**Otitis externa**

 Is a generalized condition of the skin of EUC is characterized by general oedema and erythema associated with itchy discomfort and usually an ear discharge.

**Predisposing factors**

❶ Anatomical : like

* Narrow EUM ( hereditary, iatrogenic, exostosis , etc.)
* Obstruction of the normal meatus ( FB , hearing aid, hirsute canal, etc.)

❷ Dermatological: like eczema, sebhorrhoeic dermatitis.

❸ Allergic : atopy , non atopic allergy, exposure to topical medications.

❹ Physiological: like humid environment or immunocompromisation

❺Traumatic: skin maceration (bathing) , ear probing , laceration, radiotherapy.

❻ Microbiological: like in active chronic otitis media, exposure to *pseudomonous aeruginosa* or fungi

**Pathology**

 The clinical course of OE has been divided to following stages :

1- **pre inflammatory**

 The protective lipid/acid balance (normal pH 4-5) is lost and stratum corneum become edematous ,blocking off the sebaceous and apocrine glands producing aural fullness ,itching. With increase edema and scratching there is disruption of epithelial layer and invasion of resident or introduced organisms and will result in stage

2- **Acute inflammatory stage** (Mild, Moderate or Severe)

 More oedema , obliteration of the lumen Mild , Moderate or Severe with thickening exudates.In severe cases increasing pain ,auricular changes and cervical lymphadeopathy.

 After six months, or some consider chronicity after inflammation lasting longer than three weeks the patient entering the chronic phase .

3- **Chronic stage:**

 Is characterized by thickening of external canal skin and fibrous canal stenosis .

**Diagnosis of Otitis Externa**

Based on the following symptoms:

Pain

Itch

Oedema

Erythema of EUC with purulent otorrhea and debris in the meatus

**Complications**

 If untreated, mild attacks of otitis externa can spontaneously resolve as the epithelial barrier becomes re-established ,the piloapocrine unit produce normal secretions and the pH of the canal returns to normal.

 If the inflammation progress faster than repair pain will increase ,otorrhea, and oedema of the canal occur, lymphadenopathy due to rich lymphatic drainage.

This can lead to perichondritis , chondritis ,cellulites ,parotitis and\or erysipelas, in immunocompromised patient malignant otitis externa can develop.

**Management**

1- aural toilet with or without microscopic assistance , irrigation may cause severe complications.

2- Topical medication

Ribbon gauze 1 cm is often used to hold medication in the EUC ,90:10 glycerol and icthammol is commonly used ,the dehydrating effect reduce canal oedema and reduce pain. steroid with AB wick can be used also.

* No evidence for efficacy of systemic antibiotic.

**Otomycosis (Fungal otitis externa)**

 It affects 10% of the population in their lifetime, it is more common in hot , humid climates and often secondary to prolong treatment with topical antibiotics .Diabetes and immunocompromised states also predispose to the condition.

 Aspergillus accounts for 80-90 percent of cases with Candida being responsible for the remaining 10-20 percent.

 The most common finding is a black, grey, green, yellow or white discharge with debris resemble wet newspaper .

 **Treatment** is similar to that of diffuse otitis externa , aural toilet , removal of debris, topical antifungal drops (e.g Locorten-Vioform), the foot and ear reaction can cause recurrent otomycosis if the primary fungal infection elsewhere remains untreated ,water avoidance is essential in acute phase.

Wearing of hearing aid mould exacerbate the condition.

**Furunculosis**

 Furunculosis is a localized form of otitis externa resulting from infection of a single hair follicle. Hair follicles are only present in the lateral (cartilaginous) segment of the external auditory canal. Furunculosis is, therefore, confined to the lateral canal. The affected ear is extremely painful, feels blocked and exudates a scanty serosanguinous discharge. The pinna and tragus are tender on palpation.

 Otoscopic examination usually establishes the diagnosis, although this may be difficult if the external auditory canal is severely edematous.

 Characteristically, the edema and inflammation is restricted to the lateral segment of the canal, with relative sparing of the medial canal and an unaffected tympanic membrane.

***Staphylococcus aureus*** *(S. aureus)* is the most common organism causing furunculosis.

**Management options :**

1. an appropriate analgesics
2. oral or systemic antistaphylococcal antibiotics (penicillinase-resistant penicillin, macrolide, cephalosporin, clindamycin or quinolone).
3. topical medication : antibiotics , glycerol and icthammol
4. Formal incision and drainage is recommended if an abscess forms.

**Malignant otitis externa**

**DEFINITION**

 Malignant otitis externa is an aggressive and potentially life-threatening infection of the soft tissues of the external ear and surrounding structures, quickly spreading to involve the periostium and bone of the skull base.

 Malignant otitis externa is a misnomer as it is not a neoplastic process.

 **Bacteriology**

 *Pseudomonas aeruginosa* is the most common pathogen and is responsible in over **95** percent of cases. Rarely, aspergillus can cause malignant otitis externa.

 **Staging**

Stage 1 malignant OE with infection of soft tissue beyond the EUM, but

 negative bone scan

Stage 2 soft tissue infection with positive bone scan

Stage 3 as above with cranial nerve paralysis

Stage 4 meningitis , empyema , sinus thrombosis or brain abscess

**DIAGNOSIS**

 Malignant otitis externa is a clinical diagnosis made on the basis of pain, exudates , granulations and oedema of the external auditory canal , often supported by a positive bone scan and/or the presence of microabscesses at surgery. **resistance to local therapy for at least eight to ten days are highly sensitive for making a diagnosis of malignant otitis externa**.

 Diabetes or other immunocompromised state, *Pseudomonas aeruginosa* on culture, a positive bone scan and cranial nerve palsy are confirmatory factors that enhance the specificity of the diagnosis. The erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) levels are nonspecific measures of inflammation that are significantly raised in untreated cases and are useful barometers with which to measure response to treatment. The ESR is often over 100 mm/hour.

**MANAGEMENT OPTIONS**

 **Aural toilet**

 Local toilet to the external auditory canal is essential to control the granulations and improve local pain control.

 **Systemic antibiotics**

 **The treatment of choice** for the management of malignant otitis externa is systemic anti-Pseudomonas antibiotics. The drug often needs to be given for at least **six weeks** and in advanced cases, several months.

**Surgery**

 There is now widespread agreement that surgical intervention for malignant otitis externa should be reserved for a few selected cases and no longer has the goal of removing all the infected tissue.