



A STUDY OF FUNGAL ETIOLOGY OF CHRONIC SUPPURATIVE OTITIS MEDIA IN TERTIARY CARE HOSPITAL, BARABANKI, U.P.

Otorhinolaryngology

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ABSTRACT

Aim: The present study was aimed to speculate the etiological fungal flora responsible for the cases of CSOM among patients. **Methods:** A total of 400 patients clinically diagnosed with CSOM were interviewed & middle-ear effusion samples were collected using sterile swabs. All fungal isolates were identified by conventional microbiology methods- KOH mount and Sabouraud's dextrose agar. **Results:** 61 were fungal positive and 339 fungal negative. The frequency of occurrence of fungal infections in CSOM in our study was 15.25%. The 339 fungal negative where having bacterial culture positive 254 (63.5%). **Conclusion:** A definite search for fungal etiology is desirable in all cases of CSOM. Prolonged use of topical antibiotics or antibiotics-steroids ear drops may cause suppression of bacterial flora and the subsequent emergence of fungal flora. This probably increases the incidence of fungal superinfection. Otolologists should suspect mycotic otitis media in patients with continuous otorrhea and who do not respond to the antibacterial treatment.

KEYWORDS

Ear infection, CSOM, fungal culture.

INTRODUCTION

A WHO/CIBA Foundation workshop in 1996 defined "Chronic suppurative otitis media (CSOM) as stage of disease in which there is chronic infection of the middle ear cleft, i.e., Eustachian tube, middle ear and mastoid, and in which a non intact tympanic membrane (e.g., perforation or tympanostomy tube) and discharge (otorrhea) are present for at least 2 weeks or more." It is also known as chronic active mucosal otitis media, chronic otomastoiditis, or chronic tympanomastoiditis¹.

CSOM is a major health problem in developing countries because of poor nutrition, improper hygiene and lack of health education. In CSOM cases superimposed fungal infection 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 conditions².

The most commonly isolated fungi from CSOM was *Candida* and *Aspergillus* species, but they also varies between the different geographical areas³.

CSOM is mainly caused by bacteria, so studies are mainly focused on finding the bacterial aetiology. Most commonly isolated aerobic bacteria in CSOM are *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Klebsiella*, *Streptococcus pyogenes* etc. The irrational use of broad spectrum antibiotics, use of steroids and immunodeficiency disorders favours the secondary infection by fungi. Presence of moisture in ear canal also favours fungal infection by *Candida*, *Aspergillus*, etc. The microbiology investigations help in reducing the active infection of CSOM and thus prevent further serious complications such as mastoiditis and brain abscess.

AIM -

To speculate the etiological fungal flora responsible for the cases of CSOM among patients.

OBJECTIVE -

To identify the fungal aetiological agents of CSOM in patients attended in the Department of ENT , Hind Institute Of Medical Sciences , Barabanki , U.P.

MATERIAL & METHODS

Study population

This cross-sectional analytical study comprised a total of 400 patients clinically diagnosed with CSOM in age group 18-60 years, who visited to the ENT opd of Hind Institute Of Medical Sciences, Barabanki.

CSOM was defined as otorrhea through a perforated tympanic membrane, present for at least two to six weeks. The study included patients of both sexes with ear discharge . Otomycosis which does not have a CSOM association and patients on topical antifungal therapy were excluded.

Ethical committee approval was obtained before starting the study. In addition, all 400 enrolled patients signed informed consent forms.

Sample Collection

Middle-ear discharge was collected from the patients, by ENT specialist, under strict aseptic precautions using sterile swabs. The swab samples were immediately sent to the microbiology laboratory for fungal studies.

Data collection made using a proforma for each patient regarding name, age, sex, address. The clinical information like earache, ear discharge, duration of symptoms, predisposing factors, history of recurrence, the treatment taken etc are also included in the proforma. Other medical history like diabetes mellitus, hypertension and tuberculosis were also noted.

Ear discharge was collected under aseptic precautions. Excess discharge was mopped and the external auditory canal cleaned using sterile normal saline. The specimen was then collected using two sterile cotton swabs. One swab was subjected to microscopic examination by KOH wet mount preparation and the other swab was used for inoculation in Sabouraud's dextrose agar (two tubes). One tube kept at 37° c and other at room temperature. Fungal growth obtained on SDA were examined for characteristics like rate of growth, colony morphology, colour of obverse and reverse, diffusible pigment production⁴.

RESULTS

Out of total 400 cases 15.25% were culture positive and 84.75% was culture negative (bacterial positive 63.5 % & no growth 21.25%). Out of these 15.25% -8% were male and 7.25% female were positive for fungal growth . The age of the participants ranged from 18 to 60 years. *Aspergillus* species 36(9%) was found to be the most common fungus isolated (*Aspergillus Niger* - 6.75%) and followed by *Candida* species 25(6.25%).

Out of 400 otitis media patients, the fungal culture positive where more in males. The previous study conducted^{5,6} showed that females were commonly involved compared to males. Studies done earlier^{7,8} reported that otomycosis is more common in males.

Aspergillus was isolated in 36 cases , of which maximum number 27 (6.75%) of strains being Aspergillus Niger , 6(1.5%) were Aspergillus flavus, 3 (0.75%) , Aspergillus fumigatus and Candida albicans were 25(6.25%) which is similar to a previous study⁹. Candida species was identified as the common non- bacterial cause of ear discharge in various studies, this is at variance with findings in India and Greece where Aspergillus species was the commonest isolated fungus^{10,11}.

This may be attributed to the environmental effect (hot and humid) on the cases of otitis media which were studied in this area. Evaluation of Microbiological pattern in local area becomes helpful in prescribing empirical antibiotics for successful treatment of Otitis Media and thus minimizing its complications and emergence of resistant strains.

Table 1: Finding Of Fungal Culture Among The Study Participants

Fungal Culture	Overall (N=400)
ASPERGILLUS FLAVUS	6 (1.5%)
ASPERGILLUS FUMIGATUS	3 (0.8%)
ASPERGILLUS NIGER	27 (6.8%)
CANDIDA	25 (6.2%)
NO GROWTH	339 (84.8%)

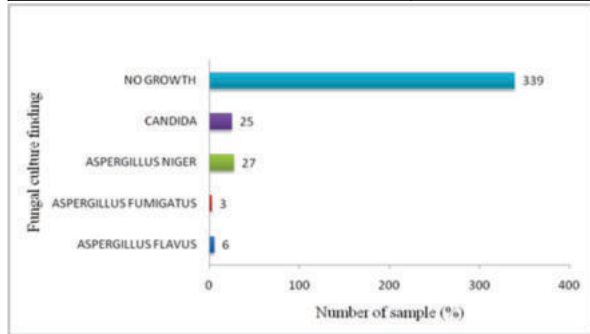


Figure 1: Findings of fungal culture among the study participants

Table 2: Age Group Of The Patients And Isolated Organism Among The Study Participants

	ASPERGILLUS FLAVUS (N=6)	ASPERGILLUS FUMIGATUS (N=3)	ASPERGILLUS NIGER (N=27)	CANDIDA (N=25)	NO GROWTH (N=339)	Total (N=400)	P value
Age Group							0.43
18-28 Yrs	2 (33.33%)	0 (0.0%)	10 (37.03%)	12 (48.0%)	153 (45.13%)	177 (44.25%)	
29-39 Yrs	2 (33.33%)	2 (66.7%)	6 (22.2%)	8 (32%)	91 (26.84%)	109 (27.25%)	
40-50 Yrs	2 (33.33%)	1 (33.3%)	8 (29.62%)	4 (16%)	50 (14.74%)	65 (16.25%)	
51-60 Yrs	0 (0.0%)	0 (0.0%)	3 (11.11%)	1 (4.0%)	45 (13.27%)	49 (12.25%)	

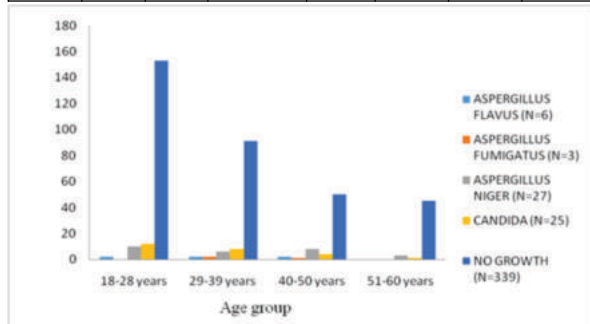


Figure 2: Age group of the patients and isolated organism among the study participants

CONCLUSION

CSOM caused by both bacterial and fungal origins in laboratory diagnosis has frequently been reported; however, CSOM associated with the clinically relevant fungal flora alone is a unique case.

In conclusion, the mycological study of CSOM reveals Aspergillus species is the most common causative agent followed by Candida. Carefully selected local and/or systemic antibiotics guided by culture and sensitivity, along with the use of frequent ear toilet is an effective treatment modality in general. Long term topical antibiotic therapy, presence of moisture in ear canal etc. can lead to otomycosis. So fungal culture should also done in chronically discharging ear. This will prevent the administration of unwanted antibiotics.

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