Original Research Article

The Study on the etiology of otitis externa - Experience in our institution

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Abstract

Background: The aim of the study is to ascertain the commonest etiology of otitis externa in our institution. **Methods:** 90 patients were included in our study who were reported and diagnosed in our outpatient department as otitis externa . **Results:** 90 patients were studied (52 males and 38 females – Age ranging from 15 to 56) Aural fullness and pain were the most common presenting complaints. Most common etiology was found to be handling of ears and external auditory canal. **Conclusion:** Our institution is present in a mofussil environment catering to people of different sectors. 90 patients who presented with complaints pertaining to Otitis externa were selected and detailed history was taken to understand the etiology and its causes. Probing of ears was found to be the most commonest cause leading to Otitis Externa. Otitis externa has a good prognosis when diagnosed early.

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INTRODUCTION

OTITIS EXTERNA

Otitis externa (OE) is an inflammation or infection of the external auditory canal (EAC), the auricle, or both.[1, 2, 3] This condition can be found in all age groups.[4] Penetrating middle ear and tympanic membrane injuries in children can be self-inflicted or caused by caregivers or medical personnel. Damage can include tympanic membrane perforation, hemotympanum, injury to the ossicular chain or facial nerve, vertigo, peri-lymphatic fistula, and conductive and/or sensorineural hearing loss.[5,6,7]

Classification

OE may be classified as follows:
Acute diffuse OE - Most common form of OE, typically seen in swimmers.
Acute localized OE (furunculosis) - Associated with infection of a hair follicle.
Chronic OE - Same as acute diffuse OE but is of longer duration (>6 weeks).
Eczematous (eczematoid) OE - Encompasses various dermatologic conditions (eg, atopic dermatitis, psoriasis, systemic lupus erythematosus, and eczema) that may infect the EAC and cause OE
Necrotizing (malignant) OE - Infection that extends into the deeper tissues adjacent to the EAC; occurs primarily in immunocompromised adults (eg, diabetics, patients with AIDS) Otomycosis - Infection of the ear canal from a fungal species (eg, Candida, Aspergillus)

Signs and symptoms

The key physical finding of OE is pain upon palpation of the tragus (anterior to ear canal) or application of traction to the pinna (the hallmark of OE). Patients may also have the following signs and symptoms:

- Otalgia - Ranges from mild to severe, typically progressing over 1-2 days

- Hearing loss
- Ear fullness or pressure
- Erythema, oedema, and narrowing of the EAC
- Tinnitus
- Fever (occasionally)
- Itching (especially in fungal OE or chronic OE)
- Severe deep pain - Immunocompromised patients may have necrotizing (malignant) OE
- Discharge - Initially, clear; quickly becomes purulent and foul-smelling
- Cellulitis of the face or neck or lymphadenopathy of the ipsilateral neck (occasionally)
- Bilateral symptoms (rare)
- History of exposure to or activities in water (frequently) (ex: swimming, surfing, kayaking)
- History of preceding ear trauma (usually) (eg, forceful ear cleaning, use of cotton swabs, or water in the ear canal) (9)
- History of Diabetes Mellitus, Hypertension was illicited.
- In addition to the cotton-tipped swabs and the wooden matchstick implicated in our 2 cases, other potentially injurious objects include rattail combs, bobby pins, sticks, artists' brushes, and cerumen curettes (5,6,9)
- Similar injuries can be caused by ear canal irrigation and by attempts to remove foreign bodies(.5,7,9)
- Injuries limited to the anterior or inferior portions of the tympanic membrane are usually of limited consequence.(5)
- Traumatic causes include: penetrating injuries caused by insertion of objects into the ear canal purposely (cotton swabs) .(14)

Physical Examination

The key physical finding of OE is pain upon palpation of the tragus (anterior to ear canal) or application of traction to the pinna (the hallmark of OE). Examination reveals erythema, oedema, and narrowing of the external auditory canal (EAC), and a purulent or serous discharge may be noted (see the image below). Conductive hearing loss may be evident. Cellulitis of the face or neck or lymphadenopathy of the ipsilateral neck occurs in some patients.

Figure 1; Figure 1

Acute otitis externa. Ear canal is red and oedematous, and purulent discharge is present.

The tympanic membrane may be difficult to visualize and may be mildly inflamed, but it should be normally mobile on insufflation. Eczema of the pinna may be present Fungal OE results in severe itching and pain. A thick discharge that may be white or gray is often present. Whereas pseudomonal infection produces purulent otorrhea that may be green or yellow, *Aspergillus* otomycosis looks like a fine white mat topped by black spheres. Upon close examination, the discharge may contain visible fungal elements (eg, spores or hyphae) or have a fuzzy appearance. The sine qua non of necrotizing OE is pain that is out of proportion to the clinical findings. Upon close examination, granulation tissue may be present in the ear canal.

Treatment:

The patient's history and physical examination usually provide sufficient information to allow the clinician to make the diagnosis of otitis externa (OE). Most persons with OE are treated empirically.

Imaging studies are not required for most cases of OE. However, radiologic investigation may be helpful if an invasive infection such as necrotizing (malignant) OE is suspected or if the diagnosis of mastoiditis is being considered. High-resolution computed tomography (CT) is preferred and better depicts bony erosion.[5] Radionucleotide bone scanning and gallium scanning have been used to make the diagnosis. Magnetic resonance imaging (MRI), though not used as often, may be considered secondarily or if soft tissue extension is the predominant concern.[6]

Otoscopy

In cases of external ear infection, otoscopic examination must be performed in conjunction with evaluation of related structures (eg, the external ear and the head and neck). For example, the auricle should be examined for swelling, deformity, and erythema; the face, for evidence of facial nerve paresis or other cranial neuropathy; and the neck, for masses. Conditions that disrupt the lipid/acid balance of the external ear will have a predisposition to otitis externa. These include Trauma by ear probing, eczema, sebhorrhoeic dermatitis, Active chronic otitis media and obstruction of normal meatus like foreign body and hearing aid. Most traumatic tympanic membrane perforations heal spontaneously." and they are therefore usually managed expectantly. Occasionally, attempts are made to reposition the margins of a fresh traumatic tympanic membrane perforation.[6,7] The tympanic membrane injury can predispose to middle ear infection which has grave consequences including facial nerve paralysis, formation of cholesteatoma, perilymph fistula, and intracranial infections and may require ear and intracranial exploration.[8,9] Treatment of traumatic tympanic membrane perforation range from inactive watchful waiting, active intervention to surgical intervention.[7] The incidence of perforations of the tympanic membrane due to trauma is on the increase consequent to trauma, and increased violence and accidents seen in present-day life[9,10] Treatment of traumatic tympanic membrane perforation range from inactive watchful waiting, active intervention to surgical intervention.[11] Otolaryngologists have however been advised to offer conservative treatment in cases of traumatic tympanic membrane perforation without significant symptoms as most patients will heal spontaneously within two months.[12] If the perforation fails to close spontaneously in 3-6 months (in absence of infection), surgical closure is indicated[9,13] Paper patching also mentioned in Shambough should be tried; at least in perforations smaller than 5 mm before a patient is referred for surgery.[15] Steroid-containing ear drops can inhibit healing and are therefore contraindicated in the treatment of traumatic perforations[16]. Topical treatment includes the usage of 1 cm ribbon gauze or pope otowick to hold the medication in the external auditory canal. For moderate and severe cases of otitis externa, Glycerol and Ichthammol (90:10) percent with an aural wick is used commonly for its dehydrating and anti-inflammatory properties. Though it has antibacterial activity against staphylococci and streptococci, it has poor activity against pseudomonas. Reduction in pain and canal edema occurs by the dehydrating property, though oral analgesics are needed in moderate or severe cases. If not contraindicated, Non-steroidal anti-inflammatories is an excellent treatment option for otitis externa.

In cases of uncomplicated diffuse otitis externa, no evidence for the efficacy of systemic antibiotic therapy has been noted. IG pack usage was studied and has a better clinical outcome in 3 days with a maximum duration of 7 days[23] Steroid-aminoglycoside drops are proven to be better than placebo alone in studies.[22] Studies have also proven that corticosteroid containing ear drops are effective than acetic acid containing ear drops in the treatment of otitis externa.[21] Studies also have proven results that fluoroquinolones drops are as effective as steroid –aminoglycoside drops. Though fluoroquinolones are expensive, they are non-ototoxic. Though fluoroquinolones may have ototoxic preservatives, they are not much of a concern unless there is perforation of tympanic membrane. The rate of healing of traumatic tympanic membrane perforation varies inversely with age of patient and size of perforation. But, it is independent of the location of the perforation[17] Healing of the traumatic perforations of tympanic membrane should not invariably be left to chance. A penetrating injury in the postero-superior quadrant may cause damage to the ossicular chain or a perilymphatic leak. Therefore, a careful middle ear examination is necessary to access the damage before starting the treatment[16]

DISCUSSION

Among 90 patients who presented with symptoms of otitis externa, the most important cause for the same was assessed. We also assessed the gender predominance for the subjects. There are studies which assessed increase risk of otitis externa in swimmers but bacteriological studies failed to demonstrate a direct link between swimming pool contamination and microflora of external otitis[18]. They also suggest that other factors may be involved including skin maceration or an alteration in the pH of the ear canal.[19] A Hallmark sign of diffuse acute otitis externa is tenderness of the tragus, pinna or both that is often intense and is proportionate to what it might expect based on visual inspection. The most common organism are pseudomonas Aeruginosa , Staphylococcus aureus and very rarely fungal involvement. Lupus involvement is very rare . In our study around 14 patients had a staphylococcus involvement 3 patients had seborrheic dermatitis and 17 patients with allergic/irritant dermatitis. For patients with seborrheic dermatitis dermatologist opinion was sought and treatment was planned accordingly. Combination of steroid and anti-fungal topical applications were preferred in these cases. Some patients required hospitalization as intravenous administration of antibiotic and daily examination of ear was required owing to the severity of the disease and their long distance travel back home. Patients presented with

pain, itching, discharge, hearing loss generally.[24] Some patients were suspected to be infected by covid-19 but their test reports were negative. Most of the outpatients were advised to review in 7 days if pain had subsided and to review in 3rd day itself if pain had not subsided by then. Strict dry ear precaution was advised and usage of ear plugs during bath were advised. Most cases seemed to settle with topical treatment and regular follow-up seemed to be the key in successfully treating the condition. Aural toileting was done in each visit as and when needed. We had some patients with active discharge due to delayed treatment , pain and itching were the predominant complaints. Some presented with tympanic membrane perforation too. There were patients who presented with blocking sensation in the ear and hearing loss. Hearing improved once the existing condition was treated and resolved.

RESULTS

There were a total of 90 participants in this study out of which 52 males and 38 females and Age ranging from 15 to 56. Aural fullness and pain were the most common presenting complaints. Most common etiology was found to be probing of ears and external auditory canal was found to be involved. Ear bud usage history significantly was found to be high in the study population. The other predisposing factors to otitis externa were Narrow external auditory meatus, Keratosis obturans, Foreign body, Hearing aid, hirsute canal, Eczema, Sebarrhoeic dermatitis, exposure to topical medications, Humid environment, Immunocompromisation, Skin maceration(bathing), laceration, radiotherapy, Active chronic otitis media. In this study ear probing was found to be the predominant cause.

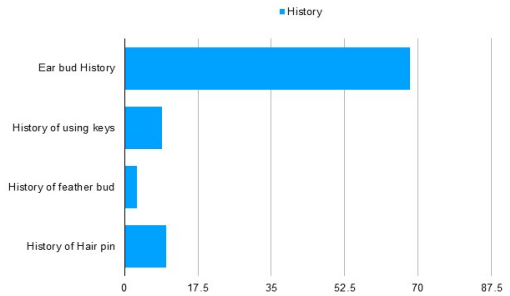

Figure 3:

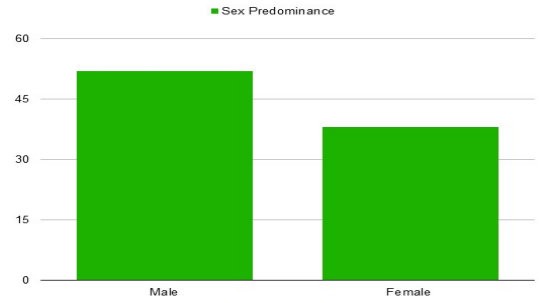

Figure 4:

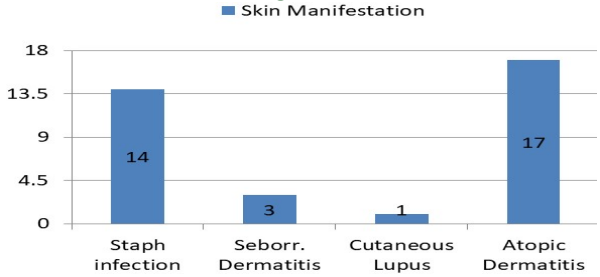

Figure 5:

CONCLUSION

There are various etiological factors to otitis externa, out of which ear probing with ear bud tops the list and closely followed by probing with key chain, feather buds and hair pins . Evidence of self probing as a leading cause of Otitis Externa has been discussed in a study[20]. This study is to present our experience in our Institution to ascertain the commonest cause of Otitis externa. Self cleaning the ear is found to be among both the literate and illiterate group. This compulsive behavior amongst these individuals have traumatized their ear canal and sometimes the tympanic membrane. Patients were advised to close the ears by applying mild tragal pressure when the need for compulsive itching need arises. The nature of the infection was diagnosed and treated accordingly. A proper symptomatic intervention is sufficient to treat this condition and is usually resolvable in a short duration of time. This study emphasizes the need for an awareness to be created to educate the public to avoid self probing .

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