

**CLINICAL & MYCOLOGICAL PROFILE OF OTOMYCOSIS CASES IN CENTRAL INDIA****Dr. Sandeep Wankhede****Assistant Professor Dept. of Microbiology Datta Meghe Medical College, Nagpur****Article Info:** Received 13 January 2020; Accepted 23 February 2021**Corresponding author:** Dr. Sandeep Wankhede**Conflict of interest statement:** No conflict of interest**Abstract**

Background: Otomycosis is a fungal infection of the pinna, external auditory meatus, and ear canal that can be acute, subacute, or chronic. Otomycosis presents a challenge for patients as well as otolaryngologists because it frequently necessitates a lengthy course of treatment and follow-up.

Aims & objectives: The goal of the current investigation was to clarify the risk factors, clinical manifestations, mycological agents, and concomitant bacterial infections seen in patients of otomycosis with a clinical diagnosis at a tertiary hospital.

Material and Methods: The current study was an observational, prospective, hospital-based study that included patients over the age of 15 who had been diagnosed with otomycosis through history and physical examination and who were willing to take part.

Results: The current study comprised 152 individuals that had been determined to have otomycosis by a history and physical examination. The ratio of male to female was 0.56, with women making up the majority (64.47%). The age group of 21–30 years had the largest proportion of patients (30.26%), followed by that of 31–40 years (25%). Hearing loss (73.68%), pruritus (64.47%), earache (47.37%), otorrhoea (38.16%), and tinnitus (9.21%) were the most prevalent symptoms. Self-cleaning (38.16%), no cerumen (15.79%), use of local and systemic antimicrobials (15.79%), and history of chronic suppurative otitis media (11.84%) were all common predisposing factors in the current study. *Aspergillus niger* (51.32%), *Aspergillus flavus* (34.21%), *Aspergillus fumigatus* (6.58%), and *Candida* species (5.26%) were the most frequent fungi isolated from otomycosis patients.

Conclusion: A prevalent potential predisposing factor for otomycosis included self-cleaning, a lack of cerumen, the use of local and systemic antimicrobials, and a history of chronic suppurative otitis media. In such circumstances, common isolates included *Aspergillus* and *Candida* species.

Keywords: lack of cerumen, chronic suppurative otitis media, otomycosis, *Aspergillus*. Species

Introduction

Otomycosis is a fungal infection of the pinna, external auditory meatus, and ear canal that can be acute, subacute, or chronic. The infection is typically unilateral and is marked by suppuration, pain, inflammation, pruritus, and scaling. Failure of the ear's defence mechanisms (changes in the coating epithelium, changes in pH, quantitative and qualitative changes in ear wax), bacterial infection, oil instillation, hearing aid or hearing prosthesis, self-inflicted trauma, swimming, broad-spectrum antibiotic agents,

steroids and cytostatic medication, neoplasia and immune disorders can all make the host susceptible to the development of otomycosis¹⁻⁴. Due to increased antibiotic use, immune-compromised host illnesses including diabetes, and more lately increased use of topical antibiotics + steroid combo and poor aural hygiene, its occurrence has been rising. Involved in external fungal otitis are roughly 61 different fungus species, with *Aspergillus niger* and *Candida albicans* being the more frequent

offenders. Both patients and otolaryngologists find otomycosis hard since it frequently necessitates long-term therapy and follow-up. Despite receiving excellent care and aftercare, the recurrence rate is still significant⁵.

Aims & objectives: The goal of the current study was to clarify the risk factors, clinical manifestations, mycological agents, and associated bacteria seen in cases of otomycosis that were clinically diagnosed at a tertiary hospital.

MATERIAL AND METHODS

The current investigation was an observational, prospective, hospital-based study carried out in the microbiology department of a medical college in Central India. The study lasted a year (January 2021 to December 2021). The institutional ethical committee approved the study. Patients over the age of 15 who had otomycosis based on their medical history and physical examination and were willing to take part in the study were taken into consideration. After receiving signed informed consent, the study was discussed. The patients' ages, sexes, socioeconomic statuses, and occupations were noted. Any prior use of oral or topical antibiotics or steroids was noted, as well as any use of wooden sticks.

The examination/otoscopic findings (soft, white, cheese-like sebaceous material or finely sprinkled or matted masses of hyphae and/or spores) and symptoms (pruritus of the ear, otalgia, hearing impairment, tinnitus, discharge and sense of having an ear obstruction) were

noted in the proforma. Two sterile cotton swabs were used to aseptically capture samples of ear discharge. For direct microscopic examination, only one swab was used. By using Gram's staining and a 10% KOH mount, the specimens were directly examined under a microscope. The other swab was used to inoculate Sabouraud Dextrose Agar with chloramphenicol, which was then incubated aerobically for four weeks at 25°C and 37°C. Colony morphology and lactophenol cotton blue mount microscopy were used to make the identification.

The LCB mount, which exhibits sporulating vesicles, a profusion of black spores, variable length conidiophores, and biseriate phialides, was used to identify *Aspergillus* isolates. By using the germ tube test, growth at 44°C, Dalmau plate culture, as well as studies on the fermentation and assimilation of sugar, *Candida* species were discovered. On HiChrome agar, colonies were inoculated in order to identify the species of *Candida*. Microsoft Excel was used for data collection and compilation, and descriptive statistics were used for statistical analysis.

RESULTS

The current study included 152 cases that had been determined to have otomycosis through a history and physical examination. The ratio of male to female was 0.56, with women making up the majority (64.47%). The age group of 21–30 years represented the largest proportion of patients (30.26%), followed by that of 31–40 years (25%).

Table 1: Age and sex wise distribution of Otomycosis patients

Age (in years)	Male	Female	Total (n=152)
16-20	8 (5.26 %)	14 (9.21 %)	22 (14.47 %)
21-30	16 (10.53 %)	30 (19.74 %)	46 (30.26 %)
31-40	14 (9.21 %)	24 (15.79 %)	38 (25 %)
41-50	8 (5.26 %)	14 (9.21 %)	22 (14.47 %)
51-60	6 (3.95 %)	12 (7.89 %)	18 (11.84 %)
>60	2 (1.32 %)	4 (2.63 %)	6 (3.95 %)
Total	54 (35.53 %)	98 (64.47 %)	152

Hearing loss (73.68%), pruritus (64.47%), earache (47.37%), otorrhoea (38.16%), and tinnitus (9.21%) were the most prevalent symptoms.

Table 2: Symptoms at the time of diagnosis

Clinical Symptom	Number of patients (n=152)	Percentage (%)
Hearing loss	112	73.68
Pruritus	98	64.47
Earache	72	47.37
Otorrhoea	58	38.16
Tinnitus	14	9.21

Self-cleaning (38.16%), no cerumen (15.79%), use of local and systemic antimicrobials (15.79%), and history of chronic suppurative otitis media (11.84%) were all common risk factors in the current investigation.

Table 3: Predisposing factors for otomycosis

Predisposing Factors	Number of patients (n=152)	Percentage (%)
Self-cleaning	58	38.16
No cerumen	24	15.79
Use of local and systemic antimicrobials	24	15.79
Chronic suppurative otitis media	18	11.84
Any history of discharge	14	9.21
Instillation of coconut oil/ Oiling	12	7.89
Swimming	12	7.89
Diabetes	6	3.95

Aspergillus niger (51.32%), *Aspergillus flavus* (34.21%), *Aspergillus fumigatus* (6.58%), and *Candida* species (5.26%) were the most frequent fungi isolated from otomycosis patients.

Table 4: Fungal isolates from otomycosis patients

Fungal isolates	Number of patients (n=152)	Percentage (%)
<i>Aspergillus niger</i>	78	51.32
<i>Aspergillus flavus</i>	52	34.21
<i>Aspergillus fumigatus</i>	10	6.58
<i>Candida</i> species	8	5.26
<i>Mucor</i>	2	1.32
<i>Penicillium</i> species	2	1.32

DISCUSSION

One of the most common fungus infections of the external auditory canal is otomycosis, commonly known as fungal otitis externa. Tropical and subtropical parts of the world frequently experience this. Otomycosis is more common in hot, muggy, and dusty regions. Its frequency varies with different environmental circumstances. On the basis of symptoms including pruritus, otalgia, discharge, obstruction, hearing loss, and the appearance of musky debris that resembles wet newspaper in the external auditory meatus, otomycosis can be clinically diagnosed⁶⁻⁸. In a rainy and humid coastal city in South India, Prasad et al.

conducted an experiment on otomycosis. They were able to identify the isolated fungi and bacteria that cause the condition as well as compare them to healthy ears. The main risk factors for otomycosis in their investigation appeared to be the instillation of coconut oil (42%), the use of tropical ear drops (20%), and compulsive cleaning of the external ear with hard items (32%). Similar results were seen in the current investigation. Otomycosis was shown to be more prevalent in the age group of 21 to 30 years (35.36%) and among females (58.54%) in a study by Haja AN et al. of 100 clinically suspected patients. Pruritus was the primary presenting symptom in 77% of the

patients with otomycotic infections. Self-cleaning was shown to be the second most common predisposing factor for otomycosis (32.93%), followed by the instillation of coconut oil (36.59%). The most common species isolated was *Aspergillus niger* 39 (47.56%). *Aspergillus flavus* 25 was the second most typical species isolated (30.49%).

Other species that were isolated included *Aspergillus fumigatus* 9 (10.97%), *Candida* species 7 (8.54%), *Mucor* 1 (1.22%), and *Penicillium* species 1 (1.22%). Similar results were seen in the current investigation. In a study by Nitin A et al., 108 samples of symptomatic otomycosis were examined; 89 of these samples had fungal infections, 18 were negative, and 1 sample was considered to be contaminated. *Aspergillus niger* was the most often isolated fungal species, isolated in 38 cases (41.57%), followed by *Aspergillus flavus* 32 cases (35.95%) and *Aspergillus fumigatus* 7 cases (7.86%). In 2 (2.24%), *Candida* species were discovered, and in 1 (1.12%), *Mucor*. Itching was the most prevalent symptom (84.25%). In this study, black mycotic plugs (28.70%) and ear discharge (44.44%) were the two most frequent findings^{9,10}.

To find potassium hydroxide (KOH) mount positive in ear discharge of chronic otitis media, Amit Prakash analysed 200 chronic otitis media patients. Most of the patients were aged 20 to 30 (34.5%), followed by those aged 30 to 40 (29.5%), in that order. It was discovered that there were 115 more females than males (57.5% vs. 42.5%). KOH positive was reported to be prevalent overall at 20.5%. Clinically and statistically significant KOH positivity was identified in 41 (20.5%) of the patients, with a likelihood of KOH positives in the future ranging from 9.2-22.6%. *Aspergillus* 26 (63.41%) was determined to be the most prevalent fungal pathogen, followed by *Candida* species 11 (26.83%) and other saprophytes 4 (9.76%). Similar results were seen in the current investigation. 50 instances of otomycosis with a clinical diagnosis were examined by Babita Kumari et al. Bacterial isolates or contamination were discovered in 9 instances. The three most

common fungi were *Aspergillus* species, *Candida* spp., and *Penicillium*¹¹. In our study, there was a 52% male preponderance compared to 48% female instances. Otomycosis prevalence was highest in the age group of 15 to 35 years, then 35 to 55 years. According to Ahuja S. et al., the most common risk factors for otomycosis were a history of using a wooden stick or another instrument to remove wax (68%), using oil (44%), swimming (28%) and trauma history (23%). The two most prevalent complaints were otalgia (89% each) and pruritus. A statistical correlation between the isolation of fungus and otomycosis was discovered (p value 0.001). *Aspergillus niger* made up the majority of the isolated fungus (77.0%), followed by *Aspergillus flavus* (12.6%), *Aspergillus terreus* (4.6%), *Candida guilliermondii*, and *C. krusei* (1.1% each). *Staphylococcus epidermidis* (21%), *Staphylococcus aureus* (7%), *Klebsiella pneumoniae* (2%), and *Enterobacter aerogenes* (1%), were the bacteria that were isolated. 8% of the controls had fungal infections isolated from their external auditory canal. Debris and discharge from the external auditory canal should be removed in order to treat otomycosis because they lower the pH of the external auditory canal and consequently lessen the effectiveness of aminoglycoside ear drops (used in those patients who showed signs and symptoms suspicious of bacterial otitis externa)¹²⁻¹⁴. Ear drops with an antifungal suction is helpful. The ear should be maintained dry and cotton bud scratching should be avoided.

CONCLUSION

A prevalent potential predisposing factor for otomycosis included self-cleaning, a lack of cerumen, the use of local and systemic antimicrobials, and a history of chronic suppurative otitis media. In such circumstances, common isolates included *Aspergillus* and *Candida* species. A targeted antifungal treatment can be started early with the aid of microbiological diagnosis.

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