Otitis externa

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There is little or no information on the incidence of otitis externa in New Zealand. In the USA a figure of four per 1 000 per annum is quoted, of which 1% (4 per 100 000) go on to become chronic.

This gives a figure of over five million cases per annum treated by USA GPs. With New Zealand's climate, extensive coastline and easy access to water, I suspect that the incidence is higher, but there is no data available at present. Ninety-seven per cent are treated by the general practitioner with no specialist ENT service involvement.

Definition

Otitis externa is the generic term for any inflammatory condition of the external auditory meatus (EAM). It may be a local phenomenon or part of a generalised skin condition.

Otitis externa can be subdivided into acute, recurrent-acute and chronic.

Aetiology of otitis externa

The cause is usually infective (bacterial or fungal) but non-infectious/dermatological processes should not be forgotten.

- ***Bacterial:*** 80% - Staphylococcus aureus, Pseudomonas aeruginosa, Bacillus proteus
- ***Fungal:*** 10% (Aspergillus 80%, Candida 20%); mixed bacterial/fungal infections common
- ***Viral:*** Otitis externa Haemorrhagica (bullous myringitis), Herpes Zoster and Simplex
- ***Dermatological:*** Eczema/seborrhoeic dermatitis/psoriasis (don't forget hypersensitivity/allergy to topical drops)

Symptoms

- Pain and/or discomfort limited to the EAM (itching through to severe pain)
- Deafness (conductive)
- Pre- and post-auricular lymph node enlargement/tenderness

Signs

Erythema and swelling of the EAM skin with variable discharge/moist debris.

Anatomy/physiology of the EAM

The EAM is unique in being the only skin-lined cul-de-sac in the body. It is warm and humid and exfoliated skin provides an ideal growth medium for bacteria and fungi. The canal skin is unique in that it is continually migrating laterally carrying debris with it.

Cerumen is protective being acidic and hydrophobic. In addition it contains lysozymes that inhibit bacterial growth. Too much or too little cerumen predisposes to otitis externa.

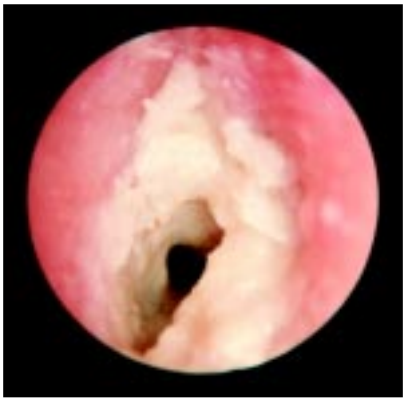
Hair helps prevent entry of foreign bodies, however too much prevents migration and can add to cerumen build up, (particularly in older males where the hairs can have the effect of acting like steel rod reinforcing in concrete!).

Predisposing factors

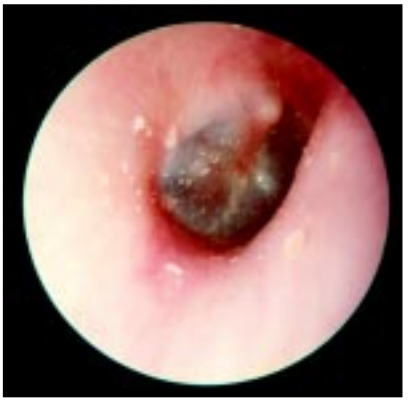
- Anatomical – a narrow canal, excessive wax production
- Moisture – swimming, perspiration, high humidity
- High environmental temperatures
- Mechanical removal of cerumen
- Trauma – e.g. cotton-buds, fingernails, hearing aids, ear plugs, hair grips, paper clips etc.
- Chronic dermatological disease – e.g. eczema, psoriasis, seborrhoeic dermatitis, acne
- Immuno-compromised
- Contaminated water (possibly)

Clinical differential diagnosis of otorrhoea

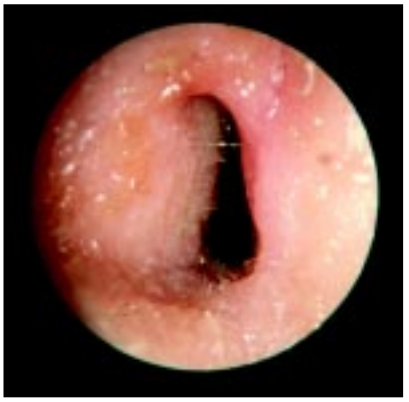
The clinical appearance is rarely diagnostic – but the following signs can give some clues. Culture from the



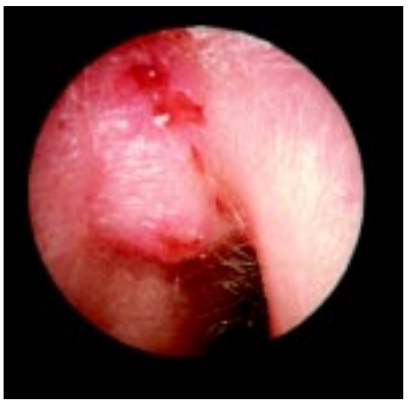
Acute fungal otitis externa



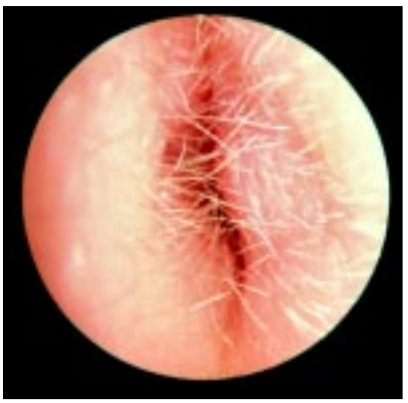
Chronic eczematous otitis externa



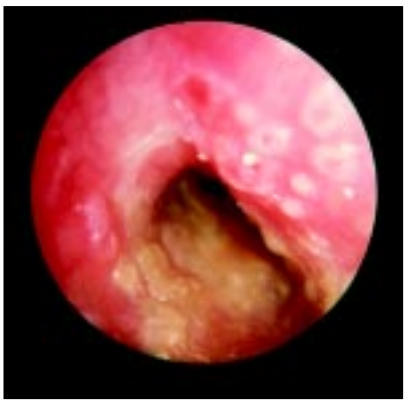
Chronic bacterial otitis externa



Furuncle



Chronic otitis externa with canal skin hypertrophy



Acute viral otitis externa (herpetic – Ramsay Hunt Syndrome)

Photos from: *A Colour Atlas of Otolaryngology.* Published by Martin Dunitz.

deep part of the canal is required to confirm the diagnosis.

Otitis externa

- ***Acute – bacterial:*** scanty white mucoid discharge (occasionally thick)
- ***Chronic – bacterial:*** can be bloody – often granulation tissue present
- ***Fungal:*** white to off-white discharge, but may be black, grey, bluish-green or yellow; black or white conidiophores on white hyphae associated with aspergillus

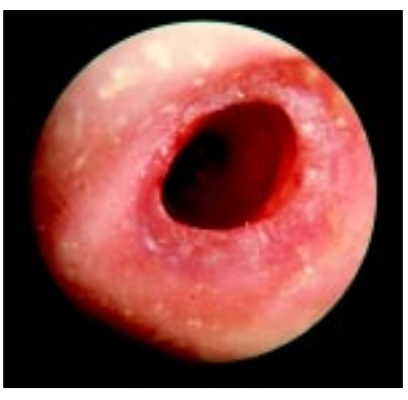
Otitis media with perforated tympanic membrane

- ***Acute*** – purulent white to yellow mucus with deep pain
- ***Serous*** – clear mucus, especially in the presence of allergies
- ***Chronic*** – intermittent purulent mucus without pain
- ***Cerebrospinal fluid leak*** – clear, thin and watery discharge
- ***Trauma*** – bloody mucus
- ***Osteomyelitis*** – discharge and odour

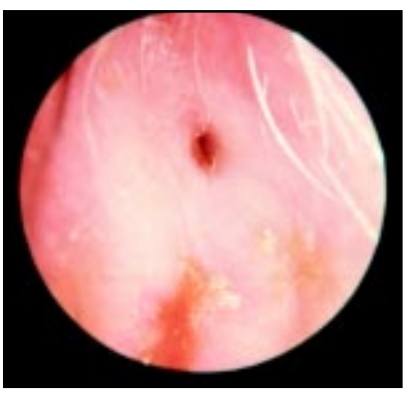
Management

Ear toilet

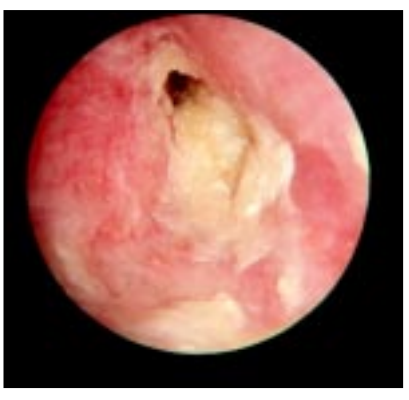
Most important is the removal of as much debris as possible. This is best achieved with suction (+/- microscopy)



Chronic otitis externa leading to canal stenosis



Total canal stenosis secondary to chronic otitis externa



Acute bacterial otitis externa

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but dry mopping or gentle curettage with a Jobson Horn probe as an alternative. Cotton buds (other than for mopping out discharge around the meatal opening) are best avoided as they tend to push the debris further into the canal. 'Tissue spears' – tissue twisted into a point and inserted into the canal about 2cm then allowed to absorb the discharge (and repeated as required) – can help clear a watery discharge and obtain deeper access when about to instil new drops.

Open access to an ENT department for ear suction toilet for these patients would be the ideal and in some centres in New Zealand clinic nurses have been provided with additional training in ear suction toilet and this service is available. Funding is the major issue in other centres.

One needs to visualise the tympanic membrane if possible to exclude otitis media or a tympanic membrane perforation. Syringing the ear is inadvisable if a perforation is present as it can lead to marked nausea and vertigo and damage to middle ear structures. It also often seems to make the otitis externa worse.

Drying of the canals with a hair dryer if they get wet can be helpful.

Culture

Culture and sensitivity is indicated if there is not a rapid response to first line topical drops. The sample should be taken from the deeper debris using a wire/cotton swab to reduce secondary bacterial contaminants. Ask the lab to look for bacteria and fungi.

Topical therapy

Antibiotic (or anti-fungal)/steroid drops. If the symptoms are worsening in spite of drops, consider an allergy/hypersensitivity to the drops.

A wick is required for the very narrow or occluded canal (1/2 inch ribbon gauze or compressed foam such as a 'Pope' wick) as it helps deliver drops to the deeper part of the canal. The steroid component is important to settle the oedema.

Analgesia

Analgesia depends on the severity of the pain.

- Paracetamol
- Codeine
- NSAIDs
- Opiates

Acidification

Acidification is for maintenance/chronic otitis externa.

Steroids

Steroids are mainly for their anti-inflammatory/oedema-reducing effects which help the itching and maintenance of canal patency.

Surgery

This is rarely required – mainly as a last resort for the very narrow canal secondary to grossly hypertrophic canal skin. Swimmer's osteomas can predispose to otitis externa and may require surgical removal.

Topical drop options

The standard 1–2 drops as directed on the bottles is totally inadequate! As a personal observation (during ventilation tube surgery), two drops rarely reaches the drum in a child, getting caught in the ear canal hairs by surface tension. A minimum of five drops was needed plus massage of the tragus and pinna to cover the canal skin.

- Use five to six drops, six to eight hourly.
- Lie on one side for five minutes after instilling drops – manipulating the tragus by pumping it up and down and moving the pinna at intervals to encourage drops down the canal.
- If a wick is required for the very narrow canal, apply the drops three to four hourly whilst awake. Change the wick every two to five days with suction toilet depending on severity until no longer required to keep canal patent.
- If vertigo occurs with the drops, warm the bottle in the hand for a few minutes first.
- Continue for three days beyond control of symptoms – usually seven to ten days (up to 14 days if severe).

Acute otitis externa

- Sofradex
- Betnesol N
- Maxitrol *eye* drops
- Tobrex or Tobradex *eye* drops (for Pseudomonas – check organism sensitivities first)
- Ciproxin HC – no Phamac funding (for Pseudomonas – check organism sensitivities first)

Fungal otitis externa

- Kenacomb
- Locorten and Vioform
- Daktarin 2% lotion
- Daktacort cream

Chronic eczematous otitis externa

- Elocon lotion or cream 0.1% (mometasone furoate)
- Hydrocortisone cream 0.1%
- Olive oil or Almond oil (for the dry itchy canal)

Maintenance

'Surfers' mixture

- Alcohol 70%
- Acetic acid 2%
- Hydrocortisone 1%
- Water 27%

Two to five drops after swimming/showering etc.

This can be painful if the canal is already inflamed – it can be diluted 50/50 with boiled water if it stings too much. Alternatively the alcohol can be left out of the formula.

A homemade solution of 50% alcohol + 50% white vinegar is a further option, but does not help the itching.

Vosol

- 3%1.2-propanediol diacetate, 2% acetic acid
- 0.02% benzethonium chloride in propylene glycol does not have

any steroid – so patients often continue to complain of itching)

Elocon Lotion or cream 0.1% (mometasone furoate)

Prevention

Prevention of recurrence of otitis externa primarily consists of avoiding predisposing factors and treatment of underlying dermatological conditions.

Swimming should be avoided for 7+ days after symptoms have settled.

After bathing or swimming, options include using a hair dryer on the lowest heat setting, with the instillation of acidifying drops or 'surfers' mixture afterwards.

Avoid any manipulation of the skin of the external auditory canal (such as scratching or overzealous cleaning). This is where the topical steroids really help in reducing itching.

If cerumen is difficult to remove, a ceruminolytic agent or a four per cent baking soda solution can be used to soften the cerumen first to help avoid any trauma when syringing.

Ear plugs can be used for swimming but need to be kept clean to prevent re-infection. Bathing caps or neoprene 'ear wraps' can offer better protection.

Systemic treatment

Oral antibiotics

These are rarely needed; only use when otitis externa is persistent, or associated otitis media is present or when local or systemic spread has occurred beyond the EAM.

Use systemic antibiotics in diabetics and the immuno-compromised.

If the temperature is above 38.3°C or pain is out of proportion to clinical findings – suspect spread.

Complications

Furuncle

Staphylococcal abscess in the lateral third (cartilagenous part) of the ear canal from an obstructed apo-pilosebaceous gland. The lesions may be multiple and recur. The pain is severe and may require surgical drainage plus topical and systemic antibiotics.

Necrotising (malignant) otitis externa

Consider the possibility in diabetics, the elderly or immuno-compromised. This is an osteomyelitis of the mastoid or temporal bone, usually caused by pseudomonas. Severe pain/headache out of proportion to the clinical findings is a feature. Mortality is about 50% even with treatment – urgent referral to an otolaryngologist is appropriate, treatment requires intravenous antibiotics and debridement/surgery.

Malignant change

Consider in chronic otitis externa where an area of inflammation or ulceration persists in spite of active treatment or when the pain seems excessive for the clinical findings, consider a malignancy, usually a squamous cell carcinoma of the EAM.

Summary

- The vast majority of cases of otitis externa respond to toilet and the application of steroid/antibiotic drops.
- Keep water out of the ears during treatment and for three days after the symptoms settle.
- If symptoms persist obtain a deep canal culture sample – change drops if appropriate.
- Oral/systemic antibiotics if spreading or medically indicated
- If no improvement – specialist referral/suction toilet.
- Maintenance/prevention with topical acidification or oil drops.

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