

Original Research Article

Clinico-mycological study of otomycosis in Raichur, Karnataka: a hospital based study

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ABSTRACT

Background: Otomycosis is a fungal infection of the ear canal. It is mostly seen in hot and humid climatic conditions of the tropical and subtropical countries. It can also occur as a result of decreased immunity (and has been seen as a common occurrence as an opportunistic infection in the immunocompromised).

Methods: Patients clinically diagnosed with otomycosis and coming to the ENT department RIMS teaching hospital were first subjected to detailed history taking. The samples from ear will then be collected by three sterile cotton swabs and sent to Microbiology Department, RIMS. Fungal, bacterial cultures were performed and microscopic examination was done.

Results: Patients presented with a wide age range, the youngest patient being 6 months old and eldest being 28.31 years old. The mean age of the study population was 28.31 years. The ratio between male and female patients was 1.13:1 with male predominance. There were 26 patients (81.2%) who had a habit of using pins or sticks. The chief complaints of majority of the patients were pain and itching. Pain ranged from mild to severe type. Least common symptom was tinnitus.

Conclusions: In our study male predominance was seen and majority of cases were unilateral. There were only 5 patients who were immunocompromised. The most common presenting symptom was pain and itching. There were 81.2% patients who had a habit of using pins/ sticks.

Keywords: *Aspergillus*, *Candida*, Otomycosis, Tinnitus

INTRODUCTION

Otomycosis, also known by the name of fungal otitis externa, is described as fungal infection of middle ear, external auditory meatus and its associated complications.¹ It is generally seen in people living in hot and humid climatic conditions and amongst people involved in water sports. The incidence of otomycosis has been reported between 9%-30.4%.^{2,3} Majority of cases of otomycosis are fungal in origin and amongst them *Aspergillus* and *Candida* species predominate. These fungi as major causative organisms were reported

by Geaney et al and by Lakshmi pathi and Murthy.^{4,5} Various predisposing factors for otomycosis include diabetes, lymphoma, patients undergoing chemotherapy and radiotherapy, AIDS or any other immunocompromised condition, any pre-existing ear disease, dermatitis.^{4,6-8}

The most common presenting signs and symptoms of otomycosis include pruritis, pain, inflammation, scaling.^{2,9} Tinnitus, ear ache, hearing impairment, discharge is some other commonly associated symptoms.^{2,10,11} Even in most advanced cases of

otomycosis, the fungal hyphae do not protrude outside the ear as they derive their nutrition from external auditory canal. Increased prevalence of otomycosis has been because of exuberant use of antibiotics for otitis externa, which results in secondary overgrowth of fungi because of the use of broad spectrum agents.¹² In the present study, an attempt to determine the incidence of otomycosis in the general population, in individual sexes, in different age groups, in the immunocompromised and in malnourished children in Raichur, has been made and to determine the efficacy of various antifungal drugs.

METHODS

The study was conducted in the ENT Department of RIMS teaching hospital from Aug 2014 till Aug 2017. All the patients reporting to the department with otomycosis were included in the study. All the patients were informed about the study and a written informed consent was obtained. The study was approved by the ethical committee of the institute. A detailed history was taken and samples were collected from ear using three sterile cotton swabs and sent to department of microbiology for examination. The first swab was examined under microscope after preparing slide. The second and third sample was taken for fungal and bacterial culture respectively.

Only clinically diagnosed cases of otomycosis and recurrent cases of otomycosis were included in this study. Patients with referred otalgia, or using antifungal ear drops or with CSOM were excluded from the study. A total of 32 specimens from symptomatic patients were studied. The specimens were inoculated on Sabouraud dextrose agar and incubated for a period of 1 week at room temperature. The fungal and bacterial colonies were formed and studied.

The data was arranged in a tabulated form and analysed using SPSS software. Percentage of the data was calculated and compared with the data obtained by various other studies.

RESULTS

In the present study a total of 32 samples were obtained and the results of the study are presented below.

Table 1 show the demographic data and study characteristics of the population. Patients presented with a wide age range with the youngest patient being 6 months old and eldest being 28.31 years old. The mean age of the study population was 28.31 years. The ratio between male and female patients was 1.13:1 with male predominance. In majority of the patients left ear was involved. The ratio between right to left ear involvement was 4:11. There were 2 patients who showed bilateral involvement. There were 5 systemically compromised patients presenting with diabetes, hypertension. One patient presented with AIDS.

Table 1: Demographic data and site of involvement.

Study characteristics	
Mean age	28.31 years
Male:female	1.13:1
Site of involvement (Right:left:bilateral)	4:11:1
Presence of systemic disease	5 (hypertension, diabetes)

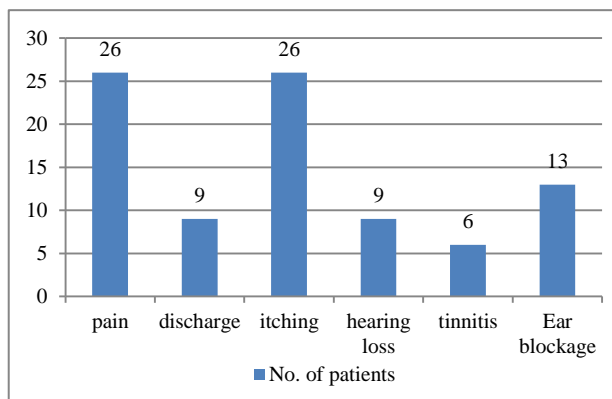


Figure 1: Presenting symptoms.

Figure 1 show the presenting symptoms of the patients who reported to the department. The chief complaints of majority of the patients were pain and itching. Pain ranged from mild to severe type. Least common symptom was tinnitus. There were 9 patients (28.1%) who presented with discharge and hearing loss. There were 40.6% patients i.e. 13 patients who presented with ear blockage. Discharge was generally greyish white to greyish black in colour. Some patients also presented with whitish or creamish white discharge.

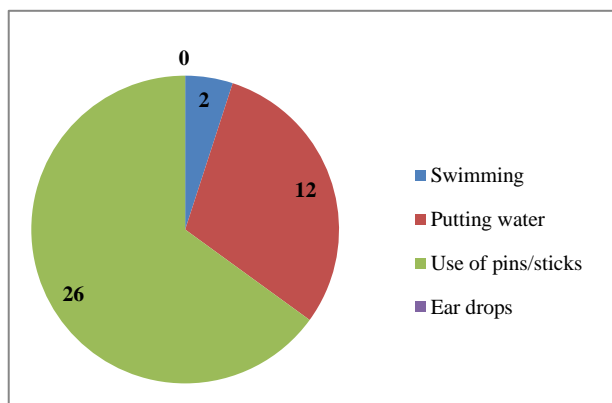


Figure 2: Associated indigenous habits.

Figure 2 shows the predisposing factors or the indigenous habits that patients were involved in. There were 26 patients (81.2%) who had a habit of using pins or sticks. Only 2 patients (6.3%) were involved in swimming. Approximately 12 patients had a habit of putting water in ears.

Table 2: Results of culture.

S. no.	Microorganisms	Incidence
1	<i>A. Niger</i>	15
2	<i>A. Flavus</i>	6
3	<i>Candida</i>	10
4	<i>A. Fumigates</i>	2
5	<i>A. Terreus</i>	1
6	<i>S. aureus</i>	11

Table 2 shows the results of bacterial and fungal culture. The most common fungal species to be isolated was *A. niger*. There were 46.9% patients from which *A. niger* was isolated. Approximately 34.4% patients showed positive cultures for *S. aureus*. There were 6 patients from whom *A. flavus* was isolated. The most commonly isolated microorganism was *A. niger* and *A. terreus* was the least common microorganism.

DISCUSSION

Otomycosis can be acute or sub-acute in nature. Infection can occur in any region of the world but it is more prevalent in tropical and subtropical areas. There have been several studies on Otomycosis, but none in a centrally placed, dry, arid land like Raichur, where majority of the population lives below poverty line, education and hygiene is poor, and there is high prevalence of malnourishment. The place is also known for its high incidence of AIDS and tuberculosis. Most of the literature obtained on otomycosis has been to determine the prevalence of otomycosis and the common causative organisms. In India, studies have been conducted primarily in regions where patient input is high due to the geographic and demographic particulars of the place.

The mean age of involvement in our study was 28.61 years with the youngest patient being 6 months old and eldest being 55 years old. According to a study by Satish et al, the incidence of otomycosis was greater between 21-30 years of age.⁹ In a study done by Than et al 52% males and 48% of females were affected and in a study by Satish et al 53% males and 47% of females were affected.^{9,13} According to our study, the male to female ratio was 1.13:1. Unilateral involvement is commonly seen in otomycosis. In a study by Paulose et al, 87% of the cases were unilateral.⁵ This was in accordance with our study where majority of cases were unilateral.

According to Pradhan et al, the most common symptoms associated with otomycosis were ear pain and blocking sensation.¹⁰ In our present study ear pain and itching were the most common presenting symptoms ear blockage was seen in only 40.62% patients. According to our study, *A. niger* was the most commonly isolated organism from cultures accounting for 46.9% cases. In a study by Dr Ricky et al, in 45% cases *A. niger* was isolated.¹⁴ In his study *C. albicans* was isolated only in 21% cases. In our

present study it was isolated in 31.25% cases. In a study by Chander et al, in 57% of cases *A. niger* was isolated. In a study by Satish it was isolated in 54% of cases, making it the most commonly isolated micro-organism.^{13,15}

In a study by Rickey et al, there were 64% of patients who enrolled in a habit of self-cleaning of ears. In our study 26 patients had a habit of using pins or sticks.¹⁵ In his study only 6% patients used ear drops, in our present study there was no reported case of using ear drops. The few limitations associated with our study were that the sample size was small and recurrent cases of otomycosis were taken into account. In the present study, ointment application was used as treatment option instead of ear drops. Ointment of clotrimazole, terbinafine, ofloxacin, ornidazole and clobetasol was either used singly or in combination to treat the cases. Better and improved outcomes were seen with ointment as compared ear drops.¹⁶⁻¹⁸

CONCLUSION

Otomycosis is a commonly encountered condition in otolaryngology clinics. It has few dreaded sequelae like tinnitus, hearing loss. In our study male predominance was seen and majority of cases were unilateral. There were only 5 patients who were immunocompromised. The most common presenting symptom was pain and itching. There were 81.2% patients who had a habit of using pins/ sticks.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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