Section: ENT

Original Research Article

A STUDY ON THE CLINICO MYCOLOGICAL PROFILE OF OTOMYCOSIS IN A TERTIARY CARE CENTRE

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Abstract

Background: Otomycosis is a common condition encountered in ENT practice which is a superficial fungal infection of the external auditory canal. Despite the fact that our climatic conditions may predispose to otomycosis, literature search revealed that no much work has been carried out. The present study is undertaken to study the demographic profile, predisposing factors, clinical features and prevalence of fungal agents in cases of otomycosis. **Materials and Methods:** 120 clinically diagnosed cases of otomycosis attending the ENT OPD for a period of one year was asked detailed history and specimens were collected for mycological examination. **Result:** 105 out of 120 cases were diagnosed with otomycosis. Pruritis and otalgia were the symptoms commonly encountered. Swimming, use of oils and eardrops and diabetes were the most common predisposing factors. The fungi isolated were Aspergillus niger, A fumigatus, A flavus, C. albicans, non albicans candida and penicillium. **Conclusion:** Otomycosis is still a common problem. Awareness about the predisposing factors, clinical suspicion and mycological studies are important.

INTRODUCTION

Otomycosis or fungal otitis externa has typically been described as fungal infection of the external auditory canal with infrequent complications involving the middle ear.[1] The infection may present as acute, subacute or chronic, and is typically unilateral, with the bilateral form being more common in immunocompromised patients.

The infection is present globally, with prevalence ranging from 9% to 30% in patients with the signs and symptoms of EAC infection.[2–4] 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 followup. Prevalence is also influenced by the geographical area, as otomycosis is most commonly present in tropical and subtropical humid warm climates.[5] The fungus may not be the primary cause but merely a secondary invader in cases of otitis externa. Therefore, otomycosis can be seen in mixed fungal infection with bacterial infections.[6] The causative agents of otomycosis are various types of fungi, such as hyaline saprophytic moulds, dematiaceous saprophytic moulds, yeasts, and, rarely, pathogenic moulds like dermatophytes.[7-11] The most common causative agents of otomycosis are moulds of the genus Aspergillus and yeasts of the genus Candida.[12] Several etiological factors predispose to Otomycosis which include chronic ear infections with long term use of antibiotics or steroid ear drops, swimming, use of oils mainly coconut oil which can lead to depletion of the protective cerumen layer maceration of underlying skin and increase in ambient pH.[13] Evidence of yeast or fungal infections elsewhere in the body, co morbid conditions like diabetes mellitus and immunocompromised host are other contributing factors.

Despite the fact that our climatic conditions may predispose to otomycosis, literature search reveals that no much work has been carried out in this region. So, the present study is thus designed with a view to elucidate the demographic profile, predisposing factors, associated conditions, clinical features and mycological pattern of fungal agents in otomycosis at Bagalkot district, North Karnataka, India.

MATERIALS AND METHODS

A total of 120 patients with clinically suspected otomycosis, attending OPD of ENT department of S. Nijalingappa Medical College Hospital were chosen for the study. Patients complaining of itching, pain, sensation of blockade in ear or impaired hearing were selected. General information like age, sex, socioeconomic status, diabetic status, trauma, history

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of ear surgery or previous ear infections and laterality of symptoms were recorded. Any history of habits like swimming, use of oils/ear drops, wooden sticks or metal wax picks for removal of wax were also recorded. Otoscopic examination of external auditory meatus was carried out. From patients with suspected otomycosis ear swabs were collected from affected ear. All samples were transported to the laboratory within half an hour. Direct microscopy was done by 10% potassium hydroxide (KOH) preparation and grams stain examination. Culture was done in Sabouraud's Dextrose Agar (SDA) inoculated media and incubated at room temperature and were followed for two weeks. For isolation of fungi growth on media were confirmed by lacto phenol cotton blue (LCB) preparation. The debris in the external auditory canal was thoroughly cleaned by suction aspiration and dry mopping and patients were put on antifungal ear drops.

RESULTS

A total of 120 patients with otomycosis were included in the study. The age and gender were evaluated in which it was highest in the age group of 21-30 [35%] followed by 31-40 age group [24%] and was more prominent in males [56%]. Majority of cases were unilateral [86%] in which 55% in right ear and 45% in left. Bilateral cases were seen in about 16%. According to the BJ Prasad salary score, it was found to be common in lower class [72%]. This may be due to the fact the lack of awareness and self-hygiene of the society.

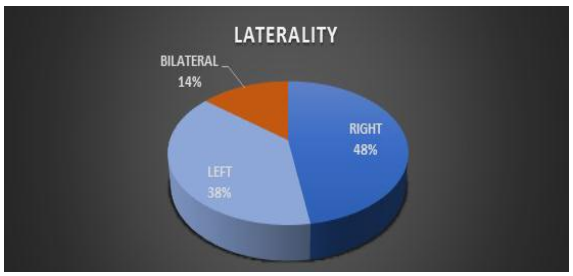

Figure 1: Laterality of Cases

The number of cases were noted to be more in the rainy and winter season in the months of June-July [12%] and from October to December [56%]. Most of the patients presented with multiple complaints. Pruritis [79%] was the most common complaint encountered followed by otalgia [72%]. Associated ear discharge was seen in 41%. The other symptoms were tinnitus [17%], hard of hearing [13%] and aural block [9%]. Various predisposing factors for the development of otomycosis were studied and the most common ones were noted to be swimming in canals or ponds [36%], use of oil in ear [32%], diabetes mellitus [31%], history of previous ear infection [30%], local antibiotic use [24%] and use of ear buds [23%].

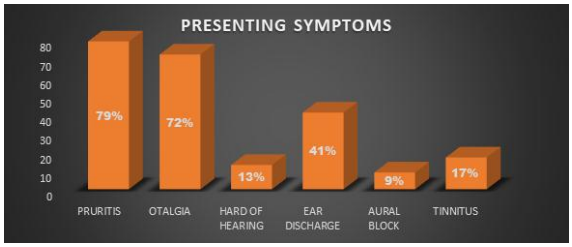

Figure 2: Presenting symptoms of study population

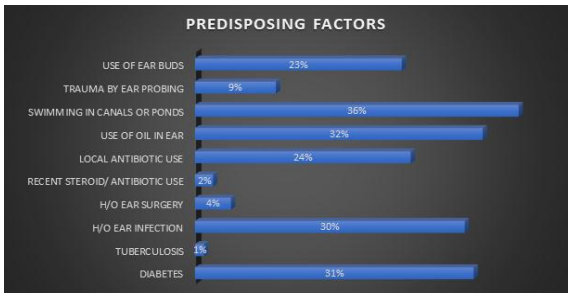

Figure 3: Predisposing factors among study population

On mycological examination, 99 out of 120 cases were positive on KOH smear and 105 out of 120 samples were positive for fungal growth. 9 cases which showed positive fungal growth on culture were negative on KOH examination and 3 samples without fungal isolates showed positive KOH results. Considering culture as the gold standard method, the sensitivity and specificity of KOH examination was 91.42% and 80% respectively. The most common isolate was Aspergillus niger [42%] followed by Candida albicans [23%] and Aspergillus fumigatus [20%].

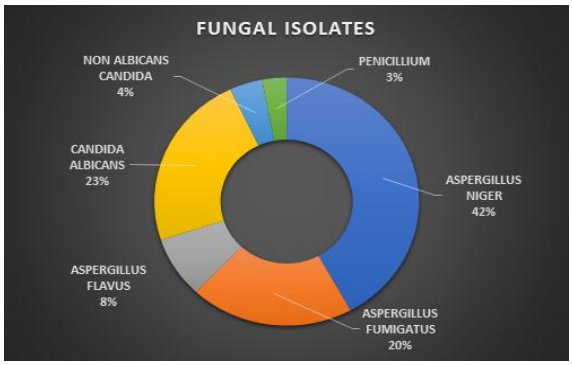

Figure 4: Spectrum Of Fungal Isolates

Table 1: Age and gender distribution

Age (Years)	Male	Female	Total
< 20	7	7	14
21 - 30	24	18	42
31 - 40	15	14	29
41 - 50	11	7	18
51 - 60	7	5	12
> 60	3	2	5

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Total	67 (56%)	53 (44%)	120

Table 2: Socioeconomic status among study population

	Monthly income	Cases	Percentage
Lower	<2728	86	72%
Middle	2729 - 9097	25	21%
Upper	>9098	9	7%

Table 3: Fungal Culture and KOH Examination of Study Group

		Fungal culture		Total
		Positive	Negative	
KOH	Positive	96	3	99
	Negative	9	12	21
Total		105	15	120

DISCUSSION

Otomycosis is a chronic superficial fungal infection that affects the deeper ear canal skin and the tympanic membrane. Unless manifested in the classical way, they tend to be misdiagnosed. Otomycosis is commonly associated with increased ear canal moisture, warmth and treatment of a bacterial infection with long term topical antibiotic therapy, which can lead to depletion of the protective cerumen layer, maceration of underlying skin, increase in ambient pH and a modification of the microbial flora of external auditory canal, thereby selecting for untreated organisms. A medical history of diabetes and / or an immunocompromised state may be present.[14] Otomycosis is predominantly unilateral both in males and females.[15] Present research was undertaken at S. Nijalingappa medical college hospital, Bagalkot in order to identify the presenting symptoms, predisposing factors and causative agents of otomycosis in this area.

Considering the fact that otomycosis can occur at any age, age does not act as a barrier to the infection, although the commonest age group affected in our study was 21-30 years which correlates with higher incidence seen in the same age group in the study conducted by Mohanty JC et al,[16] Chander J et al,[17] Paulose KO,[18] and Kaur R.[19] In our study, we observed that otomycosis was more common in young men, which is in accordance with the findings of other studies.[19,20] Males are more exposed to fungal spores because they generally spend more time outdoors than others do. It is well known that the outdoor air is an important vector for locally prevalent fungal flora. Our observation that otomycosis was unilateral and showed no preference for either side confirms the findings of other authors and supports the idea that the disease is not highly infectious. [19,21]

All the patients in our study presented with itching (79%) and other common complaints were ear ache (72%), and ear discharge (41%). The above complaints and their incidence as mentioned earlier were in accordance with KO Paulose, Al Khalifa, P. Shenoy, RK Sharma et al,[18] Yehia MM and Alhabib HM and Shehab NM.[21]

Predisposing factors determined in this study include use of oils and eardrops, swimming, diabetes, use of ear buds and previous ear infections. Cerumen which is present in the external auditory canal has a pH of 4 to 5 and hence it supresses the bacterial and fungal growth. Aquatic sports including swimming and surfing are particularly associated with this condition because repeated exposure to water removes the cerumen from the external auditory canal and results in the drying of external auditory canal.[22] Lack of formal education in people in many parts of India has led them to believe myths that coconut oil application for ears is beneficial for a variety of ailments. Our study revealed high association of otomycosis with instillation of coconut oil in the external ear, which is a sporostatic,[23] and therefore may help preserve the viability of fungal conidia deposited in the external ear for longer time and indirectly contribute to occurrence of otomycosis.[15]

The majority of the fungal pathogens isolated from the ear swabs belonged to the taxon Aspergillus followed by Candida sp, Mucor and Penicillium. Aspergillus spp are common in airborne dust and their heavy growth is added by earwax. Further more the PH level in the normal ear canal is on the acidic side and the common pathogenic aspergilli experience optimal growth at a PH range of 5 to 7. Aspergillus niger was the commonest fungi isolated in our study, in accordance with the other studies.[2,19,21,24-26]

CONCLUSION

Otomycosis is a common condition encountered in this geographical area where the humid weather is favourable for the growth of fungi. The disease was found to be predominantly unilateral and more common in males. Ear itching was the most common symptom at presentation followed by ear ache and ear discharge. The condition was commonly found in people working in dusty environment and those who are exposed to the outdoor environment and housewives who work in a cold damp environment. In this study Aspergillus group were found to be the most common causative agent. Of the Aspergillus group the common isolated species were Aspergillus niger. Other species isolated included Candida and Penicillium. Keeping in view the high prevalence of otomycosis in India, avoidance of predisposing factors, timely and critical diagnosis of the causative

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agent and susceptibility testing for proper treatment of otomycosis is the need of the hour.

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