An earful on treatment Otitis Externa

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Presented at the University of Saskatchewan
Practical Otolaryngology Conference 2003, March 22, 2003

Otitis externa, also known as swimmer's ear, is an inflammatory/infectious process of the external auditory canal. It is typically a localized process that is easily controlled with topical antibiotics.The potential for serious, even life-threatening, infection of otitis externa (OE) can occur due to spreading to surrounding tissues in immune compromised patients.

What is the external auditory canal?

The external auditory canal is unique in that it is the only skin line in the human body called cul-de-sac. It is warm, dark, and prone to becoming moist, making an excellent environment for bacterial and fungal growth. The skin is thin. The lateral third overlies cartilage, while the rest has a base of bone. It can easily be traumatized. The exit of debris secretions and foreign bodies is beaded by a curve at the junction of the cartilage and bone. Presence of hair, especially thicker hair in older men, can be a further impediment.

What does cerumen do?

Cerumen creates an acidic coating containing lysozymes, which protects the ear canal. Cerumen is hydrophobic, preventing water from penetrating the skin. The canal is also defended by the epithelial migration that occurs in the tympanic membrane outward carrying debris with it.

Precipitants of OE include several factors (Table 1).

Warren's ear pain

Warren, 28, presents to the emergency department with a 24-hour history of initial pruritis in the right ear, followed by progressive pain and tenderness. He is now at the point where he is in extreme pain. His hearing has been somewhat affected. Warren has no imbalance or vertigo. There is no tinnitus and no obvious discharge.

Over the past weekend, Warren has been swimming, and he has gotten a fair bit of water in both ears.

He says he has been using Q-tips®, particularly with his itchy, right ear.

Warren is afebrile, and not a diabetic. His general health is good, and he is not on any regular medication.

Examination of Warren's symptomatic ear shows profuse redness and swelling of the external canal. There is discharge in the ear canal, which is extremely tender upon placement of the tip of the otoscope. There is a small, tender palpable node behind the ear, over the mastoid and at the angle of the mandible.

Table 1
Precipitants of otitis externa

- Moisture (from swimming, perspiration, high humidity, *etc.*)
- Water contaminated with bacteria
- High environmental temperatures
- Mechanical removal cerumen
- Insertion of foreign objects (*e.g.,* cotton swabs, fingernails, hearing aids, ear plugs)
- Chronic dermatologic disease (*e.g.,* eczema, psoriasis, seborrheic dermatitis, acne)

What is the presentation and evaluation?

More characteristic symptoms are otalgia and otorrhea. The discomfort can range from pruritis to severe pain, requiring systemic analgesics. Swelling of the external canal may lead to a sense of aural fullness and hearing loss.

The most common precipitants of OE are excessive moisture and trauma.

Debris can occlude the ear canal, making visualizing of the tympanic membrane difficult, and interfering with topical treatment. It is imperative, therefore, this material be removed. Cleaning the ears is best done by suction under direct visualization, using an open or operating otoscope and a Number 5 or Number 7 French Frazier malleable suction tip.

Alternatively, cotton swabs with cotton fluffed out can be used to gently pop out the secretions, again under direct visualization. If the secretions are thick, crusted or adherent, instillation of topical drops or hydrogen peroxide may help remove them.

Unless the tympanic membrane is fully observed, and is found to be intact, flushing the ear canal should not be attempted. Repeat cleanings once or twice a week may be necessary to remove debris as the infection resolves. When the canal is quite swollen, a cotton wick

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Table 2
Topical antibiotic treatment for otitis externa

- Aminoglycoside otic drops are effective and cheap, and can be used if tympanic membrane is intact.
- Quinolone otic drops are highly effective without the risk of ototoxicity.
- Steroids in eardrops are thought to reduce inflammation and edema, and resolve symptoms quickly.

Facts to keep in mind when using drops are:

- The drops should be administered at least 3 times a day, and should be continued for at least 3 days beyond the cessation of symptoms.
- Warm drops reduce the chance of causing dizziness.
- Manipulating the tragus to distribute the drops throughout the external auditory canal can augment absorption of the drops.

Table 3
When to use systemic antibiotics

- Otitis externa is persistent,
- Concommitant otitis media is present,
- The patient is immunocompromised,
- There is an underlying chronic dermatitis, or
- If the disease is on the external auditory canal.

Table 4
Differentiating noninfectious causes of otitis externa

Disease	Clinical characteristics
Atopic dermatitis	• Chronic, intensely pruritic reaction to allergens or stress. • Poorly circumscribed erythema and small papules, often obscured by excoriation associated with pruritus. • Excoriation may cause lichenified and hyperpigmented external auditory canal over time. • Typically part of more generalized skin involvement, including the external ears, face and neck. • Commonly associated with personal or family history of atopy of the respiratory tract or eyes. • Typical onset in childhood.
Psoriasis	• Idiopathic, chronic, inflammatory, proliferative skin disease. • Commonly associated with scalp involvement but rarely with facial involvement. • Raised, red lesions with thick silvery-white adherent scales. • Often pruritic.
Seborrheic	• Powdery or greasy scale with pink or orange base; typically not as thick as dermatitis in psoriasis. • Typically associated with scalp, face, upper trunk involvement. • Often associated with parkinsonism, Down syndrome and other neurologic conditions; may be associated with HIV infection.
Acne	• Closed and open comedones with occasional pustules; similar findings on face and upper trunk.
Lupus	• Multisystem autoimmune disease; look for other organ involvement when erythematousus present. • Ear canal involvement commonly associated with discoid form of the disease; epidermal atrophy causes shiny surface and telangiectasia. • Usually associated with erythema and scaling with hypopigmentation.
Contact dermatitis due to irritant	• Dose-dependent response to irritants ranging from acids to alkalis to excess water. • Insidious inset with lichenification.
Allergic contact dermatitis	• Less dose-dependent than irritant contact dermatitis; requires predisposition to react to the allergen. • External auditory canal may react to allergens that do not cause a reaction elsewhere. • Erythema, pruritus, edema and exudate with occasional vesiculation.

or a small pressed sponge wick (specifically designed for this purpose) should be placed to facilitate drainage from application, and administration of topical antibiotic drops.

Where does OE come from?

Bacterial OE accounts for approximately 90% of infections. Pathogenic flora is dominated by pseudomonas aeruginosa and staphylococcus aureus.

Once the external canal has been cleaned as well as is possible, topical antibiotic treatment should be started. Topical agents include a variety of antibiotic drops with or without hydrocortisone (Table 2). All antibiotic drops, which are also effective in treatment, are acidic in nature.

Is fungal otitis externa common?

Fungal OE occurs in 10% of all OE cases. The most common pathogen is Aspergillus followed by candida. This is generally the result of prolonged treatment of bacterial OE, which alters the floor of the ear canal.

Fungal OE is usually less painful, often taking the form of pruritis, and a feeling of fullness in the ear. Discharge and tinnitus are also common in fungal OE. Treatment, again, involves cleaning the ear by suction and acidification, and the appropriate use of anti-fungal drops. It may take several weeks to completely clear up. Systemic antibiotics may be needed (Table 3).

OE is a disease process that should be treated aggressively because it can cause significant morbidity.

What are the non-infectious dermatological causes?

A detailed discussion of these causes is beyond the scope of this article (Table 4). The most important aspect of treatment is identification and removal of the underlying irritant or allergen.

How can recurrence be prevented?

Prevention of recurrence of OE consists primarily of avoiding the many precipitants that have been discussed, and treating any underlying dermatologic problems. This is particularly important in patients with unusually viscous cerumen, narrow external canal, or stomach allergies (especially in those who are immunosupressed). Prevention is important in people who have excessively itchy ears and who participate regularly in water sports. After bathing or swimming, the external canal can be dried using a hair dryer. A rinse, which a patient can make and use whenever there is increased moisture in the ears, includes equal portions of vinegar, rubbing alcohol, and hydrogen peroxide. The solution can be instilled in the ears, on a regular basis, through an eyedropper after the ears have become wet.

The solution is particularly in patients who have hearing aids. These patients should be instructed that the time to administer the solution is after they have removed their hearing aids at night. This solution can be used after the ears have been syringed, in order to remove cerumen plugs. Itching in the ear can be controlled almost always with application of Kenacomb™ (procyclidine) ointment on a periodic basis.

Take-home message

Quick facts about preventing and treating otitis media

- Otitis externa can almost always be successfully treated with topical medication.
- The most common precipitants of otitis externa are excessive moisture and trauma.
- It is important to keep the ears dry.
- The most important aspect of treatment is identification and removal of the underlying irritant or allergen.
- Systemic antibiotics may be needed if:
  - otitis externa is persistent,
  - concommitant otitis media is present,
  - the patient is immunocompromised,
  - there is an underlying chronic dermatitis; or
  - the disease is on the external auditory canal.

Otitis Externa

When is it time to refer?

Although OE has a variety of causes, there are some uniform principles of evaluation of treatment that should allow expeditious management in most cases. OE is a disease process that should be treated aggressively because it can cause significant morbidity and, rarely, severe or life-threatening complications. I feel it would be reasonable for the family doctor to consider referring the patient to a specialist if there is no improvement in the condition after 10 to 14 days, despite the use of appropriate drops. I think it would also be appropriate to refer the patient if there is any worry that potential complications may develop. CME

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Net Readings

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www.stacommunications.com

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