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Original Research Article

Clinico-Mycological Analysis of Otomycosis in A Tertiary Care Hospital

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Abstract

Introduction: Otomycosis is an acute, subacute, or chronic superficial fungal infection of the external auditory canal that is most frequent in tropical and subtropical regions of the world and can result in hearing loss and ear drum perforation. The current study was conducted to find fungal agents and their relationships with various factors.

Materials and Methods: The study was conducted at a tertiary care hospital, Ballary. The study included 60 patients over the age of 10 with clinically confirmed otomycosis. Certain patient information, such as age, gender, and clinical presentations, as well as potential risk factors and clinically observable findings, were documented. Microbiological causes were determined by culture of samples taken from each participant. The data were statistically evaluated and are presented in a tabular format.

Result: According to the findings of our study, most of the patients were between the ages of 20 and 30. Males were seen more frequently than females. The most often detected risk factor was self-cleaning of the ears, which was observed in 30% of the study population, followed by mustard oil instillation in 26% of the study group and usage of antibiotic ear drops in 24% of the study group. Hearing loss was described as the most common presenting symptom in 76% of the study group, followed by pruritis in 70%, earache in 52%, and a sensation of a plugged ear in 48%. Aspergillus was the most often isolated fungus, seen in 66% of the total population. Aspergillus fumigatus was the most prevalent species isolated from samples, accounting for 56%. Candida was the second most commonly isolated fungus, accounting for 24% of the group.

Conclusion: In this study, the most prevalent fungus isolated from otomycosis patients were Aspergillus and Candida species. The current study further emphasises the need of education in eradicating the aforementioned predisposing risk factors in order to reduce the occurrence of Otomycosis.

Keywords: Otomycosis, Otitis externa, Fungal ear infections, Candida, Aspergillus, Risk factors.

Introduction

Regarding ear complaint visits, it is estimated that otitis externa accounts for approximately 5 to 20% of total clinic presentations, with fungal infections accounting for approximately 10 to 25% of the total [1,2]. Otomycosis is more common in tropical and subtropical regions, however, it is found worldwide [3,4]. Otomycosis is a superficial, subacute, or chronic infection of the external auditory canal that causes inflammation, pruritus, and scaling.[5]

Otomycosis affects the squamous epithelium of the external ear canal, and the causative fungi are most commonly found in the medial aspect of the ear canal, partly due to the location of the inferior tympanic recess, which allows debris accumulation, and partly due to this aspect of the ear canal being comparatively darker and warmer, promoting fungal growth. [6] Following a clinical exam (otoscopy), a fungal examination might be used to confirm the diagnosis. Aspergillus and Candida spp. are the most typically found fungi in EAC infections; they are opportunistic and usually have varying pathogenicity, and they are part of the normal microbiota from many body areas [7,8]. Treatment strategies range from infection control and/or prevention to local debridement (micro aspiration) and/or the use of antimicrobial drugs (topical/systemic) [9,10]. The purpose of this study was to identify the presenting symptoms, risk factors, and incidence of fungal agents that cause otomycosis.

Materials and Methods:

Study settings: The study was carried out at VIIMS, Ballary with the following departments.

• Department of Microbiology

• Department of Otorhinolaryngology

Study Design: It is a Descriptive, cross-sectional study

Study duration: Following clearance from the Ethical Committee, samples were collected and processed during the period January 2021 to June 2021

Inclusion criteria: Only patients over the age of 10 years were included in the study. This study included only patients who were diagnosed with otomycosis based on their medical history and physical examination.

Exclusion criteria: The study excluded all patients under the age of 10 years. The study excluded patients having a history of significant, chronic medical conditions such as TB and diabetes.

Data and sample collection:

The study comprised 60 otomycosis patients who had been clinically diagnosed. Each study participant provided demographic information such as age, gender, occupation, and a history of associated risk factors. Sterile swabs were used to collect samples. Three swabs were obtained and promptly transported to the laboratory. One swab was used for Gram staining, another for direct evaluation of fungal elements with 10% potassium hydroxide, and the third for fungal culture. Two sets of Sabouraud's dextrose agar were incubated at 37°C and 25°C for fungal culture. These were checked for growth every day for the first week and twice a week for the next three weeks. Growth was observed in terms of rate of growth, colony morphology, texture, and surface pigmentation. To identify the fungi, microscopic inspection with Lacto phenol cotton blue and slide culture were performed. Candida species were tested by Gram staining and the germ tube test. After 4 weeks, a negative fungal culture report was provided.

Statistical analysis of data:

Using excel and SPSS, data were presented in the form of tables and graphs using percentages of the total population.

Results: The total study population consisted of 60 subjects, with the majority of those being between the ages of 21 and 30 years, accounting for 37% of the study

population, and the least number of patients being over the age of 50 years accounting for 4%.

Table 1: Age wise distribution

Age	Frequency (n)	Percentage (%)
11-20	16	26
21-30	22	37
31-40	13	21
41-50	7	12
50 and above	2	4

55% of the study population were males and 45% were females, which corresponds to 33 males and 27 females (Figure 1).

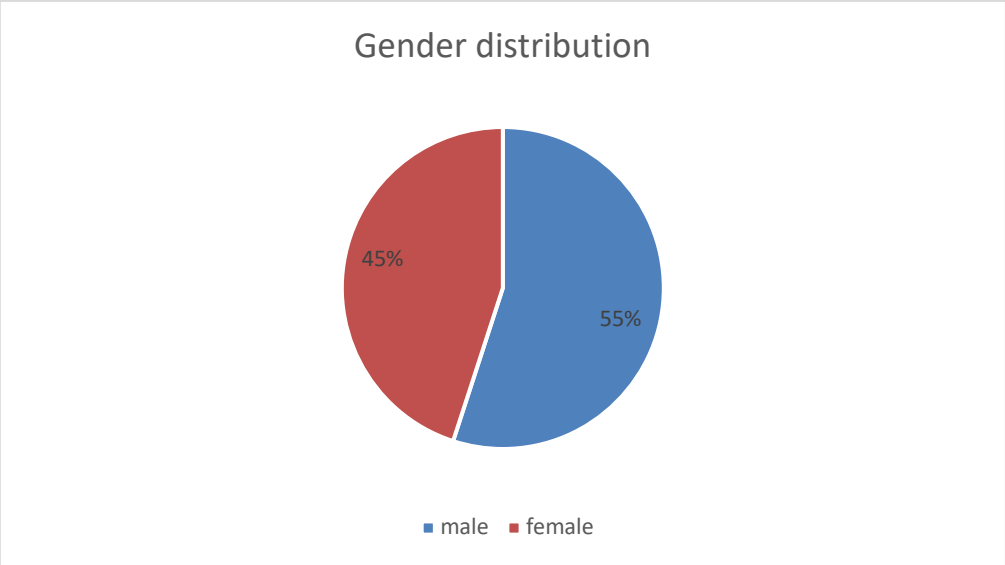

Figure 1: Gender distribution

Self-cleaning of the ears was the most prevalent risk factor observed in the study population, being observed in 30% of the study population. The use of mustard oil was the second most prevalent risk factor, occurring in 26% of the study population, followed by the use of antibiotic ear drops in 24% and swimming in 20%. (Table 2).

Table 2: Predisposing factors associated with Otomycosis

Predisposing factor	Frequency (n)	Percentage (%)
Self-cleaning of ear	18	30
Use of musturd oil in ear	16	26
Use of antibiotic ear drop	14	24
Swimming	12	20

Hearing loss was reported by 76% of the study population, followed by pruritis in 70%, earache in 52%, sensation of the blocked ear in 48%, otorrhoea in 16%, and tinnitus in 10% of the total study group (Table 3).

Table 3: Clinical presentation

Clinical presentation	Frequency (n)	Percentage (%)
Hearing loss	46	76
Pruritus	42	70
Earache	31	52
sensation of the blocked ear	29	48
Otorrhoea	10	16
Tinnitus	6	10

Aspergillus fumigatus caused the most cases of otomycosis with 22 cases, followed by Aspergillus niger with 16 cases, Candida albicans with 14 cases, Penicillium species with 6 cases, and Aspergillus glaucus with 2 cases. (Table 4)

Table 4: Fungal species causing Otomycosis

Type of fungus	Frequency (n)	Percentage (%)
Aspergillus fumigatus	22	36
Aspergillus Niger	16	26
Candida albicans	14	24
Penicillium species	6	10
Aspergillus glaucus	2	4

Discussion

Otomycosis is a widespread ear infection caused by fungi that is observed in many parts of the globe. [11]In our study, the ratio of male to female patients was determined to be 1:2. Young males exhibited the greatest prevalence of otomycosis. This is consistent with studies conducted by numerous authors. [12-15]

The majority of otomycosis patients were between the ages of 21 and 30 years, comprising 38.2% of the total population, followed by those between the ages of 11 and 20 years, comprising 28.4%. This is consistent with the age categories defined by other studies, such as R Mgbe et al.'s study in which 33.8% of the 338 patients diagnosed with otomycosis were between the ages of 21 and 30, making this the most prevalent age group of the study [16].

The highest incidence of otomycosis was observed in patients with a history of self-cleaning of ears (30%), heated oil instillation (26%), followed by the use of topical antibiotics and steroids (24%). This is consistent with research conducted by Prasad et al. [17]

The majority of patients presented with hearing loss (76%), followed by pruritus (70%), and ear pain (52%). Ho et al. (2006) reported that earache was the most prevalent symptom, followed by otorrhea and hearing loss.[18]

Aspergillus species were isolated from 66% of patients, followed by Candida species (24%). This observation is consistent with other reported findings.[19.20,21] Although Aspergillus has been the prevalent causative agent in the majority of studies, its species vary from study to study. In our study, Aspergillus fumigatus (36%) was found to be the predominant species isolated, whereas many other studies have found Aspergillus niger to be the most prevalent. The geographical distribution of fungi is affected. Aspergillus fumigatus (41 %) and Aspergillus niger (36 %) are the most commonly isolated fungi, according to Kaur et al. [22]

Conclusion

In the field of ENT, otomycosis is a common problem. To adequately treat cases, it is essential to identify the causal fungal species. Aspergillus and Candida species were the most prevalent fungi isolated from otomycosis patients in this study.

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