

SHORT COMMUNICATION

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ABSTRACT

Background: Otomycosis is a superficial fungal infection of the external auditory canal, commonly encountered in tropical and humid regions. It presents with nonspecific symptoms such as pruritus, ear pain, and aural fullness. The condition is often underdiagnosed and mismanaged due to its overlapping presentation with bacterial otitis externa. **Objective:** To analyse the clinical presentation, mycological profile, and treatment response of patients diagnosed with otomycosis in a tertiary care centre. **Methods:** A prospective observational study was conducted on 20 patients presenting with symptoms suggestive of otomycosis. Clinical examination was followed by debris removal, microscopic examination, and fungal culture. Antifungal therapy (topical and systemic) was initiated based on empirical choice and later modified based on culture reports. Follow-up was done after one week to assess treatment response. **Results:** • Female preponderance (70%) was observed with a mean patient age of 31 years 9 months. • Right ear was more frequently involved (50%). • Most common symptoms included pain (100%), irritation (75%), and ear blockage (55%). • The predominant fungal isolate was *Aspergillus niger* (80%), followed by *Candida albicans* (15%) and one mixed infection with *Rhizopus* species (5%). • Clinical improvement was noted in most cases after one week of antifungal therapy. **Conclusion:** Otomycosis remains a significant cause of otitis externa in tropical regions, with *Aspergillus niger* as the most prevalent pathogen. Accurate diagnosis through clinical and microbiological evaluation is crucial for effective treatment. Removal of debris and appropriate antifungal therapy lead to favourable outcomes in the majority of cases. **Keywords:** Otomycosis; *Aspergillus Niger*; *Candida albicans*; Mycoses; Antifungal Agents; Otitis Externa.

INTRODUCTION

Otomycosis is a superficial fungal infection involving the external auditory canal and occasionally the auricle and tympanic membrane. It is commonly encountered in tropical and subtropical regions where high humidity and warm climatic conditions favour fungal growth. The disease accounts for nearly 10% of cases of otitis externa and is frequently associated with symptoms such as otalgia, pruritus, irritation, ear blockage, and hearing impairment. Despite its high prevalence, otomycosis is often underdiagnosed due to its nonspecific clinical presentation and overlap with bacterial otitis externa.[1]

Several predisposing factors have been implicated in the development of otomycosis, including excessive ear cleaning, use of topical antibiotics, humid environmental conditions, hearing aid usage, trauma to the external auditory canal, and immunocompromised states.[2] *Aspergillus* and *Candida* species are the most commonly isolated fungi, with *Aspergillus niger* reported as the predominant organism in most Indian studies.[3,4]

The present study was undertaken to evaluate the clinical spectrum, microbiological profile, and treatment outcomes of otomycosis among patients attending a tertiary care centre and to compare the findings with existing literature.

METHODS

Study Design and Setting

This prospective observational study was conducted in the Department of Otorhinolaryngology at a tertiary care centre after obtaining approval from the Institutional Ethics Committee (RRMCH-IEC/116/2019-20).

Study Population

20 consecutive patients presenting with symptoms suggestive of otomycosis were included in the study.

Inclusion Criteria

Patients presenting with one or more of the following symptoms were included:

- Ear pain
- Irritation or pruritus
- Aural blockage

Clinical Evaluation

All patients underwent detailed otoscopic and microscopic examination following meticulous aural toileting and removal of fungal debris. The condition of the EAC epithelium and tympanic membrane was documented. Figure 1A, 1B.

Microbiological Evaluation

Specimens obtained from the EAC were subjected to:

Fungal isolates were identified based on colony morphology and microscopic characteristics using lactophenol cotton blue staining.



Figure : 1A



Figure : 1B

Figure 1. External image of otomycosis showing fungal mass at the EAC.



Figure : 2A

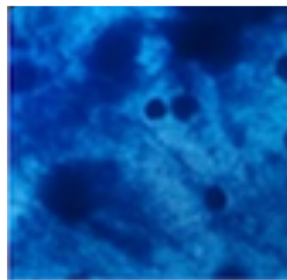


Figure : 2B

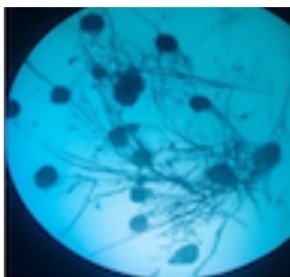


Figure : 2C

Figure 2. 2C: Microscopic appearance of fungal elements isolated from otomycosis specimens demonstrating *Aspergillus* species morphology. Lactophenol Cotton Blue (LPCB) stain showing septate branching hyphae and characteristic conidial heads under high-power light microscopy (400× magnification)]



Figure : 3A



Figure : 3B

Figure 3. 3B: Fungal culture on Sabouraud Dextrose Agar (SDA) demonstrating characteristic black, powdery to cottony colonies of *Aspergillus niger* following incubation under aerobic conditions at 25–28 °C for 5–7 days.

Treatment Protocol

Patients were initiated on topical Clotrimazole with Lignocaine ear drops along with systemic antifungal therapy using either Fluconazole 150 mg twice daily or Itraconazole 200 mg once daily for seven days. Routine analgesics and antibiotics were prescribed when clinically indicated.

Follow-up

Patients were reassessed after one week. Treatment modifications were made based on fungal culture findings and clinical response.

Variables Assessed

The following variables were analysed:

- Age and gender distribution
- Clinical symptoms
- Laterality
- Otoscopic findings
- Fungal isolates
- Treatment response

Statistical Analysis

Data were analysed using descriptive statistics and expressed as frequencies and percentages.

RESULTS

A total of 20 patients diagnosed with otomycosis were included in the study. Females constituted the majority of the study population, accounting for 14 cases (70%), while males accounted for 6 cases (30%). The age of the patients ranged from 9 to 55 years, with a mean age of 31 years and 9 months.

The right ear was involved in 10 patients (50%), the left ear in 9 patients (45%), and bilateral disease was observed in 1 patient (5%).

Otalgia was the most common presenting symptom and was observed in all patients (100%). Irritation or pruritus was noted in 15 patients (75%), while aural blockage was present in 11 patients (55%). Giddiness and tinnitus were each reported by 1 patient (5%). [Table 1]

Table 1. Clinical presentation of patients with otomycosis

Symptom	Number of Patients (%)
Pain	20 (100%)
Irritation/Pruritus	15 (75%)
Aural blockage	11 (55%)
Giddiness	1 (5%)
Tinnitus	1 (5%)

On otoscopic examination, fungal debris involving the entire EAC was observed in 9 patients (45%), while debris confined to the bony EAC was observed in 10 patients (50%). Isolated tympanic membrane involvement was noted in 1 patient (5%). Black-coloured debris was the most common appearance and was observed in 12 patients (60%), followed by yellow debris in 4 patients (20%), mixed-coloured debris in 3 patients (15%), and white debris in 1 patient (5%).

Congestion of the EAC epithelium was observed in 8 patients (40%), while ulceration was noted in 3 patients (15%). Tympanic membrane congestion was present in 7 patients (35%). Three patients (15%) demonstrated tympanic membrane ulceration, including one patient with associated bleeding. Tympanic membrane perforation was identified in 3 patients (15%), comprising one subtotal perforation and two small central perforations.

Clinical improvement following antifungal therapy was observed in the majority of patients. Complete symptom resolution was achieved in 15 patients (75%), partial improvement in 4 patients (20%), and persistent symptoms in 1 patient (5%). Recurrence could not be assessed because of the short follow-up duration.

DISCUSSION

Otomycosis is a common fungal infection affecting the external auditory canal, particularly in tropical and humid climates. The condition is usually caused by *Aspergillus* and *Candida* species and is frequently associated with local trauma, excessive ear cleaning, and prolonged use of topical antibiotics.[1,2]

In the present study, females constituted 70% of the affected population. Similar female predominance has been reported in several Indian studies.[3,5] This may be attributed to increased use of cotton buds, cosmetic ear cleaning practices, hair oil application, and greater healthcare-seeking behaviour among females. However, the exact reason for female predominance remains uncertain and may vary between populations.

The mean age observed in this study was comparable to previous studies reporting otomycosis predominantly among young and middle-aged adults.[4,5] The right ear was slightly more commonly affected, although no significant laterality preference has been consistently reported in literature.

Otalgia was the most common symptom observed in the present study, followed by irritation and aural blockage. Similar symptom distribution has been reported by Pradhan et al. and Munguia and Daniel, who identified pain, pruritus, and hearing blockage as the predominant presenting complaints in otomycosis.[4,6]

Aspergillus niger was the predominant fungal isolate in the present study, accounting for 80% of cases. This finding is consistent with previous Indian and international

studies reporting *Aspergillus* species as the most common etiological agent, with prevalence ranging from 60% to 85%.[3,4,6] The predominance of *Aspergillus* species may be related to the warm and humid environmental conditions favourable for fungal proliferation.

Candida albicans was isolated in 15% of patients, which is comparable to previous reports.[5] One patient demonstrated mixed fungal growth with *Aspergillus niger* and *Rhizopus* species, indicating the possibility of polymicrobial fungal colonisation in chronic cases.

Direct microscopy using KOH mount and fungal culture on SDA remain essential diagnostic tools for confirming fungal infection. Identification of fungal morphology assists in differentiating *Aspergillus* from *Candida* species and facilitates targeted therapy.[2] [Table 2]

Table 2. Mycological profile of otomycosis

Organism	Number of Cases	Percentage
<i>Aspergillus niger</i>	16	80%
<i>Candida albicans</i>	3	15%
<i>Aspergillus niger</i> + <i>Rhizopus</i> spp.	1	5%

Most patients in the present study demonstrated favourable clinical response following aural toileting and antifungal therapy. Complete symptom resolution was observed in 75% of patients after one week of treatment. Similar treatment outcomes have been reported in previous studies emphasizing the importance of meticulous debris clearance combined with topical antifungal therapy.[4,6]

Limitations

The present study has several limitations. The sample size was relatively small, and the study was conducted at a single tertiary care centre, limiting generalizability. The short duration of follow-up prevented assessment of long-term recurrence rates. Additionally, antifungal susceptibility testing was not performed, which could have provided valuable information regarding resistance patterns and guided targeted antifungal therapy.

CONCLUSION

Otomycosis remains a common fungal infection of the external auditory canal in tropical regions, predominantly caused by *Aspergillus niger*. Clinical diagnosis supported by microbiological evaluation facilitates accurate identification and targeted treatment. Early diagnosis, meticulous aural toileting, and appropriate antifungal therapy contribute to favourable clinical outcomes in the majority of patients.

Funding

None.

Ethical Approval

The study was approved by the Institutional Ethics Committee of RRMCH (RRMCH-IEC/116/2019-20). Informed consent was obtained from all participants.

Conflicts of Interest

None declared.

REPORTING, DATA & REGISTRATION

Reporting guideline

This manuscript follows the Short Brief Communication reporting guideline. A completed checklist is provided alongside the submission.

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Clinical trial registration

Clinical trial registration is not applicable: this manuscript does not report a prospectively registered clinical trial.

DECLARATIONS**Conflict of Interest**

The authors declare that they have no conflict of interest relevant to the content of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Clearance

The study was conducted in accordance with the Declaration of Helsinki (1964 and its later amendments). Ethical approval was obtained from INSTITUTIONAL ETHICS COMMITTEE, RajaRajeswari Medical College and Hospital, RRMCH- Approval Number :IEC/116/2019-20 Date: 19.10.2019. Written informed consent was obtained from all individual participants (or their legal guardians) included in the study.

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