

# Therapy Update

ENT



## PLAYING IT BY EAR

While acute otitis externa is a relatively common condition, treating it can still present some unexpected twists and turns.

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**T**HE external ear is subject to a wide variety of pathology. This article will focus on acute otitis externa (inflammation of the outer ear canal), with an emphasis on diagnosis, treatment and warning signs of more sinister pathology.

### Pathophysiology

Acute otitis externa (AOE) is usually infectious in nature. It is more common in warm, humid environments, with about 80% of cases occurring during summer.<sup>1</sup>

The condition is thought to result from a loss of integrity of the hydrophobic, acidic, ceruminous layer of the external auditory canal. This exposes the epithelium of the canal to water and bacterial infection. Infection leads to an inflammatory response causing erythema and oedema of the epithelium, with resulting otalgia, pruritus and jaw pain. If oedema is severe, hearing loss may result from occlusion of the canal.

Other factors that may predispose a person to AOE include anatomical obstructions such as exostoses (see figure 1), impacted cerumen or canal stenosis. The use of hearing aids, earplugs, or cotton ear buds may also predispose to infection. Water exposure is a significant risk factor and the condition is sometimes referred to as swimmer's ear. Immunosuppressed patients, including those with diabetes mellitus, AIDS or undergoing chemotherapy, are at greater risk of developing AOE and its complications.

The most commonly cultured organisms are *Pseudomonas aeruginosa*, *Staphylococcus epidermidis* and *Staphylococcus aureus*.<sup>2</sup> Fungal AOE is less common and accounts for 1-10% of cases.<sup>2,3</sup> Fungal otitis externa may, however, occur as an opportunistic infection following treatment for bacterial AOE. Patients with fungal otitis externa may complain more of pruritus than pain.

### Diagnosis

Otalgia in AOE may be severe and is often exacerbated by manipulation of the ear. Associated symptoms include itching, hearing loss and jaw pain. The external auditory canal will often be erythematous and oedematous. In the case

of suspected fungal otitis externa, the canal should also be inspected for the presence of fungal hyphae (see figure 2).

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There may be otorrhoea in the canal and the tympanic membrane may not be visible due to oedema. If the tympanic membrane can be visualised, it should be assessed for possible perforation or the presence of a ventilation tube (grommet). An episode of AOE can be secondary to acute otitis media, and ototoxic topical drops should be avoided in the presence of these.

The external auditory canal and conchal bowl should also be inspected for

malignant otitis externa (also known as necrotising otitis externa or skull base osteomyelitis), and squamous cell carcinoma or adenocarcinoma of the external auditory canal, which may present as a mass in the canal (see figure 4).

### Complications

Malignant (necrotising) otitis externa, or skull base osteomyelitis is a serious and potentially fatal complication of AOE. This complication affects immunocompromised individuals, most notably elderly patients with diabetes mellitus. Other predisposing immune deficiency states include AIDS, chemotherapy-induced aplasia, refractory anaemia, chronic leukaemia, lymphoma, splenectomy, neoplasia and renal transplantation.<sup>5,6</sup>

In this condition, infection spreads through the floor of the external auditory canal to the base of the skull, with associated formation of granulation

tissue. *P. aeruginosa* is the most common cause. However, fungal pathogens can also cause the condition especially in patients with AIDS, in whom *Aspergillus fumigatus* is the most common pathogen.<sup>5</sup>

Patients with skull base osteomyelitis will often have very severe otalgia or pain that is disproportionate to clinical findings. Patients may also complain of otorrhoea, aural fullness and hearing loss. These patients have typically failed appropriate topical and/or systemic antibiotic therapy.

On examination, the external auditory canal should be examined for the presence of granulation tissue or a polyp on the floor of the canal, as well as exposed bone. Extension into the skull base may result in cranial neuropathies, with the facial nerve most commonly involved. Carcinoma of the ear canal has a similar appearance and biopsy is necessary to rule out malignancy.

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from previous page nancy. Patients suspected to have skull base osteomyelitis should be referred to an otolaryngologist.

**Treatment**

If otorrhoea is present, a swab should be taken for culture. Ideally, debris in the external canal should be removed using a microscope and suction. However, in the primary care setting, cotton wool may be used under direct vision to wick away moist discharge. Syringing of the ear should be strictly avoided, especially if there is also a perforation of the tympanic membrane.

Pain management should be tailored to the severity of the disease, with non-steroidal anti-inflammatories being of benefit in the early acute phase. In more severe cases, patients may require paracetamol and codeine preparations for adequate pain relief. In patients without any contraindications, oral steroids for 48 hours may also be of benefit, with an average adult dose of 4mg dexamethasone BD.

In uncomplicated AOE, topical treatment is the appropriate initial step. Topical antibiotic drops have been shown to reduce the duration of symptoms compared with acetic acid drops, and there is currently insufficient evidence for the benefit of adding a steroid.<sup>7</sup> Ciprofloxacin eardrops are recommended as they are not ototoxic and treat the common pathogens responsible.

Patients should be shown how to properly administer eardrops by lying on their side with their affected ear up, instilling the drops into the ear and ‘pumping’ them into the external auditory canal by pressing firmly over the tragus of the ear. The patient should remain on their side for at least five minutes after instillation of the eardrops.<sup>8</sup>

In cases of severe canal oedema, the use of an otowick can allow antibiotic drops to bypass the obstruction to reach the medial aspect of the canal. An otowick can be inserted into the external auditory canal using non-toothed forceps and good lighting. Follow-up should be arranged for removal in 48-72 hours.

An important component of the treatment of AOE is maintaining strict water precautions for 10-14 days.

In acute fungal otitis, externa canal debridement is important, often requiring suction under microscopic conditions. Otological therapy includes antifungal agents such as cicloquinol, which is available in a combined preparation with a steroid (Locacorten-Vioform eardrops).

Patients should avoid try-

**Acute otitis externa red flags**

Consider referral in patients with:

- Diabetes or immunocompromised state
- Failure to respond to appropriate initial treatment
- Granulation tissue or exposed bone on the floor of external canal
- Mass/ lesion in the ear canal
- Vesicles in the conchal bowl or external ear canal suggestive of herpes zoster oticus

Figure 1.



Figure 2.





Figure 3.



Figure 4.

### Dry ear precautions and preventing acute otitis externa

- Avoid self-cleaning of the ear
- Place cotton wool with vaseline in external auditory canal when showering
- Use reusable adhesive (such as Blu-Tack) or earplugs and swimming band/caps when swimming
- Dry the ear with a hair dryer and use topical acetic acid/alcohol eardrops (such as Aquaear) after swimming
- For regular swimmers, consider using custom-moulded plugs

FOR YOUR ADULT PATIENTS WITH TYPE 2 DIABETES\*\*

\*As add-on to metformin and/or sulphonylurea



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# CONTROL AND CARE MATTER<sup>1-5</sup>



Before prescribing, please review the full Product Information, which is available on request from Boehringer Ingelheim or from <http://files.boehringer.com.au/files/PI/Trajenta%20PI.pdf>

**TRAJENTA® (linagliptin) 5mg film-coated tablets.** **INDICATION:** TRAJENTA® is indicated in adult patients with type 2 diabetes mellitus to improve glycaemic control in conjunction with diet and exercise, as add-on to metformin, sulphonylureas or metformin plus sulphonylureas. **CONTRAINDICATIONS:** Hypersensitivity to linagliptin or to any of the excipients. **PRECAUTIONS:** Not for use in type 1 diabetes, diabetic ketoacidosis; risk of hypoglycaemia (when used in combination with sulphonylureas); pregnancy; lactation; children < 18 years. **INTERACTIONS:** Antagonized by strong P-gp or CYP3A4 inducers (e.g., rifampicin); consider alternatives to linagliptin if used in combination. Others, see full PI. **ADVERSE REACTIONS:** *Very common:* Combination with metformin and sulphonylurea – hypoglycaemia; *Common:* Combination with metformin – arthralgia, back pain, headache; Combination with a sulphonylurea – nasopharyngitis, hypertriglyceridaemia; Combination with metformin and sulphonylurea – cough. Others, see full PI. **DOSAGE AND ADMINISTRATION:** Recommended dose is 5mg once daily taken with or without food. No dose adjustment is necessary for the elderly, or patients with renal or hepatic impairment. 26 November 2012. **References:** **1.** Two of a Kind (Kidneys in Diabetes). The burden of diabetic kidney disease and the cost effectiveness of screening people with type 2 diabetes for chronic kidney disease. Deloitte Access Economics, [www.deloitte.com/au/economics](http://www.deloitte.com/au/economics), June 2011. **2.** NKf/KDOQI. *Am J Kidney Dis* 2007; 49(suppl 2):S13-S179. **3.** Morris AD. *Diabetes Educ* 2003; 29:440-6. **4.** TRAJENTA® Product Information. Date of approval: 1 November 2011. **5.** Gallwitz B *et al.* *The Lancet* 2012; 380(9840):475-83. BOEHRINGER INGELHEIM PTY LIMITED ABN 52 000 452 308, 78 WATERLOO ROAD NORTH RYDE NSW 2113. ELI LILLY AUSTRALIA PTY LIMITED, ABN 39 000 233 992. 112 WHARF ROAD, WEST RYDE, NSW 2114 AUSTRALIA COPYRIGHT © 2012. ELI3365AUTRJ00129DPS/AD/MAR March 2013. Prepared February 2013.

ing to clean the ear with a cotton bud as this may exacerbate the disease. Hearing aids and earphones should be avoided for the duration of treatment and appropriate cleaning of such devices should be performed.

Most cases of acute otitis externa will resolve with medical therapy in 7-10 days. Systemic antibiotics are indicated in cases of AOE that involve extension beyond the external auditory canal to the pinna or periauricular skin and in patients with immune deficiency.<sup>8</sup> Patients suspected to have skull base osteomyelitis should be referred to an otolaryngologist for further investigation and management, which usually includes anti-pseudomonal agents such as ciprofloxacin. ●

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#### References

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**NEXT WEEK**  
Our How To Treat pull-out section features a breakdown of potential ENT emergencies.

**PBS Information: Streamlined authority code 3540 –**  
Type 2 diabetes, in combination with either metformin or a sulphonylurea – criteria apply.