



MYCOLOGICAL STUDY OF OTOMYCOSIS PATIENTS OF PATNA MEDICAL COLLEGE AND HOSPITAL, PATNA

Medical Microbiology

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ABSTRACT

Introduction Otomycosis, also known as fungal ear infection, is a condition in which the external ear canal is infected by fungi. This condition is relatively common and can affect people of all ages, but it is more frequently seen in tropical and subtropical regions. The most common fungi responsible for otomycosis are *Aspergillus* and *Candida* species. **Material and Methods** A total of 100 patients with clinically suspected Otomycosis, attending OPD of ENT department of Patna medical college hospital, Patna were chosen for the study. Patients complaining of itching, pain, sensation of blockage in the ear, impaired hearing or discharge from ear were selected. patients with suspected Otomycosis, three ear swabs were collected from affected ear. **Observation and Result** In a study of Chronic Suppurative Otitis Media (CSOM) patients, otomycosis was found in 60% of cases, indicating a notable association. Males were predominantly affected, and students comprised the largest occupational group affected. Most cases were from the lower-middle-class socio-economic group, primarily originating in Bihar, with a prevalence in rural areas. Right ear involvement was more common, and the most common symptoms included ear discharge, itching, ear pain, hearing loss, and ear blockage. Fungal elements were detected in 57% of suspected cases, with *Aspergillus niger* and *Candida* species being the most prevalent isolates. Bilateral ear disease was rare. These findings shed light on the epidemiology and clinical characteristics of otomycosis in the context of CSOM. **Conclusion** In summary, the study on otomycosis revealed that it predominantly affects middle-aged individuals, with a higher occurrence among males, particularly those engaged in fieldwork or farming. The condition is more prevalent in hot and humid climates, typically manifesting as unilateral symptoms such as ear discharge, itching, pain, and hearing loss. Prevention strategies include avoiding the use of oil or hard objects in the ear and maintaining clean and dry ear canals to reduce the risk of fungal infection.

KEYWORDS

Otomycosis, Fungal ear infection, Chronic suppurative otitis media (CSOM), *Aspergillus*, *Candida*

INTRODUCTION

Otomycosis is a superficial fungal infection of the external auditory canal and auricle, typically presenting as acute, subacute, or chronic. While not life-threatening, it poses challenges for patients and otolaryngologists due to its need for long-term treatment and potential recurrence. This condition is more prevalent in warm, humid climates, especially during the rainy season, and is often associated with lower socioeconomic status and poor hygiene. It's commonly observed in individuals between the ages of 20 to 30, with a higher incidence among those working in moldy or dusty environments. Predisposing factors include chronic ear infections, the use of oils, ear drops, steroids, and swimming, among others.

Notably, there has been an increase in otomycosis cases in recent years, possibly linked to the extensive use of antibacterial ear drops. The most common symptoms include itching, pain, hearing loss, and potential tympanic membrane perforations. *Aspergillus* and *Candida* species are the primary causative agents, with *Aspergillus niger* being the most common. Treatment involves controlling predisposing factors, debridement, and the use of antimicrobial agents, either topically or systemically. This study aimed to isolate and identify the spectrum of fungi responsible for otomycosis.

MATERIAL AND METHODS

A total of 100 patients with clinically suspected Otomycosis, attending OPD of ENT department of Patna Medical College Hospital, Patna were chosen for the study. Patients complaining of itching, pain, sensation of blockage in the ear, impaired hearing or discharge from ear were selected. General information like age, sex, occupation, diabetic status, trauma, history of ear surgery or any fungal infection in other parts of body and laterality of symptoms were recorded. Any history of habits like use of oils/ear drops, wooden sticks, or metal wax picks for removal of wax were also recorded from patients with suspected Otomycosis two ear swabs were collected from affected ear.

External ear specimen collection

- No drops should have been used 3 hrs prior to taking the swab
- Place the swab into outer ear & rotate gently once

Transportation

The sample collected were transported to the laboratory within two

hours since over growth of the slower growing pathogenic fungi by contaminating bacteria or fungi is common, it is important that a sample should reach to the lab as soon as possible. If transport is delayed, store a specimen under refrigeration at 4 degree Celsius.

Processing

Mycological study was carried out on debris, scrapping or exudates samples from auditory canal. Three sterile cotton swab was used for sample collection from EAC. One swab is used for gram staining, second swab was used for direct microscopic examination in KOH (10%) wet mount. Third swab is used for inoculation on Sabouraud dextrose Agar culture media and incubated at 25°C and 37°C for a minimum period of 4 weeks.

Direct examination

The clinical diagnosis of otomycosis is first supplemented by microscopy of debris material taken out from external auditory canal or mastoid area in case of cholesteatoma. For microscopy, specimen was placed on a slide, a drop of KOH (10 -20%) was added covered with a coverslip, left for 20 min at 37°C to digest keratin, then examined under microscope. Calcofluor white or blankophor wet mounts can also be used. The microscopic examination shows discrete clumps of hyphae with conidiophores. In otitis external caused by *Aspergillus niger*, septate hyphae, sporulating vesicles and abundant black spores are also seen.

Fungal culture

SDA culture was used for fungal culture. It is a general purpose peptone medium with dextrose (supporting growth of fungi) & antibiotic like Chloramphenicol and Gentamicin. The Peptones are source of nitrogenous growth factors and Dextrose being carbon source provides energy to the growing fungi. This formulation serves as an excellent basal medium to which antibiotics and other inhibitory substances may be added for the selective cultivation of various fungal pathogens. The pH should be maintained at 5.6 . Agar should have optimum moisture for inoculating specimen with sterile loop kept for observation in 25 -30 °C.

Culture are examined atleast weekly & should be observed till minimum 4 week before reporting negative result.

The colonies of *A.niger* grown on SDA are black, *A.flavus* are yellow and *A. fumigatus* are smoky green. *A. niger* growth is wooly, at first white to yellow then turning dark brown to black due to color of the conidia. *Candida* colonies are creamy white, smooth & with a yeasty odour.

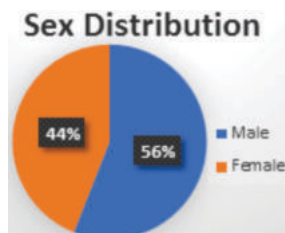
The identification of colonies was done in LPCB mount. Lactophenol cotton blue (LPCB/LCB) mount is used to study morphological features of fungal isolates after the strain is grown on culture medium.

OBSERVATION AND RESULT

In our study 60% of patients evaluated for CSOM were found to have coexisting otomycosis.

Sex distribution

In the present study, it was observed that males outnumber females. There were 56 Males and 44 females with a male to female ratio of 1.27 : 1.



Occupation

In the present study, 42 patients were students of schools or college. Homemaker 24 cases comprised 2nd most common group while serviceman (8 cases) were least sufferer.

Socio - economic Status

In the present study majority of the cases belonged to lower middle class (55 cases) and the least number of cases were in upper class.

Geographical distribution

In this study most of the patients were from Bihar (93%), some patients were also from Nepal (5%) and Jharkhand (2%).

Rural : Urban distribution

In the present study, number of cases belonging to rural areas were in majority (88%) as compared to the urban areas (only 12%).

Laterality

Involvement of Right ear cases (54%), was more common in the present study. Left ear involved in 44% cases. Only 2 patients had bilateral ear disease.

Symptoms

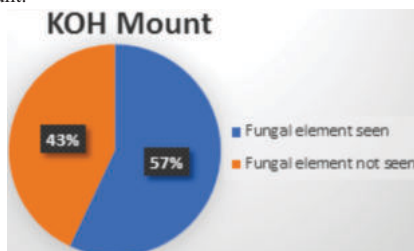
Most common complain in our study was ear discharge 86%, followed by itching 78% and ear pain 72%, the other complains include hearing loss 65% and ear block 62%.

Microbiological Profile.

Out of 100 suspected cases of otomycosis only 57 cases were shown positivity for fungal element on culture and KOH mount.

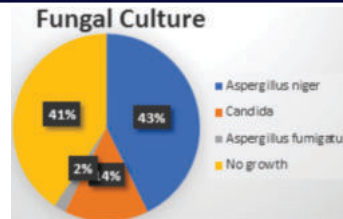
KOH mount

Fungal element were observed in 57 of the specimens subjected to KOH mount.



Fungal Culture

Out of 100 clinically suspected cases of otomycosis only 61 cases were shown positive on fungal culture, rest 39 were negative for fungal culture. Most common *Aspergillus niger* were isolated in 41 cases, *Candida* species were isolated in 14 cases. Rest two were positive for *Aspergillus fumigatus*.



CONCLUSION

Otomycosis is a fungal infection of the ear canal. It is more common in middle-aged males, particularly among field workers, farmers, and female household workers. The condition is prevalent in hot and humid weather, especially during the rainy season. Manipulation of the ear with hard objects can contribute to fungal growth. Symptoms include ear discharge, itching, ear pain, and hearing loss, with the possibility of vertigo and tinnitus in severe cases. Common fungal isolates are *Aspergillus* and *Candida*, and mixed infections can occur. Fungal infection should be suspected in chronic otitis externa cases that do not respond to typical treatments. Prevention involves avoiding the use of oil and hard objects in the ear, maintaining ear hygiene, and keeping the ear dry to prevent both fungal and bacterial external otitis.

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