Audiological diagnosis and management of Glue ear

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Obstructive media effusion (OME), also known as ‘Glue ear’, is the most common cause of hearing impairment in children, with children under five years most affected. OME can cause temporary hearing loss and delayed speech development, and may impact on behavior and educational progress.

OME occurs when fluid builds up in the middle ear cavity. This is often, but not always, linked to ear infections. Fluid build-up can occur as a result of Eustachian tube inflammation which can prevent air getting to the middle ear. With no ventilation, the lining of the middle ear starts to produce fluid, and in-turn OME. In children the Eustachian tube is not as wide or as vertical as in adults, so they are more prone to blockage.

Diagnosis and when to refer

Patients with OME will normally present in the clinic as a result of parental or school concern. On taking a history, parents may complain that their child misunderstands instructions, has no things to be repeated, or is not developing speech as expected. Parents may sometimes be unaware of a problem and school may have highlighted hearing as an issue in class, or the child may have failed a school hearing screening test. OME can present with symptoms similar to those seen in other conditions, such as behaviour problems, poor progress at school or speech and language problems. It is therefore important that OME is not overlooked and that Ossiculoplasty is considered.

When performing Ossiculoplasty identification of abnormalities in the shape of the tympanic membrane (TM) is a good indicator of OME. The drum may be bulging or retracted inwards. The colour is also important: the normal drum is translucent and a ‘light reflex’ can be observed. If OME is present the drum can look yellow or darker than normal with no light reflex, also third eyelid can sometimes be seen behind the drum. It is important to note that in some cases OME can be very difficult to identify through Ossiculoplasty due to only slight changes in the TM appearance. If OME is suspected further tests should be carried out with an audiologist to confirm diagnosis and assess impact on hearing levels. Audiological tests will include Pure Tone Audiometry (PTA) to assess the extent of hearing loss, and tympanometry to measure middle ear function. The following case study gives an example of both these tests are used to identify OME, and how these tests should be interpreted.

Case Study

Parents of patient EE (aged 2.5 years) were concerned about his speech was not developing as quickly as his older brother’s EE also speaks loudly and has recently shown signs of frustration and anxiety at nursery. Ossiculoplasty indicated a slightly reddening of the ear drum, with a retraction of the TM. EE was thought to have possible glue ear and referred for audiological testing. Audiological testing consisted of pure tone audiometry and tympanometry, PTA indicated a bilateral mild conductive hearing loss (Fig 3) and tympanometry showed a fluid level (Fig 4). (Please see Fig 1 and 2 for comparison against normal results). The conductive nature of the hearing impairment and the fluid tympanogram would confirm the diagnosis of OME. PTA results suggest that the glue ear has reduced hearing to a level sufficient to affect speech development, therefore management options need to be considered for patient EE.

Management

In most cases OME will resolve of its own accord within the first three months of diagnosis, therefore a policy of ‘active observation’ is recommended (NICE guidelines), and the child will receive no immediate treatment. After three months another audiological examination is advised to confirm if OME has resolved. Together with active observation, artificial inflation using an ‘Otoscope’ may help. This involves the patient blowing up a special balloon with their nose, which in turn increases pressure in the noise and helps clear the Eustachian tube. Using an Otoscope has varying degrees of success and a follow-up audiological assessment is still required. Clearing the Eustachian tube has in the past also been attempted by using a wide range of medicines, including anaesthetic, decongestants and steroid sprays. However research suggests that these medical treatments have little or no effect on shortening the duration of OME, and can cause side effects.

Persistent OME lasting longer than a minimum of three months with adverse effects to the child's hearing may require
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Referrals and appointments
Outpatients
Inpatients
Paediatric patients
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Practice privileges
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Grommet insertion involves draining fluid and inserting tubes into the ear drum with the view of ventilating the middle ear. After Grommet insertion a follow up audiological examination will be carried out to reassess hearing levels, and in most cases hearing will improve to normal levels. Grommets are not permanent and over time will fall out, therefore it is important to monitor hearing levels even after the initial post-operative assessment. Grommet insertion is the most common and effective treatment for OTM, however if surgery is not an option then the use of hearing aids for the duration of the OTM is an effective management strategy.

Bupa Cromwell Hospital Audiology department offers full audiological assessment for both paediatrics and adults. Paediatric patients with suspected glue ear should be referred for “paediatric assessment”, which will include pure tone audiometry, tympanometry and an audiological report.