
The Relation between Otomycosis and Retracted Tympanic Membrane

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Abstract:

Objectives: To study whether retracted tympanic membrane is a cause or a result of otomycosis.

Patients and Methods: The study involved 70 patients (100 ears) suffering from otomycosis, all of them were evaluated by clinical examination and sometime by audiological investigations to evaluate the state of the tympanic membrane (retracted or normal in position).

Results: The study revealed that 50% of ears had a retracted tympanic membrane due to negative middle ear pressure secondary to Eustachian tube obstruction. In 20% of ears, the tympanic membrane was just pushed inside by the mass of fungal infection and in 30% the tympanic membrane was normal in position.

Conclusion: Retracted tympanic membrane caused by negative middle ear pressure is an important predisposing factor which needs correction to have complete cure and to prevent recurrence of otomycosis. The study revealed that negative middle ear pressure affect the normal epithelial migration of the tympanic membrane and leads to accumulation of debris in the external auditory canal and increases the risk of otitis externa.

Key words: Otomycosis, fungal otitis externa, retracted tympanic membrane.

Introduction:

Otitis externa is a term, in general, applied to all inflammatory conditions of the external meatal skin.^[1, 2] It is a common condition in the tropics and can be classified according to the causative agent and one of the causes, probably the commonest, is fungal infection. Many varieties of fungi are found, but *Aspergilli* (especially *Aspergillus niger*) and *Candida albicans* are the commonest.^[3, 4] Fungi are to be found as saprophytes in the external auditory meatus. Infection is predisposed by many factors. It is common in patients who have undergone open cavity mastoidectomy, those who wear hearing aids, and in swimmers.^[5] Multiple factors may be present at the same time, but self-cleaning is the most common predisposing factor.^[4]

Commonly, the patient presented with itching, fullness, and sometimes, severe otalgia. Typically, a mass of grayish white debris with black specks on it is seen or sometimes as fine filaments.^[5] Treatment consists of good cleaning of the external auditory canal with topical antifungal agent for 3-4 weeks.^[6]

Retracted tympanic membrane is caused by negative middle ear pressure secondary to Eustachian tube dysfunction, like in children with adenoid or nasopharyngeal tumors in adults. The patient will present with conductive deafness, fullness, and sometimes otalgia.

The aim of our study was to study whether retracted tympanic membrane predisposes the patient to otomycosis or it is just pushed inside by the mass of fungal infection.

Materials & Methods:

This study was conducted over the period from Jan. 2001 to Aug. 2002 in the Otolaryngology department in Al-Yarmouk Teaching Hospital. The study sample consisted of 70 patients (100 ears), all of them suffered from otomycosis.

All patients were fully evaluated by history, clinical examination and some of them by audiological investigation.

After cleaning the meatal canal, the state of the tympanic membrane was evaluated, whether retracted or not. Retracted tympanic membrane is characterized by shortening of the handle of malleus, prominent malleolar fold and short process of the malleus with disturbed cone of light. Tuning fork tests were done; negative Rinne test may be elicited with lateralization of Weber test to the affected side.

All patients with retracted tympanic membrane were subjected to pure tone audiometry (PTA) and tympanometry. In those with negative middle ear pressure, a conductive deafness was seen in PTA with type C tympanogram.

Results:

All of the patients were diagnosed clinically as having otomycosis. Retracted tympanic membrane found in 70 ears (70%) (Table 1), from these 50 ears (71.5%) had negative middle ear pressure and 20 ears (28.5%) had normal middle ear pressure (Table 2). Recurrent otomycosis seen in 25 ears, 80% of them had negative middle ear pressure (Table 3). Various clinical types of otomycosis were seen (Table 4).

Table 1: The state of tympanic membrane by otoscope.

Position of tympanic membrane	No. of ears	%
Retracted	70	70
Normal	30	30
Total	100	100

Table 2: The results of tympanometry in those with retracted tympanic membrane.

Tympanometry	No. of ears	%	% from the total No.
Negative middle ear pressure	50	71.5	50
Normal middle ear pressure	20	28.5	20
Total	70	100	70

Table 3: Recurrent otomycosis.

Middle ear pressure	No. of ears	%	% from the total No.
Negative	20	80	20
Normal	5	20	5
Total	25	100	25

Table 4: Clinical types of otomycosis.

Middle ear pressure	No. of ears	%	Mass		Filament	
			No	%	No	%
Negative	50	50	49	54.5	1	10
Normal	50	50	41	45.5	9	90
Total	100	100	90		10	

Discussion:

On otoscopy, 70 ears (70%) had retracted tympanic membrane, while 30 ears (30%) had normally positioned tympanic membrane. After doing tympanometry to all these 70 ears with retracted tympanic membrane, only 50 ears (71.5%) (50% from the total number) have negative middle ear pressure, and 20 ears (28.5%) (20% from the total number) have normal middle ear pressure re-examination of these 20 ears by otoscopy after tympanometry revealed that the tympanic membrane is repositioned into its normal position and this proves that the tympanic membrane was just pushed inside by the mass of fungal infection.

Recurrent otomycosis was seen in 25 ears (25%), 80% of them have negative middle ear pressure; while (20%) have normal middle ear pressure.

From these results, 50% of ears with otomycosis have a negative middle ear pressure that makes it an important predisposing factor to otomycosis and it is more important in those with recurrent otomycosis and needs correction to cure the patient.

The only study found in this aspect was done by Morrison & Mackay, they found high incidence of negative middle ear pressure in patients suffering from recurrent attacks of otitis externa and they have postulated that impaired Eustachian tube function may be a factor in causing otitis externa. [7]

These findings are probably explained by the fact that patients with Eustachian tube obstruction suffer from deafness or fullness and sometimes from discomfort that make them to clean and probe their ears traumatizing the meatal skin and causing otomycosis. Or probably that retracted tympanic membrane affect the normal epithelial migration along the external auditory canal, [7] which leads to accumulation of debris in the canal that acts as a nidus for infection or again the patient try to clean the ears doing trauma to the meatal skin. The last explanation is supported, partly, by the results appear in the current study, as shown that the

commonest clinical type of otomycosis was a mass filling the canal (90 ears) (90%) from the total number, while only (10 ears) (10%) presented with fine filaments projecting from the meatal wall. A mass filling the canal was relatively more in ears with negative middle ear pressure (49 ears) (54.5%) compared to ears with normal middle ear pressure (41 ears) (45.5%), while only (one ear) (10%) with negative middle ear pressure presented with fine filament compared to (9 ears) (90%) with normal middle ear pressure. No comparable study was found.

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