

Evidence-based treatment of acute otitis externa

Outhoff K, MBChB, FPPM

Senior Lecturer, Department of Pharmacology, University of Pretoria, Pretoria

Correspondence to: Kim Outhoff, e-mail: kim.outhoff@up.ac.za

Keywords: acute otitis externa, evidence-based treatment

Abstract

Acute otitis externa (AOE), or diffuse inflammation of the external ear canal, causes a range of symptoms, including otalgia, otorrhoea, hearing loss and itching. Despite AOE being common, with a 12-month prevalence of approximately 1%, there is a paucity of evidence-based treatment guidelines. This contributes to a wide variation in its management, especially in general practice. In particular, there appears to be confusion over the roles of topical and oral antibiotics, as well as concerns about ototoxicity and the emergence of microbial resistance potentially caused by topical preparations. This article reviews the current evidence-based treatment of AOE.

Introduction

Acute otitis externa (AOE), or diffuse inflammation of the external ear canal, causes a range of symptoms including otalgia, otorrhoea, hearing loss and itching.¹ Usually, there is an optimal level of cerumen in the external auditory canal which provides a protective lipid film to the ear canal skin, lowers the pH and contains lysozymes, thereby creating an unfavourable chemical and mechanical barrier to infection.²

Therefore, risk factors for AOE include those that affect this milieu in some way, such as trauma and foreign bodies, including cotton buds, in the ear canal; skin conditions, such as eczema and psoriasis and other immunocompromising conditions, including diabetes.³ Ear irrigation with water to remove wax and frequent swimming also disturb the protective lipid film in the canal, while residual water provides an ideal warm and humid environment for the pathogenic organisms, particularly *Pseudomonas aeruginosa*, commonly found in acute diffuse externa otitis or "swimmer's ear." Not surprisingly, the risk of AOE is five times greater in swimmers than that in non-swimmers.²

Despite AOE being common, with a 12-month prevalence of approximately 1%,⁴ there is a paucity of evidence-based treatment guidelines. This contributes to a wide variation in its management, especially in general practice.^{1,5} In particular, there appears to be confusion over the roles of topical and oral antibiotics,¹ as well as concerns about ototoxicity and the emergence of microbial resistance potentially caused by topical preparations. These fears were somewhat allayed by a survey of 31 000 patients presenting to their general practitioners in which it was demonstrated that topical eardrops containing steroid alone or steroid plus antibiotics were associated with a decrease in disease persistence, while oral antibiotics were linked to an increase in disease persistence.⁴ An association was not found between the use of eardrops and recurrent disease, but a definite increase in the incidence of recurrent disease was demonstrated if treatment was carried out using oral antibiotics.

Table 1: Recommendations for the treatment of acute otitis externa⁶

Diffuse acute otitis externa should be distinguished from other causes of otalgia, otorrhoea and inflammation of the ear canal.

The patient with diffuse acute otitis externa should be assessed for factors that modify management (non-intact tympanic membrane, tympanostomy tube, diabetes, an immunocompromised state and prior radiotherapy).

Topical preparations should be used for initial therapy for diffuse, uncomplicated acute otitis externa. Systemic antimicrobial therapy should not be used unless there is extension outside of the ear canal or the presence of specific host factors, which indicate a need for systemic therapy.

The choice of topical antimicrobial therapy of diffuse acute otitis externa should be based on efficacy, low incidence of adverse events, and likelihood of adherence to therapy and cost.

Clinicians should inform patients how to administer the topical drops, and when the ear canal is obstructed, the delivery of topical preparations should be enhanced by aural toilet, placing a wick, or both.

The clinician should prescribe a non-ototoxic topical preparation when the patient has a tympanostomy tube or known perforation of the tympanic membrane.

If the patient fails to respond to the initial therapeutic option within 48–72 hours, the clinician should reassess him or her to confirm the diagnosis of diffuse AOE and to exclude other causes of illness.

Evidence-based clinical practice guidelines⁶ emphasise the importance of topical eardrops, rather than systemic antibiotics, for the treatment of uncomplicated AOE. There is also a strong recommendation for an assessment of pain, and prescribing analgesic treatment based on its severity. Other important recommendations are highlighted in Table 1.

AOE is usually treated empirically, without the need for prior culture.³ First-line topical agents include antimicrobial agents, such as ciprofloxacin, gentamycin, neomycin, framycetin and polymixin B, as well as agents that lower the pH, including

most acidifying and antiseptic agents, used either alone or in combination with topical corticosteroids, such as dexamethasone or betamethasone.⁷ It has been shown that eardrops containing corticosteroids are more effective than acetic acid eardrops, and that corticosteroid combined with either acetic acid or antibiotic eardrops are equally effective in a primary care setting.⁸ However, with the notable exception of ciprofloxacin and corticosteroids, all of these are potentially ototoxic, and should therefore be avoided in the presence of perforated eardrums, tympanostomy tubes or when the eardrum cannot be clearly visualised.⁷

An extensive review of the safety and efficacy of ciprofloxacin 0.3% and dexamethasone 0.1% otic suspension supports the use of this fluoroquinolone antibiotic or anti-inflammatory combination in the treatment of both AOE and acute otitis media (AOM) in paediatric patients with tympanostomy tubes.⁹ It is noteworthy that AOM associated with otorrhoea through tympanostomy tubes or chronic tympanic perforation is clinically and bacteriologically distinct from AOM with an intact tympanic membrane,¹⁰ and responds better to topical ciprofloxacin and dexamethasone AOE treatment than to the traditional oral antibiotics used for AOM.¹¹

Finally, patients prescribed a seven-day course of an antibiotic or steroid eardrops should expect their symptoms to last approximately six days after treatment has commenced. Non-response after this time could warrant a further seven days of treatment. Patients with symptoms persisting beyond two weeks

should be considered to be treatment failures and alternative management advised.³

References

1. Pabla L, Jindal M, Latif K. The management of otitis externa in UK general practice. *Eur Arch Otorhinolaryngol*. 2012;269(3):753-756.
2. Wang MC, Lui CY, Shiao AS, Wang T. Ear problems in swimmers. *J Ch Med Assoc*. 2005;68(8):347-352.
3. Kaushik V, Malik T, Saeed SR. Interventions for acute otitis externa. [Cochrane review]. In: *The Cochrane Library*, Issue 1, 2010. Oxford: Update Software.
4. Rowlands S, Devalia H, Smith C, et al. Otitis externa in UK general practice: a survey using the UK General Practice Research Database. *British J Gen Pract*. 2001;51(468):533-538.
5. Bhattacharyya N, Kepnes LJ. Initial impact of the acute otitis externa clinical practice guideline on clinical care. *Otolaryngol Head Neck Surg*. 2011;145(3):414-417.
6. Rosenfeld RM, Brown L, Cannon CR, et al. Clinical practice guideline: acute otitis externa. *Otolaryngol Head Neck Surg*. 2006;134(4 Suppl):S4-S23.
7. Hui CP, Canadian Paediatric Society, Infectious Diseases and Immunization Committee. Acute otitis externa. *Paediatr Child Health*. 2013;18(2):96-101.
8. Van Balen FA, Smit WM, Zuithoff NP, Verheij TJ. Clinical efficacy of three common treatments in acute otitis externa in primary care: randomised controlled trial. *BMJ*. 2003;327(7425):1201-1205.
9. Wall GM, Stroman DW, Roland PS, Dohar J. Ciprofloxacin 0.3%/dexamethasone 0.1% sterile otic suspension for the topical treatment of ear infections: a review of the literature. *Pediatr Infect Dis J*. 2009;28(2):141-144.
10. Manolidis S, Friedman R, Hannley M, et al. Comparative efficacy of aminoglycoside versus fluoroquinolone topical antibiotic drops. *Otolaryngol Head Neck Surg*. 2004;130(3 Suppl):S83-S88.
11. Dohar J, Giles W, Roland P, et al. Topical ciprofloxacin/dexamethasone superior to oral amoxicillin/clavulanic acid in acute otitis media with otorrhea through tympanostomy tubes. *Pediatrics*. 2006;118(3):e561-e569.