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Short Communication

Occurrence of fungi causes otomycosis in rural areas of MP, India

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Abstract

Otomycosis is a subacute or chronic superficial fungal infectious disease of the outer auditory meatus. In this study, the main objective is to define the etiological agents and predisposing factors of Otomycosis. This disease is involved in various sex and age groups. A total of 80 clinical specimens are collected from the external auditory canal. All clinical specimens are collected by sterile cotton swabs and inoculated on Sabouraud's dextrose agar. All isolated fungal agents were examined by the mycological investigation. In our present study Aspergillus niger 43.73% and Candida species 35.2% are the major fungal isolates. A higher incidence of Otomycosis is predominant seen in male patients between 21-30 years of age. Pruritus is the common fungal symptoms of Otomycosis. In this study, a high incidence of Otomycosis is encountered in rural areas peoples, because due to the high humidity, moist, and dusty environment. The present study focuses on educating the people about predisposing factors (self-cleaning) and aware of treatment methods of Otomycosis.

Keywords: *Aspergillus*, external auditory canal, Pruritus, predisposing factors, Otomycosis.

Introduction

Otomycosis is a superficial fungal infection of the outer auditory canal. This disease may also occur in the middle ear[1-4] or tympanic membrane. Otomycosis is a common medical problem in all over the world. The spreading of Otomycosis mainly depends upon various climatic conditions like hot, moist, and dusty climates. There are several predisposing factors[5] which play important role in Otomycosis infection such as moisture, humidity, swimming, self-hygiene, steroids, and use of oils. This type of infection has also been observed in patients who do not clean their ears.

The broad range of fungal genus[6] involves in Otomycosis such as *Aspergillus*, *Penicillium*, *Mucor, Candida*, and *Absidia*. Species of *Aspergillus* and *Candida* are the main isolated fungal agents of Otomycosis. Otomycotic symptoms occur in patients[7] are pruritus, otalgia, otorrhea, tinnitus, and blocking sensation. The major purpose of this research is to elucidate the occurrence of etiological agents and predisposing factors that cause Otomycosis in various sex and age groups in a rural community.

Materials and methods

In this study, 80 specimens were collected from clinically suspicion patients of Otomycosis from ENT clinic Ujjain, MP, India. The patients include both males and females with different clinical symptoms like pruritus, otalgia, otorrhea, tinnitus, etc.

All specimens[8] was collected from the outer auditory canal under aseptic condition by using sterile cotton swabs. Each swab labelled with the patients clinical history. All collected samples were transferred to the laboratory for further processing. In a direct microscopic examination of all samples were treated with 10% potassium hydroxide and observed microscopically. For isolation, all samples were inoculated on the surface of Sabouraud's dextrose agar (SDA) with chloramphenicol.

The Petri plates incubated at 28°c for one week. After incubation culture plates were examined for fungal growth. Fungal isolates[9] were identified based on the standard monographs.

Results and discussion

In this study, a total number of 80 specimens were collected from patients. Positive fungal isolates were found in 75 specimens. Otomycosis is more prevalent in the age group of 21-30 years. 44(46.93%) of the patients with Otomycosis were males and 31(33.06%) were females Table-1. The first most common fungal species isolated was *Aspergillus niger* 41(43.73%), Second most common fungal species isolated was *Candida* species 33(35.2%) and *Aspergillus fumigatus* 1(1.06%) as shown in Table-2 and Figure-1.

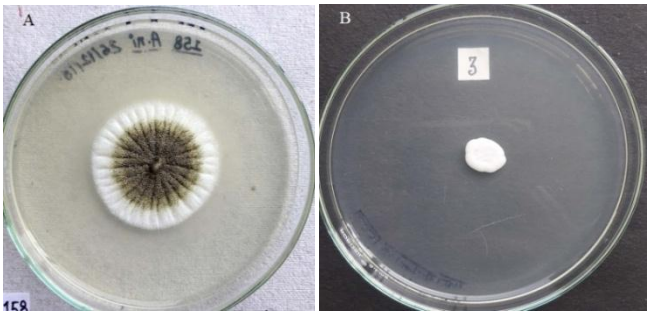
The predominant symptoms of patients during the examination were pruritus 39.4%, followed by otalgia 19.2%, tinnitus 12.8%, and otorrhea 8.53%. Major predisposing factors for Otomycosis development are self-cleaning using by unsterile earbuds, toothpicks, metal pins (49.06%), the practice of using instillation of oil in the ear (25.6%), water entering during bathing and swimming (3.2%) followed by using ear drops (2.13%) Table-3.

Table-1: Distribution of Otomycosis among various sex and age groups.

Age (in years)	Sex		Total
	Male	Female	
0-10	2	1	3 (3.2%)
11-20	4	3	7 (7.46%)
21-30	24	18	42 (44.8%)
31-40	10	6	16 (17.06%)
41-50	3	2	5 (5.33%)
51-60	1	1	2 (2.13%)
Total	44 (46.93%)	31 (33.06%)	75 (80%)

Table-2: Fungal isolates of Otomycosis patients.

Fungal isolates	No. of patients (%)
Aspergillus niger	41 (43.73%)
Candida sp.	33 (35.2%)
Aspergillus fumigatus	1 (1.06%)



(a) *Aspergillus niger*. (b) *Candida*.

Figure-1: Growth of Fungi on SDA plates.

Table-3: Predisposing factors of Otomycosis.

Predisposing factors	Frequencies (%)
Self cleaning	46 (49.06%)
Oil instillation	24 (25.6%)
Water entering in ear canal	3 (3.2%)
Ear drops	2 (2.13%)

The occurrence of Otomycotic infection in various age groups has frequently increased in the past few years. Otomycosis[10] is a universal medical problem in all over the world. It is widespread in a hot, moist, and dusty environment. This condition[11] occurs due to high humidity, hot weather, and the presence of dust particles in the environment. Some studies reported[12] that a high incidence of Otomycosis occurs in low socioeconomic peoples.

In our study occurrence of Otomycosis in patients is 75% which is compared to the studies conducted by other investigators such as Kaur[7] et al. in 74.7% patients and Kumar[13] in 75.9% patients. A high number of Otomycotic incidences have been observed in males 46.93% than females 33.06%. The occurrence of Otomycosis was high between the age of 21-30 years (44.8%). This observation compared to the studies conducted by Ologe and Nwabuisi[15] and Fasunla[5] et al.

In our present study focuses on rural areas peoples mostly males are farmers and working in the agricultural fields, other outdoor activities and they directly expose to dust particles which contain fungal spores. The presence of excessive cerumen in patients ears and they do not maintain personal hygiene allows the growth of fungal spores. In our study, the first main predisposing factor which is responsible for Otomycosis is self-cleaning 49.06%, by using unsterile cotton buds, hairpins, feathers, metal sticks, etc. it removes cerumen wax and gives relief from itching, but it may cause minor trauma in the epithelium skin lining and this condition allows the inoculation of fungal spores in the external ear. The second predisposing factor is the instillation of oil in ears is 25.6%. In our study, *Aspergillus* and *Candida* are major isolated fungal pathogens from patients ears.

Conclusion

The present study highlights the Otomycosis is a common medical problem in rural communities. In rural areas, peoples have a lack of knowledge about hygiene conditions and do not maintain proper hygiene of ears. Several people use home remedies for ear problems and it allows a higher risk of Otomycotic infections. The main focus of this study is to make awareness among peoples about predisposing factors (self-cleaning) and treatment methods of Otomycosis.

References

1. Emmons, C.W., Binford, C.H., Utz, J.P., and Kwon-Chung, K.J. (1977). Medical Mycology. *3rd ed Lea and Febiger*, Philadelphia.
2. Anaissie, E.J., McGinnis, M.R. and Pfaller, M.A. (2003). Clinical Mycology. *Elsevier Sciences*, Philadelphia, pp 464.
3. Munguia, R. and Daniel, S.J. (2008). Ototopical antifungal and Otomycosis: A review. *International Journal Pediatric Otorhinolaryngol.*, 72, 453-9.

4. Paulose, K.O., Al-Khalifa, S., Shenoy, P., and Sharma, R.K. (1989). Mycotic infections of the ear (Otomycosis): A prospective study. *Journal Laryngol Otol.*, 103(1), 30-35.

5. Fasunla, J., Ibekwe, T., and Onakoya, P. (2008). Otomycosis in western Nigeria. *Mycoses.*, 51, 67-70.

6. Loh, K., Tan, K., and Kumarasinghe, B. (1998). Otitis externa- the clinical pattern in a tertiary institution in Singapore. *Ann Acad Med, Singapore*, 27, 215-218.

7. Kaur, R., Mittal, N., Kakkar, M., Aggrawal, A.K., and Mathur, M.D. (2000). Otomycosis a clinicomycologic study. *Ear Nose Throat J.*, 79(8), 606-609.

8. Araiza, J., Canseco, P., and Bonifaz, A. (2006). Otomycosis: clinical and mycological study of 97 cases. *Rev Laryngol Otol Rhinol*., 127, 251-254.

9. Fischer, F. and Cook, M.B. (1998). Some opportunistic fungi and yeasts and yeast-like fungi. *Fundamentals of Diagnostic Mycology*, W.B. Saunders, Philadelphia, USA, pp 35-225.

10. Pontes, Z.B.V.D.S., Silva, A.D.F., Lima, E.D.O., and Guerra, F.Q.S. (2009). Otomycosis: A retrospective study. *Braz J Otorhinol.*, 75(3), 367-370.

11. Pahwa, V.K., Chamiyal, P.C., and Suri, P.N. (1983). Mycological study in Otomycosis. *Indian J Med Res.*, 77, 334-338.

12. Aneja, K.R., Sharma, C., and Joshi, R. (2010). Fungal infection of the ear: a common problem in the north eastern part of Haryana. *Int J Ped Otorhinolaryngol.*, 74(6), 604-607.

13. Kumar, A. (2005). Fungal spectrum in Otomycosis patients. *JK Science*., 7, 152-155.

14. Pardhan, B., Tuladhar, N.R., and Amatya, R.M. (2003). Prevalence of Otomycosis in outpatient Department of Otolaryngology in Tribhuvan University Teaching Hospital, Kathmandu, Nepal. *Ann Otol Rhino Laryngol*., 52, 76-80.

15. Ologe, F.E. and Nwabuisi, C. (2002). Treatment outcome of Otomycosis in IIorin, Nigeria. *West Afr J Med*., 21, 34-36.

16. Prasad, S.C., Kotigadde, S., and Manisha, S *et al*. (2014). Primary Otomycosis in the Indian subcontinent: Predisposing factors, Microbiology and Classification. *International Journal of Microbiology*., 1-9.

17. Jain, S.K. and Agrawal, S.C. (1992). Sporostatic effect of some oils against fungi causing Otomycosis. *Indian Journal of Medical Sciences*, 46, 1–6.

18. Kiakojori, K., Bagherpour Jamnani, N., Khafri, S. and Mahdavi Omran S. (2018). Assessment of response to treatment in patients with Otomycosis. *Iran J Otorhinolaryngol*., 30(96), 41-47.

19. Jadhav, V., Pal M., and Mishra, G. (2003). Etiological significance of *Candida albicans* and *Aspergillus* sp. in otitis externa. *Mycopathologia.*, 156, 313-315.

20. Ozcan, K.M., Ozcan, M., Karaarslan, A., and Karaarslan, F. (2003). Otomycosis in Turkey: predisposing factors, aetiology and therapy. *J Laryngol Otol*., 117(1), 39-42.