**Fungal Ear Infection (Otomycosis)**

**Otomycosis** is fungal infection of the external auditory canal.

**Epidemiology**

The incidence of otomycosis is not known but it is more common in hot climates and in those who partake in aquatic sports. About 1 in 8 of otitis external infections is fungal in origin. 90% of fungal infections involve *Aspergillus* spp. and the rest *Candida* spp. \[1\]. The prevalence rate has been quoted as 10% of patients presenting with signs and symptoms of otitis externa \[2\]. The fraction of otitis externa that is otomycosis may be higher in hot climates and much of the literature originates from tropical and subtropical countries. An American study found that the incidence peaked during the summer months \[3\].

Factors that predispose to otitis externa include absence of cerumen, high humidity, increased temperature and local trauma - usually from use of cotton swabs or hearing aids. Cerumen has a pH of 4 to 5 and so suppresses both bacterial and fungal growth. Aquatic sports - including swimming and surfing - are particularly associated because repeated exposure to water results in removal of cerumen and drying of the external auditory canal \[4\]. There may be a history of previous invasive procedures on the ear \[5\]. Eczema is another predisposing factor \[6\].

**Presentation** \[2, 5\]

The typical presentation is with inflammation, pruritus, scaling and severe discomfort. The mycosis results in superficial epithelial exfoliation, masses of debris containing hyphae and suppuration. Pruritus is more marked than with other forms of ear infections and discharge is often a marked feature.

The initial presentation is similar to bacterial otitis externa but otomycosis is characterised by many long, white, filamentous hyphae growing from the skin surface. Suspicion of fungal infection may arise only when the condition fails to respond to antibiotics. Even if bacteria have been grown, there may be more than one aetiological agent. It is also possible that topical antibiotics have predisposed to the fungal infection \[7\].

An essential piece of history that may easily be missed is a holiday in an exotic place with surfing or SCUBA diving.

**Investigations** \[8\]

Swabs from infected ears should be examined for both bacteriology and mycology. Epithelial debris placed in 10% potassium hydroxide should reveal the presence of hyphae and, in some instances, the fruiting structures of the aetiological agent. Results should be treated cautiously as contamination is common. Taking the swab from the medial aspect of the ear reduces this risk.

**Management** \[9\]

Otomycosis is a chronic recurring mycosis. The ear canal should be cleared of debris and discharge, as these lower the pH and reduce the activity of aminoglycoside ear drops \[10\]. See separate Otitis Externa and Painful, Discharging Ears article. Suction can be used if available. Cleaning may be required several times a week. Analgesia is required. If there is an irritant or allergen it must be removed. Keep the ear dry and avoid scratching it with cotton wool buds. Avoid cotton wool plugs in the ear unless discharge is so profuse that it is required for cosmetic reasons. If used, keep them loose and change often.

Burow's solution or 5% aluminum acetate solution should be used to reduce the swelling and remove the debris \[11\].

Antifungal ear drops are of value \[12\]. There is no consensus on treatment but clotrimazole 1% ear drops or flumetasone pivalate 0.02% plus cicloquinol 1% ear drops are commonly used \[8\].

Cleaning of the ear can represent a problem in the presence of a perforated eardrum and a specialist may need to be involved.

**Prognosis** \[13\]

Once antifungal therapy is started there is usually good resolution in the immunologically competent. However, the risk of recurrence is high if the factors which caused the original infection are not corrected and the normal physiological environment of the external auditory canal remains disturbed. Eradication is more difficult in the presence of a mastoid cavity. Frequent cleaning with a cotton bud prolongs the condition. Persistent exposure to excessive moisture and delay in receiving appropriate medical or surgical treatment can prolong the recovery period.

Further reading & references

1. Otitis Externa; DermNet NZ
9. Otitis externa; NICE CKS, July 2015 (UK access only)

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