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Outcome of 22 cases of perforated tympanic membrane caused by otomycosis

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Abstract

Twenty-two cases of perforated tympanic membrane due to fungal otitis externa were observed over a five-year period.

The diagnosis of fungal otitis externa was made on clinical grounds due to the obvious presence of fungal bloom in the external ear canal. Some perforations were noted at the first treatment after the fungal debris had been removed from the external ear canal using a microscope. Other perforations were observed to develop over a few days. Initially, a discrete area of the tympanic membrane appeared white and opaque. As time progressed the white area disintegrated, forming a perforation. Once the otitis externa had resolved most perforations healed spontaneously. Two that were observed to develop during treatment required a myringoplasty. Another one closed significantly but a tiny persistent perforation required cauterization with trichloracetic acid to encourage it to close over completely. The only residual hearing loss was in a case with almost total disintegration of the tympanic membrane requiring a myringoplasty.

Treatment of fungal otitis externa for the patients in this series was aural toilet using suction under a microscope and insertion of a gauze wick saturated in a combination of hydrocortisone, clotrimazole, framycetin and gramicidin.

Key words: Mycosis; Ear, External; Otitis Media, Suppurative

Introduction

Otomycosis of the external ear canal is one of the common conditions treated in a general ENT clinic yet there seems to be only limited recognition in the literature of it being a cause of perforation of the tympanic membrane.[1,2] Anecdotal evidence, however, suggests that this is quite common.

The author first became aware of this possibility when treating a severe case of fungal otitis externa. A discrete area of the tympanic membrane was observed to become white and opaque, after a week the white area had disintegrated leaving a large perforation. After the otitis externa had resolved the perforation gradually healed leaving a normal-looking tympanic membrane and no hearing loss. Over the next five years 21 further cases were recorded and these will be discussed.

Materials and methods

Twenty-two cases of perforated tympanic membrane in association with fungal otitis externa were identified between 1995–2000. There were 14 males and eight females, the age range was from 23 to 79 years old.

Most perforations healed within a month. Three that were observed to develop during the course of the infection failed to heal. Two required a myringoplasty, in one of these the whole tympanic membrane disintegrated over a week. This was the only case that developed a persistent hearing loss. Another perforation closed appreciably but a tiny persistent hole remained requiring cauterization with trichloracetic acid.

The size of the perforations varied from less than one eighth of the total tympanic membrane area (which were the majority) to total perforation.

Two patients developed bilateral perforations. One had simultaneous bilateral perforations while the other developed a perforation one month after the infection in the opposite ear had resolved. Both patients had spontaneous closure.

One patient developed three holes in the same tympanic membrane, each healed spontaneously.

In 12 cases no previous otitis externa had been experienced. One case had type II diabetes and one had inactive hepatitis C.

Follow-up was possible on 14 of the 22 original cases varying from six months to five years. None of these had further otitis externa and all the tympanic membranes that had been perforated had remained intact.

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Discussion

Otitis externa is common in Australia due to the warm climate and the popularity of water sports. The infection may be due to a combination of bacteria and fungi. The most common bacteria are *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Proteus vulgaris*. The commonest fungi are *Aspergillus niger*, *Asp. flavus*, *Asp. fumigatus* and *Candida albicans*.[3] Lucente reviewed and collated articles from around the world. He noted that *Candida* sp. was more prevalent in temperate climates while *Aspergillus* sp. was more common in tropical regions.[4] Other reports from Dacca[5] and New Delhi[6] confirm this finding.

Patients present because they have become frustrated with the continuing irritating itch, discharge, pain, deafness or a blocked sensation.

Cultures were not carried out routinely on the patients in this series as it was not considered cost-effective because the response to treatment is usually rapid and complete. The diagnosis of otomycosis was made on clinical grounds by the easily recognized blotting paper appearance of the matted mycelia and the characteristic appearance of the fruiting bodies or conidiophores. Perforations that developed in the patients in this series were assumed to be due to the fungal infection as they were observed to form during the course of the treatment, or they were noticed to be present at the initial treatment and subsequently healed once the infection had resolved.

At times small intradermal abscesses were observed measuring less than 0.5 mm in diameter in the skin of the external ear canal or on the tympanic membrane. When these micro-abscesses were cleaned away with the sucker, haemorrhagic granulations could be seen in their base. Perforations are thought to form after a sub-epithelial abscess develops on the tympanic membrane. The fungus then causes thrombosis in the adjacent blood vessels which produces avascular necrosis of the underlying tympanic membrane resulting in a perforation.

The customary treatment given to these patients was to clean the epithelial and fungal debris from the ear canal using suction under microscopic control. A gauze wick saturated with clotrimazole, hydrocortisone, framycetin and gramicidin was then introduced into the canal. This treatment was repeated on alternate days until the infection had resolved, usually by day 10.

Several authors have confirmed the effectiveness of clotrimazole against fungi that cause otomycosis.[7–12]

Conclusion

Twenty-two cases of perforated tympanic membrane due to otomycosis are presented with documentation of their outcome. All but three healed spontaneously usually within a month. Clotrimazole used in combination with hydrocortisone, framycetin and gramicidin was found to be an effective treatment for otomycosis.

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Mr W. Hurst takes responsibility for the integrity of the content of the paper.
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