

Original Research Article

Growing incidence of fungal flora in mucosal chronic otitis media

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ABSTRACT

Background: Chronic otitis media (COM) is commonly encountered chronic inflammation of the middle ear cleft caused by dysfunction of Eustachian tube followed by microbial infection. Fungal infections superimposed over COM are suspected when the discharging ear does not respond to the local antibiotic ear drops. Many authors have focused their attention on the bacterial flora of COM but very little is known about the mycological aspects.

Methods: Ear discharge or scrapings of debris were collected from one hundred patients of active mucosal COM in whom discharge persists after two weeks of medical management and sent to the microbiology laboratory for microscopic examination and fungal culture.

Results: Fifty seven percent cases had positive fungal KOH mount whereas fungal culture demonstrated *Aspergillus flavus* in 15 cases, *Aspergillus niger* in 38 cases and *Candida albicans* in 4 cases.

Conclusions: We conclude that the fungal isolation rate is very high among the patients who did not respond to antibiotic therapy and therefore, culture and sensitivity of discharge and removal of the focus of infection should be sought before using topical drops in cases of persistent otorrhoea.

Keywords: COM, Mucosal disease, Fungus, *Aspergillus*, *Candida*

INTRODUCTION

The incidence of COM is higher in developing countries, especially among the low socioeconomic strata of the society because of poor nutrition, overcrowding, improper hygiene, inadequate health care, lack of health education and recurrent upper respiratory tract infection.¹ The disease is highly prevalent in tropical regions including South East Asia.²

Apart from bacteria, COM can be caused by wide variety of fungi, most of which are saprobe, occurring in diverse type of environmental material.³ In the recent years, opportunistic fungal infections are gaining greater importance in human medicine as a result of possibly huge number of immunocompromised patients. Early

diagnosis and treatment of mycotic otitis media are important to minimize the risk of serious complications like mastoid abscess, labyrinthitis, facial nerve paralysis, Lateral Sinus thrombophlebitis, meningitis and intracranial abscesses.^{3,4} The objective of our study was to find out the exact prevalence of fungal flora in mucosal COM.

METHODS

The cross-sectional study was conducted in the Department of Otorhinolaryngology and Microbiology, Atal Bihari Vajpayee Institute of Medical Sciences and Dr. Ram Manohar Lohia Hospital New Delhi, a tertiary care referral centre, after taking clearance from institutional ethical committee (IEC). One hundred patients of mucosal COM with persistent ear discharge

(not responded to two weeks of medical management) were included in the study. Under all aseptic precautions either ear discharge or scrapings of debris were collected in sterile container and sent to the microbiology laboratory for microscopic examination (10-20% potassium hydroxide) and fungal culture. The specimen was examined for the presence of epithelial cells, pus cells, budding yeast cells, fungal hyphae and spores. The second sample was inoculated on sabouraud dextrose agar (SDA) slant with and without antibiotic and incubated at 25°C and 37°C.

Statistical analysis

Quantitative variables were compared using independent T-test/Mann-Whitney test (when the data sets were not normally distributed) between the two groups. Qualitative variables were correlated using chi-square test/fisher exact test. Analysis was done using statistical package for social sciences (SPSS) version 21.0.

RESULTS

Total numbers of one hundred cases of active mucosal COM with persistent ear discharge (>2weeks after giving antibiotics) were included. We found that fifty seven percent cases had positive fungal KOH mount (Figure 1). Majority (53%) had branched septate hyphae (aspergillus species) and rest were budding yeast cells (candida species). Fungal culture demonstrated aspergillus flavus in 15 cases, aspergillus niger in 38 cases and candida albicans in 4 cases. Most of the fungal positive cases were in second (65.4%) and fourth decade (72.2%) and majority of them were males.

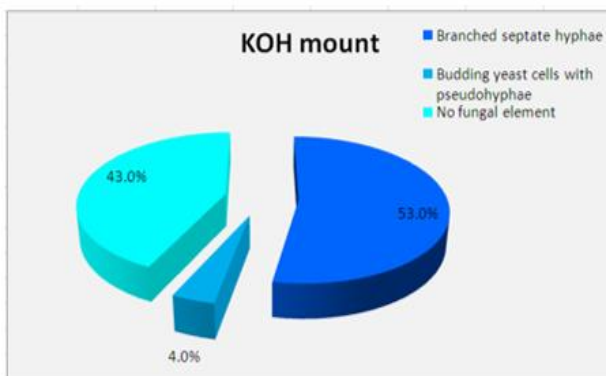


Figure 1: Highlights the observation with KOH mount.

Most of the fungal positives had blackish and dirty brownish/whitish discharge with or without mucopurulence (Figure 2).

Direct correlation was found between chronicity of disease and fungal culture positivity (Figure 3). We also observed that the majority of fungal positive cases had symptoms of earache (94.1%) and pruritis (95.7%).

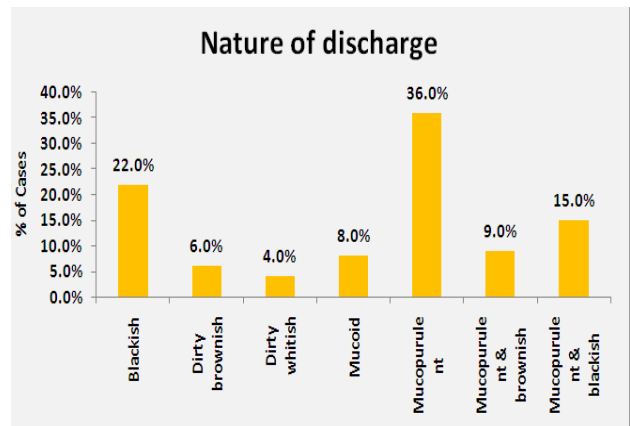


Figure 2: Nature of discharge in COM with positive fungal culture.

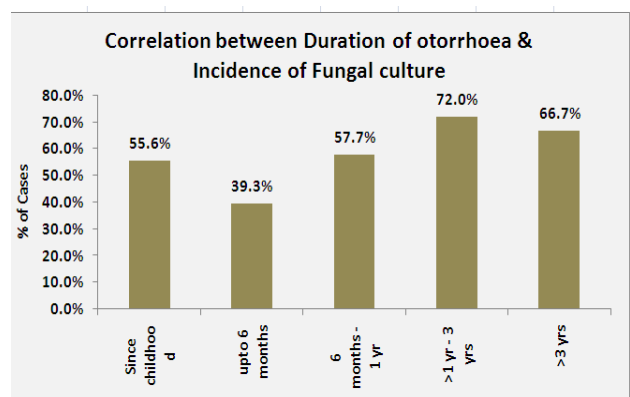


Figure 3: Correlation between chronicity of disease and positive fungal culture.

DISCUSSION

We found an overall prevalence of 57% of fungal positivity in mucosal COM. In the past, there were controversies regarding the existence of fungal etiology in COM but now it is considered to be a definitive clinical entity.

The highest incidence of fungal COM was noted in second and fourth decades of life (62%) and this observation was concurrent to the studies conducted by various other authors. Higher incidence in young adults may be attributed to the fact that they are more exposed to the fungal spores whereas extreme age groups are not. Fungal infection of COM were prevalent among males in the present study which are closer with the observation observed by different authors in their findings like Rachna et al (55.55%), laxmipati and Baskaran et al (55.80%), Salisu et al (57.5%), Gulati et al (67.50%).⁵⁻⁸ Earlier study from India, reported higher isolation rate of *Aspergillus* species (60.2%) as compared to *Candida species* (17.6%).

Sengupta reported that all cases of *Aspergillus niger* had pain in the ears and itching related to fungal infections.⁹

These symptoms, according to him, indicated the presence of fungus invasion in COM.

CONCLUSION

We found that the fungal isolation rate is very high among the patients who did not respond to antibiotic therapy. This clearly suggests that definite search for fungi is desirable in all cases of COM. In cases of persistent otorrhoea, aural toilet with culture and sensitivity of discharge and removal of the focus of infection should be sought before using topical drops. In the event of mixed infections, topical antibiotics along with antifungal agents should be used. This not only will decrease the incidence of fungal COM but will also prevent the emergence of drug resistance to an extent.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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