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10-MINUTE CONSULTATION

Otitis externa

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What you need to know

- Acute uncomplicated otitis externa can be managed effectively with topical treatments, for up to 14 days if required
- Clues for malignant otitis externa include fever, disproportionate pain, or a poor response to first line treatment, particularly in people with diabetes or immunocompromise
- Consider cholesteatoma in patients with recurrent discharge

A 57 year old man presents to his general practitioner with a 3 day history of severe right sided ear pain, reduced hearing, and discharge. He is a self-employed car mechanic with a small business, and has been absent from work for the past two days because of the pain and subsequent lack of sleep. He has hypertension and type 2 diabetes.

Otitis externa is an infection of the skin of the outer ear canal which typically presents with severe otalgia

with or without ear discharge and reduced hearing. It is a common condition with an annual incidence of 1% that affects 10% of the population during their lifetime.^{1,2} In 98% of cases the cause is bacterial, with *Pseudomonas aeruginosa* and *Staphylococcus aureus* the most common pathogens.³ Otitis externa often causes severe pain and can have a major impact on quality of life, disturbing sleep, and the ability to work or exercise.

What you should cover

As with any primary care consultation, take a focused history to narrow down the differential diagnosis ([table 1](#)) and explore the patient's ideas and concerns. Ask specifically about risk factors and clinical features for malignant otitis externa ([box 1](#)). This extension of the infection into the temporal bone can be easily missed and is a serious complication requiring long term intravenous antibiotic treatment. If not treated it may lead to sepsis and intracranial complications.

Table 1 | Differential diagnosis³

	<i>Pain</i>	<i>Itch</i>	<i>Discharge</i>	<i>Fever</i>	<i>Duration</i>	<i>Other features</i>
<i>Acute otitis externa</i>	+++	++	+	Uncommon	<6 weeks	Severe pain is the hallmark of otitis externa, commonly associated with purulent discharge
<i>Chronic otitis externa</i>	+	++	+/-	Uncommon	>3 months, usually relapsing-remitting	May be associated with an underlying dermatological diagnosis
<i>Acute localised otitis externa (furuncle)</i>	+++	-	-	Uncommon	Hours or days	Severe localised pain. A small staphylococcal abscess of the hair follicle occurs in the hair-bearing outer part of the ear canal
<i>Malignant otitis externa</i>	++++	+/-	+	Fever should prompt suspicion of malignant otitis externa, particularly in at-risk patients (box 1)	Acute onset. Persistent and refractory to treatment	History of diabetes, older age, or immunocompromise
<i>Otitis media</i>	+++	-	+/-	May be present	Hours or days	Tympanic membrane is erythematous or bulging
<i>Wax</i>	+/-	+/-	+/-	Absent	Variable	
<i>Herpes zoster oticus (Ramsay-Hunt syndrome)</i>	+++	+/-	+/-	Uncommon	Hours or days	Vesicles may be present within the ear canal. Facial palsy
<i>Cholesteatoma</i>	+/-	+/-	++	Absent	Days to years	Persistent or recurrent otorrhoea. Deep retraction pocket in the tympanic membrane—most commonly pars flaccida. Previous ear surgery (for cholesteatoma or grommets), recurrent infections

Box 1: Malignant otitis externa

Malignant otitis externa is a rare but serious extension of otitis externa, whereby infection spreads to surrounding structures leading to osteomyelitis of the temporal bone. Soft tissue, cartilage, and bone are all affected as osteomyelitis spreads along the skull base.⁴

Risk factors

- Diabetes—up to 90% of patients with malignant otitis externa have diabetes^{5 6}
- Older age
- Immunocompromise

Differentiating otitis externa from malignant otitis externa

- Clinically, differentiating malignant otitis externa from otitis externa is challenging and may not be always possible on the initial assessment in primary care. Have a high index of suspicion in patients with risk factors, in particular diabetes, who have otitis externa that is not responding to initial treatment
- Granulation tissue or exposed bone in the floor of the osseocartilaginous junction, if seen, is pathognomonic of malignant otitis externa
- One clear difference that would point towards malignant otitis externa is cranial nerve involvement, typically facial nerve palsy⁶
- Disproportional pain with fever may indicate malignant otitis externa, however otitis externa is known to be extremely painful so this is a relatively soft differentiating sign and should be used alongside the full clinical picture. Associated vertigo and hearing loss may indicate malignant otitis externa

- If you suspect malignant otitis externa arrange an urgent (same day) ear, nose, and throat (ENT) review. A computed tomography imaging scan is typically required to confirm the diagnosis.⁵

Ear symptoms

- **Duration**—Symptoms of acute otitis externa typically last less than six weeks; chronic otitis externa lasts more than three months. Symptoms that last between six weeks and three months are defined as subacute otitis externa.
- **Pain**—Pain is present in 70% of people with acute otitis externa,³ however, deep severe pain that is out of proportion to the general presentation of the patient should alert you to the possibility of malignant otitis externa.
- **Itch**—Itch is present in 60% of acute otitis externa cases.³ It can be a symptom of the infection itself, or of an underlying dermatosis such as eczema or psoriasis.
- **Discharge**—Bacterial infection is typically associated with scant white purulent discharge, which occasionally can be thick. Fungal discharge is typically described as fluffy white to off-white, but can also be black or grey, with or without fungal spores.⁷
- **Hearing loss**—Loss of hearing typically presents only when discharge or swelling obscures the tympanic membrane and therefore improves with resolution of the infection. Hearing loss

is present in around a third of cases of acute otitis externa at initial presentation.³

- *Tinnitus*—Tinnitus is rarely seen in isolation with otitis externa, but a conductive hearing loss caused by ear canal oedema may worsen pre-existing tinnitus.

Systemic symptoms such as fever, headaches, or loss of appetite are unusual in uncomplicated otitis externa and should rouse suspicion of malignant otitis externa or an alternative pathology.

Risk factors for otitis externa³

- Water exposure—This is typically from swimming, with fresh water being highest risk, but organisms responsible for acute otitis externa are also often found in hot tubs and water sources that comply with water quality standards
- Trauma—Trauma to the ear canal can occur from cleaning, scratching, or instrumentation
- Use of hearing aids or ear plugs as these can introduce bacteria and cause trauma, and may cause the ear to sweat
- Dermatitis
- Diabetes, other causes of immunocompromise, or older age
- Previous ear surgery.

Examination

Examine both ears, starting with the unaffected or less affected ear.

Inspect the ear for erythema, swelling, or scarring. Erythema and swelling primarily affecting the pinna, but sparing of the ear lobe may indicate perichondritis: seek a same day ENT opinion as urgent intravenous antibiotics may be indicated to prevent sepsis and long term deformity from destruction of the cartilage. Simple pinna cellulitis will typically involve the ear lobe.

Worsening pain with traction of the pinna or when pressing the tragus is characteristic of otitis externa,⁸ but if the diagnosis is clear this test may not be necessary to your examination.

Examine the mastoid area for erythema, swelling, and tenderness. Tenderness over this area is common in otitis externa, however if the patient has associated boggy/fluctuance, loss of the post-auricular sulcus, or protrusion of the pinna, this should raise suspicion of mastoiditis and we recommend a same day ENT review. Mastoiditis is rare, particularly in adults. It is a complication of otitis media rather than otitis externa as the mastoid is contiguous with the middle ear.

Otoscopy

Gently examine the external auditory canal and tympanic membrane. Otitis externa is indicated by inflammation and erythema of the ear canal. White debris, which can be thick, and commonly has an offensive odour, is often present in the canal (fig 1, fig 2). The tympanic membrane may be difficult to see clearly because of swelling of the walls and debris within the canal.



Fig 1 | Otitis externa. White purulent debris can be seen at the external auditory meatus.



Fig 2 | Otitis externa. The ear canal is narrowed, making it appear more slit-like, with white debris sitting on the canal wall

If the patient reports systemic features or appears unwell, check their temperature, heart rate, and blood pressure. These observations will rarely be out of normal range in uncomplicated otitis externa.

What you should do

Acute uncomplicated otitis externa

Topical antibiotics can be prescribed in preparations with or without corticosteroid. A Cochrane review in 2010 found topical antibiotics to be effective for uncomplicated acute otitis externa, with little to no difference between the efficacy of different topical treatments.^{9 10} Sprays are a good first choice, as they may be easier to use than drops and are often better tolerated.¹¹ Regardless of which topical agent is prescribed, 65-90% of patients improve clinically in 7-10 days.³ Some patients require a longer course of treatment, and those who still have symptoms after 7 days should continue the same treatment for up to 14 days. If not resolved after 14 days, then consider this as treatment failure.⁹ Acetic acid can be used as an alternative to topical antibiotics in mild cases of otitis externa.

Oral antibiotics are rarely indicated. Their use should be reserved for patients with poorly controlled diabetes mellitus, immunosuppression, or where the infection extends beyond the ear canal causing pinna cellulitis.¹² In these instances topical treatment should still be used alongside oral antibiotics.

Minimise any aggravating factors—for example, advise patients to limit use of ear plugs or hearing aids if possible—and suggest that they keep the ear dry until the infection is resolved. This can be

achieved by placing cotton wool soaked in petroleum jelly at the meatus, sitting in the conchal bowl, but not inserted into the canal. Advise patients with associated skin conditions to consider avoiding possible precipitating factors (eg, use of earphones, soaps, certain hair products etc) to apply an emollient regularly, and to use a topical steroid cream during acute flare ups. Offer analgesia according to the World Health Organization analgesic ladder.

Heavy discharge, canal stenosis, and swabs

Consider cleaning the external auditory canal (known as aural toilet) if heavy discharge is present, as discharge may impair topical treatment. This can be done using either dry swabbing or microsuction. We do not recommend ear syringing as this will likely be very painful for the patient. To perform dry swabbing use a Jobson Horne with cotton wool wrapped around the tip (or a simple swab) to soak up the excessive discharge in the external auditory meatus under direct vision. Specific training is not required to perform dry swabbing, but remember that a clear view of the tip of the instrument or swab being used is important to ensure no damage to the tympanic membrane or middle ear structures. Note that without a microscope or endoscope you will not be cleaning very deep into the canal. Taking a swab for microscopy and culture is not necessary in patients with uncomplicated otitis externa.¹³ However, if treatment has not been effective after 14 days, taking a swab from the ear canal for culture can aid targeting antimicrobial treatment.⁹

Follow-up and treatment failure

Follow-up is not required for most patients with uncomplicated acute otitis externa. Review patients who have

- ongoing symptoms despite treatment
- accompanying extra-auricular cellulitis
- diabetes, or who are immunocompromised
- associated wax impaction or a stenosed ear canal, or if you were not able to see the tympanic membrane clearly enough to rule out other causes of infection and discharge such as a cholesteatoma.

In the UK, most ENT departments run emergency clinics for patients with otitis externa and other ENT emergencies, such as recurrent epistaxis and foreign body in the ear. For patients with otitis externa we recommend referring to an ENT emergency clinic if

- the otitis externa does not respond to 14 days of topical antibiotics
- the ear canal is completely stenosed where drops cannot penetrate and wick insertion may be required
- when the canal is full of debris and aural toilet cannot be carried out in primary care.

Education into practice

- Which topical treatments are recommended for otitis externa in your local prescribing guidelines?
- How do you assess and document the risk of malignant otitis externa in patients presenting with ear pain and discharge?

How this article was created

We discussed with our GP coauthor the common problems GPs face when assessing patients with otitis externa and what information would be most beneficial to include in the article. We carried out a literature search on 18 March 2020 with the search terms “otitis externa”, “otalgia”, “management of otitis externa”, and “risk factors for otitis externa”. We used these sources to explore the condition in depth looking at epidemiology, diagnosis, and management to compile a comprehensive approach for the management of otitis externa in primary care.

How patients were involved in the creation of this article

We discussed this article with a patient who had recently received a diagnosis and had been treated for otitis externa. She highlighted the need for appropriate and prompt treatment to avoid prolonged symptoms.

Contributorship and the guarantor: VB and NB conceived the article and are guarantors. SM provided relevant insight into general practice and advised on how best to present the article and areas it should cover. All authors wrote and reviewed the article, created the boxes, and helped with figures. VB was the contact for patient involvement.

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