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## RESEARCH ARTICLE

# OTOMYCOSIS IN A TERTIARY CARE HOSPITAL WITH CLINICAL FEATURES AND PREDISPOSING FACTORS

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### ABSTRACT

**Introduction:** Otomycosis is an acute, subacute or chronic superficial fungal infection of external auditory canal, commonly seen in tropical and subtropical regions of the world. It is a common problem in the warm and humid areas and among Rural community. The commonly found causative fungi include Aspergillus and Candida species. Proper identification of causative agent is mandatory in order to prevent recurrences and complications. **Material and methods:** A total of 50 cases of symptomatic patients suspected to be of otomycosis were studied. Samples were collected on two sterile cotton swabs. Direct examination of the specimen was carried out by Gram's stain and 10% KOH mount. All samples were inoculated on Sabouraud Dextrose Agar. Identification of fungi were done as per the standard protocol. **Results:** Mycological examination yielded fungal isolates from 35 samples (70%) from a total of 50 clinically diagnosed cases of otomycosis. 9 cases were found to have contamination or bacterial isolates. Aspergillus species was the predominant fungi followed by Candida spp and Penicillium. In our study male preponderance was seen with 52% cases than female with 48% cases. Incidence of otomycosis was high in age group of 15-35 years followed by 35-55 years of age group. **Conclusion:** Otomycosis commonly presented with decreased hearing, itching, earache and otorrhea. Higher practice of self cleaning and using home remedies and ear drops to get relief from sensation of blocked ear has raised incidence of otomycosis.

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## INTRODUCTION

Otomycosis is a superficial, sub acute or chronic infection of the external auditory canal, usually unilateral, that is characterised by inflammation, pruritus and scaling.<sup>1</sup>In the year 1843, Andral *et al* and Mayer in 1844 first of all described fungal infections of external auditory canal. Virchow suggested the term 'otomycosis' in the year 1856. Wolf published first extensive review concerning relation of various fungi to otomycosis and listed 53 species of fungi causing this clinical entity (Chander Jagdish, 2018). The frequency of otomycosis depends upon different climatic conditions with higher prevalence in the hot, humid and dusty areas of the tropics and subtropics (Fasunla *et al.*, 2008; Pontes *et al.*, 2009; Pradhan *et al.*, 2003). Various predisposing factors include a humid climate, presence of cerumen, instrumentation of the ear, increased use of topical antibiotics/ steroid preparations, immunocompromised host and patients who have undergone open cavity mastoidectomy. The infection is characterised by inflammatory pruritus, otalgia, aural fullness, tinnitus, hearing impairment and ear discharge. It is a pathologic entity, with Candida and Aspergillus the most common fungal species (Kaur *et al.*, 2000; Vennevaldl *et al.*, 2003).

niger is usually the predominant agent causing otomycosis although A. flavus, A. fumigatus, A. terreus and C. albicans are also common (Chander Jagdish, 2018). Otomycosis is worldwide in distribution with prevalence ranging from 9% to 30% among patients presenting with signs and symptoms of otitis externa and discharging ears in otolaryngology settings (Fasunla *et al.*, 2008; Pontes *et al.*, 2009; Pradhan *et al.*, 2003). The flora found in the external auditory canal is made up of a series of microorganism viz. genus Aspergillus or yeast like fungi, candida spp., Staphylococcus aureus, Staphylococcus epidermidis, Streptococcus species, Micrococcus, Corynebacterium species, Bacillus species, Pseudomonas aeruginosa, Escherichia coli, Haemophilus influenzae, Moraxella catarrhalis etc (Mgbor and Gugnani, 2001). Commensal flora is not pathogenic as long as the balance between bacteria and fungi is maintained in the external auditory canal (Aneja *et al.*, 2010). Aim and objective of this study was to determine the common presenting symptoms, predisposing factors and incidence of fungal agents causing otomycosis.

## MATERIAL AND METHODS

This study was carried out in the Department of microbiology, Patna medical College, Patna. 50 cases selected for this study were taken from OPD of ENT department of PMCH, Patna

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from April 2017 to September 2017. Person selected having sign and symptoms of Itching, pain, feeling of ear blockage, ear discharge and Hearing loss. Age, sex, socio-economic status and occupation of the patients were recorded. Any history of use of wooden sticks use of oral and topical antibiotic/steroids were noted. Ear discharge samples were collected aseptically using two sterile cotton swabs. One swab was used for direct microscopic examination. Direct microscopic examination of the specimens were carried out by Gram's staining and 10% KOH mount. The other swab was inoculated on Sabouraud Dextrose Agar with chloramphenicol, which was incubated at 25°C and 37°C aerobically for a period of four weeks. Identification was done on the basis of Colony morphology and Lactophenol Cotton Blue Mount microscopy. Aspergillus isolates were identified by LCB mount, which shows sporulating vesicles, abundant black spores, varying length of conidiophores and biseriate phialides. Candida species were identified by germ tube test, growth at 44°C, Dalmau plate culture as well as sugar fermentation and assimilation studies. Colonies were inoculated on HiChrome agar for identification of species of Candida.

## RESULTS

Out of 50 samples, fungal isolates were obtained from 35 cases (70%). 6 cases were found sterile and contaminants/bacterial isolates were found in 9 cases. The most common fungal species causing otomycosis was Aspergillus niger with 17 cases (48.57%), followed by Aspergillus flavus with 6 cases (17.14%), Candida albicans with 5 cases (14.28%), Aspergillus fumigatus with 3 cases (8.57%), followed by Candida tropicalis and Penicillium with 2 cases each (5.71%) Table I. A total of 50 cases with documented diagnosis of otomycosis were included in the analysis. The group consisted of 29 (58%) males and 21 (42%) females Table II. Out of the total 50 patients, maximum number of patients belonged to the age group of >15-35 years, followed by those in the >35-55 years age group, followed by 5-15 years and >55 years age group with 64%, 18%, 12% and 6% respectively Table III. Hearing loss and pruritus were the most common symptoms at the time of diagnosis followed by earache, otorrhea and tinnitus.

**Table I. Fungal species causing Otomycosis**

S.No.	Fungal isolates	Number of samples positive of fungi	Percentage %
1.	Aspergillus niger	17	48.57
2.	Aspergillus flavus	6	17.14
3.	Candida albicans	5	14.28
4.	Aspergillus fumigatus	3	8.57
5.	Candida tropicalis	2	5.71
6.	Penicillium	2	5.71
Total fungal isolates		35	

**Table II. Distribution of patients according to sex**

	Number of patients	Percentage %
Male	29	58
Female	21	42

**Table III. Distribution of patients according to age group**

S.No.	Age	Number of patients	Percentage %
1.	5-15 years	6	12
2.	> 15- 35 years	32	64
3.	> 35-55 years	9	18
4.	> 55 years	3	6

In our study, hearing loss was found in 38 cases (76%), followed by pruritus in 33 cases (66%), followed by earache in 20 cases (40%), followed by otorrhea in 14 cases (28%) and tinnitus in 3 cases (6%) Table IV.

**Table IV. Symptoms at the time of diagnosis**

S.No.	Clinical Symptom	Number of patients	Percentage %
1.	Hearing loss	38	76
2.	Pruritus	33	66
3.	Earache	20	40
4.	Otorrhea	14	28
5.	Tinnitus	3	6

## DISCUSSION

In the present study isolation rate of fungi from the suspected cases was 70% which is in accordance with other studies.<sup>6,10</sup> Aspergillus spp was found to be predominant fungus isolated from 74.28% patients followed by Candida spp.(20%). This finding is in accordance with other findings reported from India (Aneja *et al.*, 2010; Agrawal *et al.*, 2001; Nandyal *et al.*, 2015). Among Aspergillus spp, A. niger (48.57%) was the predominant fungi followed by A. flavus and A. fumigatus, which is similar to other studies (Prasad *et al.*, 2014; Viswanatha *et al.*, 2012). Chander et al obtained A. niger in 57% cases of otomycosis (Chander *et al.*, 1996). In the current study, among Candida spp, Candida albicans(14.28%) was reported more than C. tropicalis (5.71%) which also concur with previous studies. Pontes et al found 30% of Candida in cases of otomycosis (Pontes *et al.*, 2009). Candida was reported as the predominant organisms with otomycosis in immunocompromised hosts and in post-operative cavities. Out of 50 clinically isolated cases, male preponderance (58%) was seen than female (42%) which is in accordance with other studies done earlier (Viswanatha *et al.*, 2012; Yehia *et al.*, 1990). Our study population mainly comprised of younger age group which is in accordance with studies from India and other countries. The Incidence of otomycosis was more in >15-35 years age group with 64% cases followed by age group of >35-55 years with 18% cases which goes well with other studies.<sup>3,6</sup> Among clinical symptoms, Maximum patients presented with feeling of blocked ear (76%) followed by pruritus 66%, earache 40% and discharge 28%. In another study, earache was reported as the major symptom followed by otorrhea and hearing loss (Ho *et al.*, 2006).

## Conclusion

Improper self cleaning and using home remedies to get relief from ear ailments has been found as probable predisposing factor of otomycosis. Species like Aspergillus and Candida are the common culprits involved in such cases. Treatment regimes such as clotrimazole and 2% salicylic acid coupled with mechanical debridement are generally effective. The high prevalence of otomycosis in India has raised the importance to diagnose the causative agent.

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