

Malignant Otitis Externa (MOE)

Case Definitions

Malignant Otitis Externa (MOE) or skull base osteomyelitis, is an invasive, potentially fatal, infection of the external ear canal and surrounding skull bone that typically occurs in elderly patients, or patients with diabetes mellitus (DM), end stage renal failure (ESRF) or are immunocompromised.

MOE can occur secondary to BOTH otitis media and otitis externa but is more common secondary to otitis externa. The most common causative organism is *Pseudomonas aeruginosa*.

Screening and Clinical Assessment

In high-risk patients (elderly / immunocompromised/DM/ESRF), screen for ear discharge and ear pain periodically.

Examination of any discharging ear in all adult patients must always document the function of the facial nerve at EVERY clinical encounter by assessing the ability of patients to move all parts of the face. Subtle facial weakness can be detected by asking patients to rapidly blink. All major facial muscle groups need to be clinically assessed for a comprehensive assessment.

Persistent severe otalgia (ear pain) and otorrhoea (ear discharge) out of proportion to clinical findings despite ototopical treatment may be suggestive MOE. Patients can also present with granulation tissue within the ear canal at the bony cartilaginous junction. In severe cases MOE can result in cranial nerve weakness as infection spreads along the skull base from the ear. A full neurological examination should be conducted.

Re-presentation with persistent pain or otorrhoea post-trial of standard treatment for otitis externa or media by the GP, health worker or hospital emergency department with no improvement to their symptoms needs consideration for MOE.

A previous diagnosis of uncomplicated otitis externa or otitis media should not substitute for careful assessment of the patient at each clinical encounter.

Investigations

If a high-risk patient (as outlined above) presents with a suspicion of MOE, ensure an ear swab for MCS and blood cultures are collected as soon as possible. This is preferably before starting any antibiotic treatment because MCS results can be difficult to interpret post starting antibiotics. Baseline blood tests such as a full blood count, urea and electrolytes, and C-reactive protein and HbA1c in diabetic patients should also be performed.

An urgent CT scan of the temporal bone should be requested which will indicate the presence of bony ear erosion.

If an urgent CT scan is not available or if the CT scan does not report any signs of bony erosion but the clinical suspicion of MOE is still high, the patient needs to be urgently referred to the on-call ENT registrar in Perth for an assessment. This is because the CT scan may be normal in some patients. Patients will then require an MRI scan of the temporal bones including diffusion weighted imaging (DWI), and may also require a bone scan and gallium scan which look for infection within the bone surrounding the ear.

All patients suspected of having MOE should be discussed with the on-call ENT registrar.

Alert Box

*Immunocompromised patient with ear pain and discharge or who have not responded to standard therapy **THIS IS A RED FLAG**, and should be further investigated with a CT temporal bones as first line if available.*

All patients who are suspected to have MOE should be discussed with the on-call ENT registrar.

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Management

Contact the on-call ENT registrar to discuss the case and contact the on call infectious diseases team for antibiotic advice if MOE is suspected.

As outlined above a CT temporal bone is first line imaging of choice if available. If a CT is not urgently available, commence empirical IV antibiotics and topical antibiotics until this can be obtained.

- Generally, IV Tazocin is first line therapy (cover pseudomonas).
- Topical ciprofloxacin + HC drops should also always be administered as per topical protocol.
- Continue strict dry ear precautions until clinical review.

The ear should be toileted before starting ear drops, using suction (if available), manual ear toileting using tissue spears (as per the protocol) or curette.

Ear syringing should be avoided unless discussed with the on-call ENT registrar.

Appropriate analgesia should be given. Be aware of patients who may be drowsy or have other cranial nerve weakness or paralysis. Care should be taken in these patients before prescribing opioid analgesia that may result in drowsiness.

Aggressive blood sugar control in diabetic patients with suspected MOE should also be done.

The on-call ENT registrar will advise on patient disposition and if transfer to Perth is required.

Surgery is rare in MOE patients.

Other additional treatments include hyperbaric oxygen therapy through specialty units in Perth will be decided on a case-by-case basis.

Follow Up

Decision for ongoing management in peripheral hospitals will be decided if MOE has been diagnosed and patients deemed appropriate for peripheral care.

If patients are transferred to Perth for assessment and management, long term antibiotics can be conducted in peripheral community hospitals once patients are clinically stable. Antibiotic time frame and delivery is decided by Infectious disease teams.

Referrals

Specialist input is advised if MOE is suspected or diagnosed. Discuss with ENT and/or Infectious Disease teams regarding the patient management and disposition.

Resources

Carfrae, Matthew J. et al. Malignant Otitis Externa. Otolaryngologic Clinics of North America 2008; 41 (3) 537 – 549.

Grandis J, Branstetter B, Yu V. The changing face of malignant (necrotising) external otitis: clinical, radiological, and anatomic correlations. Lancet Infect Disease 2004; 4: 34-39.

[Clinical practice guideline](#). Emergency Department Royal Eye and Ear Hospital Victoria. Malignant Otitis Externa.