Identification of otitis media with effusion by primary health workers

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A recent article in this journal[1] gave an overview of middle ear conditions (otitis media) and detailed the steps primary healthcare workers (PHWs) should take to manage them. The present article focuses on otitis media with effusion (OME), because its symptoms and signs are not particularly clear and can easily go unnoticed if health workers are not aware of the condition.

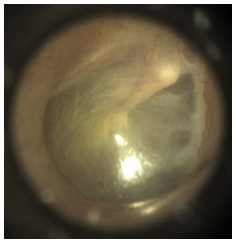
OME, also known as middle ear effusion, 'glue ear' or secretory otitis media, is defined as the presence of fluid in the middle ear (behind the eardrum) without signs or symptoms of acute ear infection (no fever or pain). The eardrum is not perforated. The fluid can vary from a watery (serous) liquid (in which case air bubbles may be present and/or a fluid level seen) to a sticky mucus (when air bubbles and a fluid level are not present). OME is more common in children than adults and may affect one or both ears, with both ears being the most common.

PREVENTION OF OME

The following will help:

- Managing upper respiratory tract infections in a timely and appropriate manner
- Managing long-term conditions such as chronic rhino-sinusitis, allergies, etc.
- Avoiding smoking and passive smoking
- Breastfeeding babies consistently and for a significant duration
- Avoiding feeding babies when lying flat on their backs (breast or bottle)
- Adequate nutrition (good and balanced diet)

Figure 1 **A normal-looking ear with an intact eardrum**



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Identification of OME at primary level: why it matters

Impact of OME

- OME causes hearing loss, which can usually be reversed after treatment. However, the hearing impairment caused by OME in children may be severe enough to affect language development, learning, attention span, task orientation and school performance. This is particularly likely in children with long-standing bilateral OME.
- Hearing impairment may be aggravated in children with pre-existing hearing loss, speech and language delay or disorder, autism, Down's syndrome or other craniofacial disorders, blindness or uncorrectable visual impairment, and cleft palate. For these children, early identification and management is more urgently needed.
- Acute otitis media (AOM) can occur more frequently in those who have OME and it can lead to eardrum perforation and chronic suppurative otitis media (CSOM), which is much more difficult to manage at primary healthcare level and can lead to complications.
- OME is uncommon in adults but may occur as a result of a viral infection affecting the nose or sinuses, cancer of the nasopharynx or systemic conditions affecting the nasopharyngeal lymphoid tissue (e.g. HIV/AIDS). If OME is found in only one ear, then it could indicate a tumour in the post-nasal space and the adult should be referred to an ENT doctor for further examination.

OME in the community

OME is of relevance to PHWs since it is commonly found among children in the community. The prevalence of OME in Asia, Middle East and Africa ranges from about 9 to 30% of children below five years of age.[2] In high-income countries, OME is one of the commonest ailments of childhood.[3]

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Otoscopy is essential for diagnosing otitis media with effusion. MALAWI

OME is completely reversible if it is treated early and any associated conditions are also adequately managed. PHWs are in the best position to identify OME early, as they are patients' first point of contact with health services.

Causes of OME

- Inflammation or infection can block the Eustachian tube and ultimately lead to fluid accumulation in the middle ear cavity.
- In children, fluid formation in the middle ear is often associated with coughs, colds and sore throats.
- OME may recur or persist in people with repeated or long-standing episodes of upper respiratory inflammation.
- An episode of AOM may fail to resolve completely and result in OME.
- In adults, OME has more serious implications, as it may be associated with systemic disease or with cancer of the nasopharynx.[4]
- Other factors associated with an increased likelihood of OME include: asthma, allergy, family history, as well as genetic, environmental (e.g. smokers in the household), anatomical, social, dietary and immunological causes.

Symptoms of OME

There is no pain or fever associated with OME and patients may not complain of the resulting hearing loss, particularly if the patient is a young child.

When OME is symptomatic, children may present with ear discomfort, hearing difficulties, sleeping and behavioral problems (such as poor performance in school), or difficulty in maintaining body balance. Adults may complaint of moderate hearing loss, or a sensation of 'full' ear. Occasionally tinnitus or balance problems may be the presenting symptom.

As symptoms of OME are often not dramatic enough to warrant a consultation with a health professional, it is important to always perform an otoscopic examination of both ears.

Diagnosing OME using an otoscope

It is primarily the appearance of the eardrum that will help you to diagnose OME. The eardrum is not perforated in OME but you should look for the following:

- Air bubbles behind the eardrum (Figure 2a).
- Fluid level behind the eardrum: it appears as a concave hairline separating the air inside the middle ear from the fluid below (Figure 2a).
- The presence of fluid makes the eardrum appear less translucent than normal when you shine a light on it; the eardrum is never red or inflamed but dull and darker than usual (Figure 2b).
- In long-standing OME, the eardrum may look indrawn, sometimes even collapsed over the middle ear ossicles (Figure 2c).

At least two of these signs should be present.

These objective signs may, however, be difficult to observe during simple otoscopy. Health workers can try the following helpful manoeuvres to confirm the presence of OME:

- Ask the patient to **gently** blow his/her nose or to swallow while nose and mouth are closed. This may facilitate entry of air into the middle ear cavity and make the air bubbles or fluid level easier to observe.
- Shift the patient's head by tilting it or asking the patient to look up or down and then look for changes in the position of the air-fluid level.
- Attach a small rubber bulb to the side port of the otoscope head (if it has one), then squeeze the bulb **gently** to force air into the ear canal and move the eardrum. The absence of eardrum movement may suggest the presence of fluid in the middle ear. **Note:** make sure that the ear canal is adequately sealed by the otoscope's speculum, so that the air does not leak out, producing a false positive result.

Management of OME

Children who have been diagnosed with OME should be carefully and regularly observed for four to six weeks, during which the condition may resolve naturally.

Give the patients and/or their carers some tips to replace the middle ear fluid with air: e.g. tell them to breathe in, close their mouth and pinch their nostrils, then blow their cheeks up.[1]

Antibiotics are not routinely prescribed for treating or preventing OME because they are not clearly proven to be of benefit and because of their side effects and the increased risk of creating bacterial resistance. At primary level, the use of intranasal or systemic steroids, antibiotics, antihistamines or decongestants should not be recommended for the treatment of simple OME (i.e. with no associated conditions such as allergies or infections).[5]

Referral to an ENT department

If OME persists after four to six weeks, refer the patient to an ENT department, where the aetiology will be investigated and treatable causes (e.g. infections or allergies) will be dealt with. Surgery may also be needed.

The surgery of choice for children under four years of age is the insertion of ventilation tubes (VTs) – also known as grommets – through small eardrum incisions (under general anaesthesia or monitored sedation). VTs allow air to circulate within the middle ear and can restore hearing whist the middle ear condition resolves. They are often spontaneously extruded into the ear canal within three to six months.

For children who are four and older, three options may be given: VT insertion, adenoidectomy, or both interventions at the same time.[5] Adult patients with persistent OME are managed with VT insertion.

If OME is present in a child with pre-existing hearing loss, they should be referred for a hearing test.

This test should also be performed if a child has presented with OME for four to six weeks. Hearing tests should be carried out before any surgery and after.

Follow-up

Chronic OME cases should be re-evaluated by a specialist every three to six months until resolution. Clinicians should check for the presence of hearing loss and/or structural eardrum or middle ear abnormalities.

References

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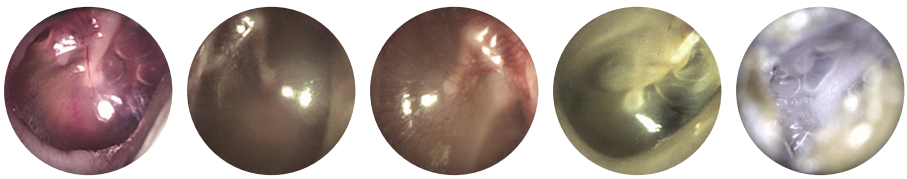
[3] VK Das. Prevalence of otitis media with effusion in children with bilateral sensorineural hearing loss. Arch Dis Child 1990; 65: 757–759.

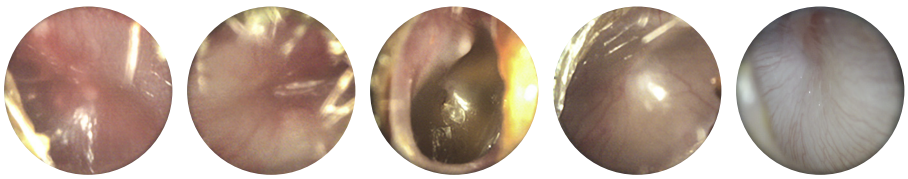
[4] R Mills and I Hathorn. Aetiology and pathology of otitis media with effusion in adult life. J Laryngol Otol 2016;130(5): 418–24.

[5] RM Rosenfeld et al. Clinical Practice Guideline: Otitis Media with Effusion (Update). Otolaryngol Head Neck Surg 2016; 154(1 Suppl): S1–S41.

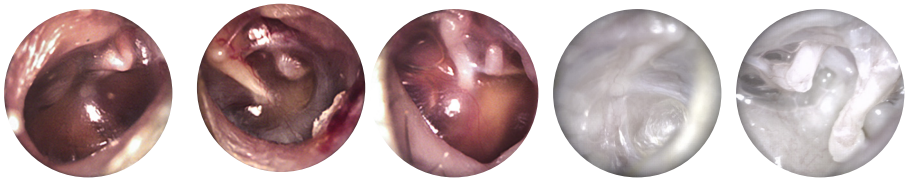
Figure 2 **Otoscopic pictures showing different degrees of OME**



2a OME with early and/or mild middle ear changes: mild changes in eardrum appearance (still translucent and not retracted); the malleus – the first ossicle, which is attached to the eardrum – is clearly visible and in the correct position; the middle ear cavity has fluid in it, but is still permeable (sometimes with presence of air bubbles or an air-liquid level).



2b OME with mid-term and/or moderate changes: moderate changes in eardrum appearance (opaque and/or dull and/or thickened); the ossicles are affected (handle of the malleus becomes more horizontal and/or not clearly visible); the middle ear cavity has thick fluid in it and no visible air bubbles or air-liquid level.



2c OME with long-term and/or severe changes: severe changes in eardrum appearance (thinned and/or scarred and/or retracted/collapsed onto the ossicles); the ossicles are heavily affected (malleus is displaced and/or wrapped by the eardrum); the middle ear cavity is nearly non-existent (no funtional space between the eardrum and the medial wall of the cavity).

IMAGES COURTESY OF THE AUTHORS AND TONY SIRIMANNA