disease, which indicates persistent disease. Structural effects are changes to the tympanic membrane, which result in severe retraction of the tympanic membrane or cholesteatoma.

Non-surgical management is the first line of treatment. This primarily consists of active observation. Active observation refers to educational and behavioural strategies to minimise the impact of hearing loss before surgical intervention is considered. This includes facing the child when speaking, getting the child's attention before starting to talk, reducing background noise to the minimal, speaking clearly with normal rhythm and volume, using visual cues (such as hands and pictures) in addition to speech, reading to or with the child (explain pictures and ask questions), repeating words, phrases and

questions when misunderstood and placing the child near the teacher in the classroom.

Medical therapy has a limited role in the management of OME except for intranasal steroids, which can be given for a period of up to 6 weeks in patients with adenoid hypertrophy or allergic rhinitis. Antihistamines have no benefit.

Surgical intervention is considered after three months of persistent OME. Referral to an otorhinolaryngologist is required for audiological assessment and surgical planning. Myringotomy with ventilation tube insertion is the procedure of choice.

OME with effusion is more common among children with craniofacial anomalies, including cleft palate and Down syndrome (DS), and as such requires an early referral to an otorhinolaryngologist. In patients with cleft lip and palate or DS, hearing aids may be considered as an alternative to surgery after carefully weighing the benefits and risks of a surgical procedure.

In this case, the child developed her symptoms following an upper respiratory tract infection. Nasal congestion predisposes her to OME. The accumulation of fluid in the middle ear causes conductive deafness and thus explains her reduced responsiveness. Tuning fork tests confirm the conductive deafness. Diagnosis is confirmed by otoscopy with characteristic findings of air-bubbles in the middle ear. Management is conservative and expectant as most cases of OME resolve spontaneously. However, persistence of disease for 3 months will require referral to an otorhinolaryngologist for further management to prevent the structural and functional effects of the disease explained above.

The importance of this CPG in general practice is that it is a common paediatric condition that is fairly 'silent' and, if left untreated, can result in structural damage to the tympanic membrane and hearing impairment. Early detection is important for it can result in early intervention and prevention of complications.