

Analysis of various fungal agents in clinically suspected cases of otomycosis

Dr. Pankti Panchal¹, Dr. Jayshree Pethani², Dr. Dipti Patel¹, Dr. Sanjay Rathod², Dr. Parul Shah³

¹ Resident doctor, ² Associate Professor, ³ Professor & Head, Department of Microbiology.

Name of institute/college : Smt. N.H.L. Municipal Medical College, Ahmedabad, Gujrat, India

Corresponding author : Dr. Pankti panchal : **Email id :** drpanktipanchal@gmail.com

ABSTRACT:

INTRODUCTION: Otomycosis is a fungal infection of external ear with troublesome symptoms like otorrhea, otalgia, pruritis etc. Fungal agents responsible for this clinical entity are commonly found to be saprobe in environment which makes infection to occur frequently in humid climate. So early diagnosis & its treatment is necessary to prevent complication & unnecessary use of antibiotics. Present work was planned to determine fungal agents involved in otomycosis & their Correlation with clinical presentation & various predisposing factors associated with such cases.

METHODS: From July to October 2012, 50 samples of clinically suspected cases of otomycosis were taken, followed by their detail clinical history & examination at ENT Department. All samples were examined for any fungal infection by means of KOH preparation & fungus culture.

RESULTS: *Aspergillus niger*(56.52%) & *Candida tropicalis* (21.73%) were found to be most common agents. Females were commonly affected (56.52%), with most common age group involving between 51-60 yrs old (47.82%). Most common symptom was otorrhea followed by pruritis & otalgia. Self injury or scratching in external auditory canal & chronic use of long term antibiotics were noted as major predisposing factor. Bacterial co infection was found in 6 patients(26.08%).

CONCLUSION: *Aspergillus niger* was common pathogen but role of candida in causation of otomycosis is also not negligible in our study area. Annoying symptoms due to this infection points towards its early microbiological confirmation, diagnosis & management.

KEY WORDS : Otomycosis, Aspergillus, Candida, Otorrhea

INTRODUCTION: Otomycosis is a fungal infection often affecting the pinna and the external auditory meatus & in case of perforation can be cause of middle ear infection too¹⁻⁴. It is one of the common conditions encountered in ENT clinic. The infection may occur as acute, subacute or chronic and with symptoms like itching in the ear, otalgia, otorrhea, ear fullness, hearing impairment and tinnitus⁶⁻⁹. In its most severe forms sometimes tympanic membrane perforation, middle ear or whole mastoid cavity & temporal bone involvement may result. Many of the fungi isolated

from clinical specimen are merely found saprophytic in environment, when local host immunity gets compromised by any of means; they found their way to colonization to cause infection^{1-5, 7}. The prevalence of this entity is also related to the geographic distribution, areas with tropical climate shows higher rates of incidence. Various factors have been proposed as predisposing factors for otomycosis local injury, immunocompromized host, long term use of broad spectrum antibiotics or steroid preparations, co morbid conditions like diabetes & dermatological disease^{10,8}.

Identification of correct pathogenic organism & its predisposing factor makes easier way for clinician to find suitable treatment & prevention of its recurrence. Present study was planned to determine fungal agents involved in otomycosis & their Correlation with clinical presentation & various predisposing factors associated with such cases.

MATERIALS & METHODS: It was a retrospective study conducted at Outpatient Department of ENT, V.S.General Hospital, Ahmedabad between July 2012 and October 2012. Total 50 samples were collected from patients with a clinical suspicion of otomycosis, which was based on different clinical symptoms like pruritis, chronic otorrhea, otalgia, impaired hearing etc and on otoscopic findings like appearance of fungal mass or debris, blackish foul smelling discharge etc. patients on anti fungal drugs were excluded from study. samples were collected using sterile cotton swabs followed by detail clinical history & clinical examination. All received samples were transported to department of Microbiology immediately, with maintenance of sterile condition, to know the presenting form of fungi responsible for infection in received sample. For fungus isolation all

collected samples were processed for direct KOH preparation & Gram stain examination. Each sample was inoculated on blood agar & duplicate set of Sabouraud's Dextrose agar. Inoculated medias were incubated at room temperature and were followed for two weeks. For isolation of fungi, growth on media was confirmed by Lactophenol cotton blue wet preparation & species identification of candida was done by sugar fermentation test, sugar assimilation test, germ tube test, Sabouraud's Dextrose broth results, pigment production on chrome agar & detection of chlamyospore formation on corn meal agar.

RESULTS: Total 50 patients on the basis of clinical suspicion were included in the study. From 50 samples 23 (46%) were positive for fungus on KOH preparation & culture. Among positive patients, 13 (56.52%) were female and rest 10 (43.48%) were male, shows females were commonly affected. Age of patients were ranging from 20 yrs to 65 yrs. Highest number of positive cases were following in age group of 51-60 yrs old(47.82%), followed by 21-30yrs age group(30.43%).Age wise distribution of positive cases has been depicted in Table-1.

Table-1 : Age wise Distribution of positive patients		
Age group	Number of patients(n=23)	Percentage(%)
0-10	0	0
11-20	1	4.34
21-30	7	30.43
31-40	2	8.69
41-50	2	8.69
51-60	11	47.82
61-70	1	4.34

Predisposing factors were evaluated by detail clinical history shows self scratching or local injury as commonest finding seen in 12 patients(52.17%), use of local long term broad spectrum antibiotics in

7 patients(30.43%),co morbidity with diabetes in 3 patients (13.04%) and one patient was on ART therapy.Duration of presenting symptoms was ranging from 5 days to 6 months , with otorrhea

was seen in almost majority of patients(86.95%), associated with other complains like pruritis in 16 patients(69.56%), otalgia in 11 patients (47.82%) , decreased hearing in 7 patients (30.43%)& three patients(13.04%) were presented with complicated otomycosis having tympanic perforations & middle ear infection.

History taking was followed by clinical examination which showed various clinical signs

like blackish discharge or sometimes whitish with tympanic perforation, congestion of meatal epithelium & canal, white cotton like or dry fungus debris in canal suggesting of otomycosis to which clinician rely on making probable clinical diagnosis.46% samples were positive for fungus, no growth was seen in 27 patients(54%). Fungus mainly isolated was *Aspergillus* & *Candida* sp. (Table-2) .

Table-2 : Results of mycological examination in clinically suspected cases of otomycosis		
Fungal isolate	Number of isolates(n=23)	Percentage(%)
<i>Aspergillus niger</i>	13	56.52
<i>Candida tropicalis</i>	5	21.73
<i>Candida albicans</i>	3	13.04
<i>Aspergillus flavus</i>	1	4.34
<i>Aspergillus fumigatus</i>	1	4.34

Aspergillus niger was isolated in 13 patients (56.52%), followed by *Candida tropicalis* in 5 patients (21.73%),*Candida albicans* in 3 patients(13.04%) and one-one patient with *Aspergillus fumigates* & *Aspergillus flavus* individually. Bacterial co infection found in 6 patients (26.08%).

DISCUSSION: Otomycosis is frequent condition seen in ENT department & is a tough to deal with due to recurrence & complications. Many of the times diagnosis is made clinically with high rate of suspicion on the basis of clinical sign & symptoms. In our study this kind of presumptive diagnosis was confirmed by lab findings in 46% of patients, compared with study by Aneja et al¹¹ who reported in 78%, Kumar et al ¹² & B Barati et al⁹ reported in 75.92% & 69% of patients respectively.

As shown in this study most frequently observed symptom was chronic otorrhea, for which patient

was usually on topical antimicrobial agent which itself is a risk factor for developing of otomycosis. So, results of this study is pointing us that when diagnosis has to be made on such few & common presenting symptoms without classical signs, it should always follow laboratory confirmation as guide for treatment. Identification of predisposing factor is also an important window to look for preventing recurrence. Habit of cleaning ear with wooden sticks, contaminated fingers which inoculate fungal debris in external auditory canal. More over it damages normal lining epithelium which is natural defence that protect against such infection. In our study it was commonest predisposing factor, similar results were observed with earlier workers¹³⁻¹⁴.

Higher incidence was found amongst females, as most of the time women using head covering which provides ideal moist environment for fungus to

grow. Here also same results were matching with earlier studies^{9, 14}. In present study majority cases were above 50 yrs old age group, findings are differing from earlier studies by Aneja et al¹¹, B Barati et al⁹ and Pontes et al.,⁶ in whom most common age group was 21-40 years old patients. *Aspegillus niger* was most common pathogen isolated. As it is a common saprobe in environment-rapid growth, dry and easily aerosolised conidia helps it to colonize more rapidly. It was most common agent too in other studies^{7, 12, 14}. Kaur et al⁸ reported *A. fumigatus* as the most common cause of otomycosis, Pontes et al⁶ reported *Candida* genus as the predominant pathogen while B Barati et al⁹ noted *A. flavus* as commonest isolate in otomycosis. Complications

like tympanic membrane perforation, mastoiditis with bone erosion are known to occur. In our study we found three patients out of 23, which is not negligible. All these things conclude that clinical suspicion should always be put on mycological confirmation to prevent unnecessary use of antibiotics & bothersome complications.

KEY MESSAGE: Otomycosis being commonest clinical problem to come across routinely, which usually represented by various non specific symptoms. chronic discharging ear not controlled by antibiotics should always be put on suspicion of otomycosis and sample should be sent for fungus culture to arrive at right diagnosis which ultimately reduce its complications & morbidity of patients by proper guided treatment.

REFERENCES:

1. Anaissie EJ, Mc Ginnis MR, Pfaller MA. Clinical Mycology. Elsevier, Philadelphia; 2003.
2. Mugliston T, O'Donoghue G. Otomycosis: a continuing problem. J Laryngol Otol 1985; 99: 327-33.
3. Munguia R, Daniel SJ. Otological antifungals and otomycosis: a review. Int J Pediatr Otorhinolaryngol 2008;72:453-9. [18279975] [<http://dx.doi.org/10.1016/j.ijporl.2007.12.005>]
4. Pradhan B, Tuladhar NR, Amatya RM. Prevalence of otomycosis in outpatient department of otolaryngology in Tribhuvan University Teaching Hospital, Kathmandu, Nepal. Ann Otol Rhinol Laryngol 2003; 112: 38p4-7.
5. Yehia MM, al-Habib HM, Shehab NM. Otomycosis: a common problem in north Iraq. J Laryngol Otol 1990;104: 38p7-9.
6. Pontes ZB, Silva AD, Lima E, Guerra M, Oliviera N, Carvalho M, Guerra FS. Otomycosis: a retrospective study. Braz J Otorhinolaryngol 2009;75:3p67-70. [19649486] [<http://dx.doi.org/10.1590/S1808-86942009000300010>]
7. Kumar A. Fungal spectrum in otomycosis patients. JK Science 2005;7:15p2-5
8. Kaur R, Mittal N, Kakkar M, Aggarwal AK, Mathur MD. Otomycosis: a clinicomycologic study. Ear Nose Throat J 2000;79:60p6-9. [10969470]
9. B Barati, S A R Okhovvat, A Goljanian, M R Omrani, Department of Otolaryngology, Isfahan University of Medical Sciences, Isfahan, Iran- Otomycosis in Central Iran: A Clinical and Mycological Study, IRCMJ 2011 December;13:12 p 873-876.
10. Stern JC, Lucente FE. Otomycosis. Ear Nose Throat J 1988;67: 80p4-10.

11. Aneja KR, Sharma C, Joshi R. Fungal infection of the ear: a common problem in the north eastern part of Haryana. *Int J Pediatr Otorhinolaryngol* 2010;74:60p4-7. [20347163] [<http://dx.doi.org/10.1016/j.ijporl.2010.03.001>]
12. Ozcan MK, Ozcan M, Karaarslan A, Karaarslan F. Otomycosis in Turkey: predisposing factors, aetiology and therapy. *J Laryngol Otol* 2003;117:39-42. [12590854] [<http://dx.doi.org/10.1258/002221503321046621>]
13. Fasunla J, Ibekwe T, Onakoya P. Otomycosis in western Nigeria. *Mycoses* 2008; 51: 67–70.
14. Xianhao Jia, Qin Liang, Fanglu Chi, Wenjun Cao -Otomyocosis in shanghai, clinical features and therapy, *Mycoses* September 2012; 55: 5, p404–409,

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