



## Original Research Article

## Prevalence of otomycosis in patients of chronic suppurative otitis media at ENT clinic in Udaipur (Rajasthan)

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## ABSTRACT

**Background:** Otomycosis is one of the most common forms of otitis externa. It is often seen in cases of Chronic Suppurative Otitis Media. It is important to treat otomycosis effectively in cases of CSOM as both conditions worsen each other.

**Objectives:** To study the aetiology of otomycosis and fungal profile in patients of diagnosed CSOM at ENT Clinic, Udaipur.

**Materials & Methods:** A total of 100 clinically diagnosed patients of CSOM were enrolled in the study and the samples were obtained from each patient using sterile cotton swab and were studied for fungal profile.

**Results:** The most common fungi found in CSOM are Candida and Aspergillus species. In the present study out of 95 culture positive cases of CSOM, fungi were found in 13 cases (13.68%). Candida species was most common found in 10.52% of all cases and Aspergillus was observed in 3.15% of all cases. Out of all candida species 60% were albicans.

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## 1. Introduction

Fungal infections are also closely associated with cases of CSOM as fungi thrive well in moist pus but many authors have focused their attention on the bacterial flora, and very little is known about the mycological aspects of these, the importance of which has been increasing in the recent years because of the excessive use of broad spectrum antibiotics, corticosteroids and cytotoxic chemotherapy and an increase in the number of immune deficiency conditions.<sup>1</sup> Most common fungi being Aspergillus spp. and Candida spp.<sup>2</sup>

Chronicity of ear discharge is important factor in the cause of fungal infection of otitis media. It causes humid condition in the ear and alters the pH to alkaline. Epithelial debris which eventually helps the growth of fungus. Topical use of steroid and antibiotics cause the fungal infection in the middle ear.<sup>3,4</sup>

The most common causal fungal organisms are Aspergillus niger, Candida albicans, Actinomyces, Trichophyton, Aspergillus fumigatus and Candida tropicalis. Common predisposing factors include prolonged treatment with topical antibiotics, hearing aid use, regular swimming in contaminated water, trauma to the ear canal and immunosuppression.<sup>5</sup>

The symptoms of otomycosis are non-specific and include itching, otalgia, otorrhoea, aural fullness, hearing loss and tinnitus. Furthermore, although the classic sign of otomycosis is the presence of waving conidiophores, this is not universally present. Yeasts, such as Candida species, do not form the closely woven mass of hyphae that are formed by moulds, such as Aspergillus.<sup>6</sup>

More common is the finding of generalized inflammatory changes of the external canal (oedema, hyperaemia, granulomatous myringitis and aural discharge of variable colour.<sup>7</sup>

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## 2. Materials and Methods

For identification of fungal organism, laboratory examination of the discharge was carried out microscopically (in 10% KOH preparations) for the presence of pus cells, budding yeast cells, fungal hyphae (septate or aseptate), etc direct microscopy and culture of the material on SDA with Chloramphenicol.

To the solution of 10%KOH, 10% of glycerol is added to prevent drying. Mix the above ingredients properly and store solution at room temperature. The material was spread on a glass slide over a drop of 10% KOH solution and covered with a cover slip. Slide was examined under the microscope for the presence of fungi.<sup>8</sup>

The swab material was cultured over SDA culture plate and incubated at 37°C temperature and was observed daily for fungal growth upto 2 weeks. The growth was observed for the following–

1. Rate of growth
2. Morphology of colony
3. Texture
4. Surface pigmentation

Microscopic examination like LP mount and slide culture were done to identify the fungi.

Gram staining was done for identification of yeast and yeast like cells.

Chlamyospore formation, germ tube tests and Candida CHROM agar were done to identify Candida albicans.

## 3. Results

In our study, growth of microorganisms was seen in 95% of the processed samples and 5% didn't show any growth.

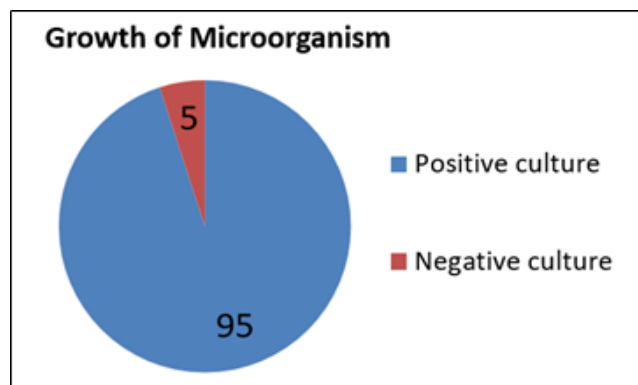


Fig. 1:

In our study Itching was the most common symptom (84.6%), followed by pain (53.8%), decreased hearing (30.7%) and sense of ear blockage (23%).

Total Fungal isolates were found in 13% of cases where Candida species was most common where it was

Table 1:

S. No.	Symptom	Percentage (%)
1	Itching	84.6
2	Pain	53.8
3	Decreased Hearing	30.7
4	Sense of blockage	23

isolated in 10% of cases. Out of total 13 fungal isolates Candida species was most common (76.92%) followed by Aspergillus species which was isolated in 23.07% of samples.

Table 2:

Species	Tubotympanic	Atticoantral	Percentage
Aspergillus flavus	00	01	01 (0.99%)
Aspergillus niger	02	00	02 (1.85%)
Candida albicans	02	04	06 (5.55%)
Candida non albicans	01	03	04 (3.76%)

## 4. Discussion

Fungal infections of the middle ear are common as fungi thrive well in moist pus. In the present study ear discharge was seen in all the patients followed by itching (84.6%), pain (53.7%), decreased hearing (30.7%) and blocking sensation in the ear (23%). These findings were in agreement with study done by Rajpal Singh Punia et al in 2018.<sup>9</sup>

The most commonly found fungi in CSOM are Candida species and Aspergillus species.<sup>10</sup> In the present study, overall 13(13.68%) fungal isolates were obtained, out of which 4 (4.21%) were single fungal isolates. Candida species was most commonly isolated which was in 10% of cases. Out of total 10 (76.92%) candida isolates; 6 were albicans and 4 were non albicans followed by Aspergillus species which was isolated in 23.07% of samples where, Aspergillus niger was isolated in 15.38% and Aspergillus flavus 7.69% of cases. This was in accordance with study done by Harvinder Kumar et al and Prakash et al,<sup>11</sup> where total fungal isolates were 15% and 12.25% and Candida species was most common which was isolated in 60% of samples followed by Aspergillus species which was isolated in 40% cases whereas Prakash et al<sup>11</sup> reported Aspergillus species 70.83% and Candida species 29.17%. Aspergillus is a saprophytic mold and is one of the primary colonizers of the manmade substrata. Its rapid growth and production of a large number of small, dry, easily aerosolized conidia make it a significant contaminant with regards to air quality and potential human exposure-related illness. Aspergilli are common in airborne dust, and their growth is aided by cerumen and the slightly acidic pH of

the ear canal. The difference in the various studies could be due to the difference in the patient population studied and geographical variation.

## 5. Conclusion

The incidence of Otomycosis in patients of CSOM is high because of indiscriminate use of antibiotic and steroid drops. Discharge of CSOM also favours fungal growth.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

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