

Original Article

Mycology of Otomycosis in a tertiary care teaching hospital

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ABSTRACT

Background: Otomycosis is an acute, subacute or chronic fungal infection of the external auditory meatus. It is worldwide in distribution with a higher prevalence in the hot, humid, and dusty areas of the tropics and subtropics. A wide variety of fungi can cause Otomycosis.

Objectives: In this study, we aimed at determining the most common mode of presentation, predisposing factors, and the spectrum of fungi involved in Otomycosis.

Materials & Methods: A total of 100 patients clinically suspected of Otomycosis were studied during the study period. All the specimens collected from patients were subjected to standard microbiological procedures for the identification of fungi involved in Otomycosis.

Results: In the present study, Otomycosis was found to be more common among females (58.54%) and majority in the age-group 21-30 years (35.36%). Pruritis was the most commonly presenting symptom seen in 77% of the otomycotic patients. Instillation of coconut oil was found to be predominating predisposing factor for Otomycosis (36.59%), followed by self cleaning (32.93%). *Aspergillus niger* 39(47.56%) was the predominant species isolated. second most common species isolated was *Aspergillus flavus* 25(30.49%). *Aspergillus fumigatus* 9(10.97%), *Candida* species 7(8.54%), *Mucor* 1(1.22%) and *Penicillium* species 1(1.22%) were other species isolated.

Conclusion: High incidence of Otomycosis has been encountered in tropical countries. In our study, *Aspergillus* species was found to be the commonest fungi involved in Otomycosis. Laboratory diagnosis is important to know the exact etiology of Otomycosis to institute appropriate antifungal therapy.

Key words: *Aspergillus*, *Candida*, Clinical features, Predisposing factors

INTRODUCTION

Otomycosis is an acute, subacute or chronic fungal infection of the external auditory meatus [1]. Although rarely life threatening, the disease is a challenging and frustrating entity for both patients and otolaryngologists as it frequently requires long-term treatment and follow-up. Despite this, there could be recurrences [2]. Predisposing factors such as a failure in the ear's defense mechanisms (changes in the coating epithelium, changes in pH, quantitative and qualitative changes in ear wax), bacterial infection, instillation of oil, hearing aid or a hearing prosthesis, self-inflicted trauma, swimming, broad spectrum antibiotic agents, steroids and cytostatic medication, neoplasia and immune disorders, all of which can

render the host susceptible to the development of Otomycosis [3,4]. Most patients suffer from Otomycosis complain of severe itching which often progress to pain, hearing loss, and often leading to tympanic membrane perforations [5]. The most isolated fungi are *Aspergillus* species and *Candida* species [6] However, other fungi can cause otomycosis. Treatment recommendations go from germ termination or controlling predisposing factors, to local debridement (micro-aspiration) and/or the use of antimicrobial agents (topical/systemic) [7].

In this study, we aimed at determining the most common mode of presentation, predisposing factors, and the spectrum of fungi.

MATERIALS AND METHODS

This is a prospective, observational study in which a total of 100 clinical specimens suspected of Otomycosis received in the department of clinical microbiology of Vinayaka Missions Medical College and Hospital, Karaikal, between March 2014 to December 2014 were processed. All specimens were collected using two sterile cotton tipped swabs or sterile scalpel blade. First swab/scrapped material was digested on a microscopic slide with 10% potassium hydroxide [8]. The second swab/scrapped material was inoculated on two Sabouraud's dextrose agar with chloramphenicol. One of the agar slants was incubated at room temperature (25°C) and the other was incubated at 37°C for 2 to 3 weeks. Cultures were examined for growth on alternate days. Fungi were identified by standard procedures [9].

RESULTS

A total of 100 specimens collected from patients suspected of otomycosis based on clinical features. Fungal isolates were found in 82 specimens. 34 (41.46%) of the patients with otomycosis were males and 48 (58.54%) were females. Predominant otomycosis was found in age group of 21-30 years followed by 11-20 years (Table-1).

Table 1: Age and sex wise distribution of Otomycosis patients

Age (in years)	Sex		Total
	Male	Female	
<10	2	1	3(3.66%)
11-20	7	12	19(23.17%)
21-30	11	18	29(35.36%)
31-40	6	9	15(18.29%)
41-50	5	4	9(10.98%)
51-60	2	3	5(6.10%)
>60	1	1	2(2.44%)
Total	34(41.46%)	48(58.54%)	82(100%)

In our study only unilateral involvement was found. Among, males and females right ear was predominantly involved. Pruritis was the predominant symptom seen in 77% of the otomycotic patients followed by hearing loss (40%). Other symptoms were ear pain (35%) and ear discharge (33%).

Instillation of coconut oil was found to be predominating predisposing factor for Otomycosis. Second most common predisposing factor was found

to be self cleaning (cleaning of the ear by the patient with unsterile sticks/feather/hair pin). (Table.2)

Table 2: Predisposing factors for otomycosis

Predisposing Factors	Frequencies (N=82)
Instillation of coconut oil	30(36.59%)
Self cleaning	27(32.93%)
No cerumen	11(13.41%)
Chronic suppurative otitis media	9(10.97%)
Prior therapy	5(6.10%)

Out of 100 specimens collected, 82(82%) specimens yielded growth. All specimens yielded single organism. *Aspergillus niger* 39(47.56%) was the predominant species isolated. Second most common species isolated was *Aspergillus flavus* 25(30.49%). *Aspergillus fumigatus* 9(10.97%), *Candida* species 7(8.54%), *Mucor* 1(1.22%) and *Penicillium* species 1(1.22%) were other species isolated (Table 3).

Table 3: Fungal isolates from otomycosis patients

Fungal isolates	No. of patients (N=82)
Aspergillus niger	39(47.56%)
Aspergillus flavus	25(30.49%)
Aspergillus fumigatus	9(10.97%)
Candida species	7(8.54%)
Mucor	1(1.22%)
Penicillium species	1(1.22%)

DISCUSSION

Andrall and Gaverret were the first to describe fungal infections of the ear Otomycosis is a superficial mycotic infection of the outer ear canal [10]. The infection may be either subacute or acute and is characterized by pruritus, pain, mild hearing loss, superficial epithelial exfoliation, debris containing fungal hyphae and spores. Occurrence of Otomycosis was high in our study (82%) when compared to the studies conducted by Kaur et al [11] and Barati et al [12]. The higher incidence of Otomycosis may be due to high degree of humidity. Maximum numbers of patients were from fisherman community, as this study was conducted in a coastal region. In our study, females (58.54%) were more commonly affected by Otomycosis than males (41.46%). This is in agreement with the study conducted by Zaror et al [13]. However, males were predominated the study conducted by B Pradhan et al. The occurrence of

bilateral otomycosis is very low [14]. In our study only unilateral involvement was found. Ho et al observed a bilateral involvement in 7% of the patients [2].

The incidence of Otomycosis in our study was high in the age group of 21-30 years (35.36%) followed by 11-20 years (23.17%). This may be due the fact that immune-compromised states are less common in younger age group [5]. Our study revealed high association (36.59%) of Otomycosis with instillation of coconut oil into the external ear. Coconut oil has been reported to be sporostatic [15] and therefore may help preserve the viability of fungal conidia deposited in the external ear long and indirectly contribute to occurrence of Otomycosis. In our study second most common factor was self cleaning (32.93%) (by using unsterile sticks/feathers/hair pins/rolled papers etc.) Habit of cleaning ear with such contaminated objects leads to inoculation of fungal debris in external auditory canal. Moreover it damages normal lining epithelium, which is the natural defense that protect against such infections. Other predisposing factors were lack of cerumen, chronic otitis media and prior antibiotic therapy. This in accordance with the study conducted by Pontes et al [16].

Most common symptoms of Otomycosis are pruritis, hearing loss, ear discharge and ear pain. This is in agreement with the other studies [17,18]. In our study, *Aspergillus niger* was the most commonly isolated organism. This is in accordance with the other studies [19, 20] *A. flavus* was found to be the second most common causative agent followed by *A. fumigatus*. However, Kaur et al [11] reported, *A. fumigatus* as the common causative agent of Otomycosis followed by *A. niger*. *Aspergillus* species and *Candida* species are the most commonly identified fungal pathogens in Otomycosis [21]. However, other etiologic agents include *Allescheria boydii*, *Scopulariopsis*, *Rhizopus*, and *Absidia* [22].

CONCLUSION

High incidence of Otomycosis has been encountered in tropical countries. In our study, *Aspergillus* species was found to be the commonest fungi involved in Otomycosis. Since clinical features are not specific, laboratory diagnosis is important to know the exact etiology of Otomycosis to institute appropriate antifungal therapy. Educating the rural population is another important concern and needs to be addressed.

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