



Fungal Otitis Externa: Clinical and Fungal Evaluation in Hyderabad-Karnataka Region

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Abstract

Background: Ear is a paired structure and a specialized sense organ for hearing and balance. Fungal otitis externa is a superficial fungal infection of the external auditory canal causing lot of suffering to the patient which is commonly seen in ENT practice. Even though the condition is worldwide in distribution is more common in humid tropical and sub-tropical regions like Hyderabad-Karnataka Region, as the climatic condition predispose to fungal otitis externa. Hence, this present study is taken to evaluate the predisposing factors and common fungal isolates seen in patients with fungal otitis externa in Hyderabad-Karnataka region

Aims and Objective: To evaluate the Predisposing factors and common fungal isolates seen in patients with fungal otitis externa in Hyderabad-Karnataka region.

Material and Methods: The present study was conducted on 160 clinically diagnosed cases of Fungal Otitis Externa attending the ENT OPD for a period of one year. Ear discharge specimens were collected on two sterile cotton swabs. Direct Examination of the specimen was carried out by Gram stain and 10% KOH Preparation. All specimens were inoculated on Sabouraud's Dextrose Agar. Identification of fungi was done as per standard protocol.

Results: Out of 160 patients Evaluated, Fungal isolates were found in 138 cases (86.25%). The highest incidence was noted in the age group of 31-40 years, more prevalent in Females (60.86%), with unilateral distribution more on right ear. Pain in the ear was most commonest symptom (95.65%) followed by itching (92.75%) and Most common fungi isolated were *Aspergillus Flavus*, *Aspergillus Niger* and *Aspergillus Fumigatus* followed by *Candida* Species.

Conclusion: It is concluded from our study that Fungal otitis externa is one of commonest conditions seen with prevalence varying with climatic conditions, but warm humid environments support their growth, and the human ear canal is ideal for their proliferation. It occurs in men and women of all ages and is usually a unilateral disease. *Aspergilli* were considered as predominant fungi for fungal otitis externa. The study also concludes that patients have to be educated not to use unsterile materials to clean the ears which will be effective in prevention of fungal otitis externa.

Keywords: *Aspergillus*, *Candida*, External Auditory Canal, Fungal Otitis Externa, Otagia.

Introduction

Fungal otitis externa is a common condition encountered in a general otolaryngology clinic setting and its prevalence in this study is 7%

among patients who presented with signs and symptoms of otitis externa. It is almost in accordance with other studies.¹ It is a pathologic entity, with candida and aspergillus the most

common fungal species.^{2,3} It is not clear that the fungi are the true infective agents or mere colonization species as a result of compromised local host immunity secondary to bacterial infection. Various predisposing factors include a humid climate, presence of cerumen, instrumentation of the ear, increased use of topical antibiotics/steroid preparations⁴, immune compromised host, patients who have undergone open cavity mastoidectomy and those who wear hearing aids with occlusive ear mold. The infection is usually unilateral and characterized by inflammatory itching, scaling and otalgia. Sometimes fungal otitis externa presents as a challenging disease in presence of otorrhoea, for its long-term treatment and follow up, yet its recurrence rate remains high & so thorough evaluation is required.

Materials and Methods

The present study was carried out on 160 clinically diagnosed cases of fungal otitis externa attending the ENT OPD at Basaveshwar Teaching and General Hospital Gulbarga. The study was conducted over a period of one year. Ethical clearance was obtained from the Institutional Ethical Committee. An informed consent was obtained from all the patients before the start of study.

Inclusion Criteria: Patients diagnosed with fungal otitis externa based on Symptoms like Otagia, Itching, aural fullness, Otorrhea and Impaired hearing with Ooscopic findings like appearance of cotton woolly debris/foul smelling discharge, wet blotting paper appearance or creamy white debris.

Exclusion Criteria: Patients on oral & topical antibiotic & antifungal drops and negative fungal isolates by direct microscopy or culture were excluded from the study.

Collection of Sample: After clinical diagnosis of Fungal otitis externa was made, all the cases were evaluated for fungal isolates by taking with sterile cotton swabs from fungal like debris seen in the

infected ear canal and sent immediately to microbiology laboratory and subjected for 10% Potassium Hydroxide (KOH) Preparation, Grams Stain Examination & Sabouraud's Dextrose Agar (SDA) inoculated media were incubated at room temperature and were followed for two weeks. For isolation of fungi growth on media were confirmed by Lacto phenol cotton blue (LCB) preparation and Grams Stain.

Results

Out of 160 clinically diagnosed cases of Fungal otitis externa only 138 cases produced positive fungal isolates, these constituted 86.25 % which were taken up for further studies. Highest incidence was noted in the age group of 31-40 years (28.1%). In our study it has been found that the incidence of Fungal otitis externa was higher in females 84 cases (60.86%) than in males 54 cases (39.1%) with laterality to right ear. As depicted in Table 1 it was observed in our study that most common predisposing factor was use of unsterile materials/swabs for cleaning the ear in 106 cases (76.81%). The use of unsterile materials varied from Safety pins, Hairpins, Matchsticks, Pens and Refills to Unsterile buds followed by use of oils/ mixture of oils 102 cases (73.91 %).

Table 1: Predisposing factors for fungal otitis externa

Predisposing factors	Number of cases	Percentage
Use of unsterile sticks/ ear buds for cleaning the ear	106	76.81
Use of oils/mixture of oils	102	73.91
Use of customary head cover or turban	48	30
Nothing suggestive	8	12.80

Pain in the ear was the commonest symptom in 132 cases (95.65 %) followed by itching in the ear in 128 cases (92.75 %), the other symptoms observed are depicted in Table 2

Table 2: Clinical presentation of fungal otitis externa:

Symptoms	Number of Cases	Percentage
Pain	132	95.65
Itching in ear	128	92.75
Aural fullness/ impaired hearing	87	63.04
Otorrhoea	46	33.33

Fungal isolates encountered in our study is shown in Table 3. *Aspergillus* were the most common fungi isolated in 127 cases of which 81 were *Aspergillus Flavus*, 40 were *Aspergillus Niger* and 06 were *Aspergillus Fumigatus*, followed by *Candida albicans* in 08 cases.

Table 3: Fungal isolates in fungal otitis externa

Fungal isolates	Number of Cases	Percentage
<i>Aspergillus niger</i>	40	28.98
<i>Aspergillus flavus</i>	81	58.69
<i>Aspergillus fumigatus</i>	06	4.34
<i>Candida albicans</i>	08	5.79
<i>Candida species</i>	01	0.72
<i>Mucor species</i>	01	0.72
<i>Penicillium</i>	01	0.72
Total	138	100

Discussion

Fungal otitis externa is a superficial mycotic infection of the outer ear canal frequently encountered by otolaryngologist and can usually be diagnosed by clinical examination. However, the correct diagnosis requires a high index of suspicion and thorough evaluation. The infection may be either subacute or acute and is characterized by inflammation, itching, scaling and severe discomfort. The mycosis results in inflammation, superficial epithelial masses of cotton woolly debris containing hyphae or wet blotting paper appearance, suppuration and pain. In addition, symptoms of hearing loss and aural fullness are as a result of accumulation of fungal debris in the canal. *Aspergillus* and *Candida* species are the most commonly identified fungal pathogens in fungal otitis externa.^{5,6} Infections with *Candida* can be more difficult to detect clinically with otorrhoea because of its lack of a characteristic appearance as compared to its

appearance of wet blotting paper without otorrhoea and high degree of suspicion of candidial infection is to be suspected when otorrhoeais not responding to aural antimicrobial.⁷ Fungal otitis externa attributed to *Candida* is often identified by culture data. In this study, we found that fungal otitis externa is more common in females (60.86%,) than in males (39.14%). Similar results were observed in several other studies⁸. We found that fungal otitis externa was more common in adolescents and young adults between ages 11-40 years. We had 46% of the cases in patients of 11-40 years of age, which was similar to the results obtained by Kaur et al⁹. The occurrence of bilateral fungal otitis externa is very low¹⁰. In our study it was commonly seen in right ear, which almost correlates with Paulose K et al¹¹. Use of unsterile sticks and swabs for cleaning the Ear and use of oils and mixture of oils in Ear were the commonest predisposing factors as per our study. These results are in accordance with the study done by Mohanty¹² and Prasad SC¹³. Unsterile sticks may cause trauma (usually minor and hence unnoticed) for the skin of external auditory canal and deposition of fungi in the wound leading to fungal infection¹⁴. Fungal study shows mixed presence of fungi¹⁵ but the most common fungal isolate determined in our study belonged to the Taxon *Aspergillus* followed by *Candida*, *Mucor* and *Pencilium*. Among the *Aspergillus*, *Aspergillus Flavus* was the commonest isolate followed by *Aspergillus Niger* and *Aspergillus Fumigatus*. The moisture, warmth and change in acidic pH of the External Auditory Canal provide ideal growth requirements for the Fungi. *Aspergilli* have an optimum pH range of 5.7 at a temperature of 37 and this is conducive for all species of *Aspergillus*. Our observations regarding fungal isolates are in accordance with earlier studies¹⁶.

Conclusion

In our evaluation, it is concluded that the disease to be more common in females. The major predisposing factors being Trauma to the External

Auditory Canal and use of unsterile oil. Otolgia and Itching are the commonest symptoms. Aspergilli and Candida were the predominant Fungi isolated, as these fungi survive on exfoliated dead epithelial cells along with humid climate in External Auditory Canal. The study also concludes that Patients have to be educated not to use unsterile materials to clean the Ears which will be effective in prevention of Fungal otitis externa. Clinical suspicion should always be put on Mycological confirmation especially with otorrhoea to prevent bothersome complications and morbidity of Patients.

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