



Otomycosis: management challenges and outcomes in a resource poor country

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Abstract

Background: Otomycosis is one of the commonest causes of otitis externa seen in otorhinolaryngology clinics especially in tropical regions of the world. This is due to the high humidity, warm, and dusty weather that characterize these regions. This study determines the prevalence of otomycosis in Port Harcourt, Nigeria and highlights its management challenges and outcomes.

Patients and Methods: This is a retrospective study of patients seen in the Ear, Nose, and Throat clinics of the University of Port Harcourt Teaching Hospital, within a period of 5 years (from January 2009 to December 2013) who were diagnosed clinically with Otomycosis. Data extracted include; demographic data (age and sex), clinical features, predisposing factors, treatment and management outcomes. Data were illustrated using simple statistical tables and figures.

Results: Our study revealed that out of 7486 patients seen, 1115 were diagnosed clinically with otomycosis, indicating a prevalence of 14.9%. Of these, males were 553 (49.6%) and females 562 (50.4%) with M: F ratio of 1:1.02. The study showed that otomycosis had a dual peak, the first at age 1-10 years with 343 (30.7%) patients, and the second at age 21-30 years with 292 (26.2%) patients. The commonest 437 (39.2%) predisposing factor seen was prolonged use of antibiotic ear drops. The commonest 1108 (99.4%) symptom was itching in the ears followed by otalgia 998 (89.5%). The commonest 1113 (%) otoscopic finding was whitish debris in the external auditory canal.

The commonest 560 (50.22%) treatment modality used was ear syringing with warm normal saline + wick packing with antifungal cream + the use of antifungal ear drop. Majority (65%) of patients responded to treatment after 6 weeks of uninterrupted management with the various antifungal agents used in this study.



Conclusion: Properly diagnosing of otomycosis clinically and uninterrupted treatment using antifungal agents for 6 weeks after appropriate ear toileting can give good clinical outcome.

Keywords: Otomycosis, antifungal ear drops, aural toileting, humidity, fungal studies, resource poor country

INTRODUCTION

Otomycosis is a superficial fungal infection of the external auditory canal¹. It is also known as fungal otitis externa². It can be seen in the middle ear when there is a perforated tympanic membrane, and in an open mastoid cavity in a patient that had a mastoidectomy³. It is one of the commonest causes of otitis externa seen in otorhinolaryngology clinics in tropical regions of the world^{1, 2}. Although, the disease is seen worldwide³ the prevalence is considerably higher in the tropics and subtropics, due to the hot, humid and dusty weather that characterize this region.

Otomycosis presents with symptoms ranging from itching in the ear (pruritus), otalgia, aural fullness, ear discharge, tinnitus, and hearing loss. It is associated with inflammation which results in the exfoliation of epithelium lining external auditory canal, leading to accumulation of whitish debris which may show fungal hyphae⁴. Otomycosis can be acute, sub-acute, or chronic, but rarely a life-threatening infection⁵. Predisposing factors include conditions that can either cause changes in the lining of the epithelium or depress the immune status of the individual, such as swimming², bacterial infection², prolonged use of antibiotics⁴, trauma to canal skin⁴, cleaning of the wax² and the chronic use of steroids⁴.

Various fungal agents have been found to cause this infection. The commonest being among them is *Aspergillus* species followed by *Candida* species. The abundance of these thermophiles (*aspergillus* and *candida*), are related to the process of inflammation seen in the ear². However, other less implicated agents include *Penicillium*, *Mucor* and *Rhizopus* species⁴. Treatment modalities for Otomycosis include the use of antifungal medications, with or without local debridement in the form of ear syringing⁶, or micro-aspiration⁵.

The weather condition in Nigeria is one that promotes otomycosis. Some studies have been done on this disease entity, mostly in the western part of the country⁴ however, there is little or no



reflection of what its prevalence is in south-south region of the country where this study was carried out. Therefore, this study determines the prevalence of otomycosis in Port Harcourt, Nigeria and highlights its management challenges and outcomes.

PATIENTS AND METHODS

The study was a retrospective study of patients seen in the Ear, Nose, and Throat clinics of the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria within a period of 5 years (from January 2009 to December 2013) who were diagnosed clinically with Otomycosis. Data retrieved from their medical records include; demographic variables of age and sex, clinical features, predisposing factors, treatment and management outcomes. Data were analyzed using SPSS 19, and illustrated using simple statistical tables and figures.

The diagnosis was made based on the clinical history and findings during otoscopy. No fungal study was done to support the clinical diagnosis due to unavailability of the necessary materials in our center. Various antifungal agents used in the treatment include Locorten-vioform (cloquinone/ flumethasone) eardrops and cream, candibiotic (beclomethasonedipropionate/clotrimazole/lidocaine hydrochloride/chloramphenicol) ear drop, clotrimazole ear drop/cream. Period of treatment was taken as the length of time from the first clinic visit to the visit at absence of symptoms.

RESULTS

Of the 7486 patients seen in our clinic, 1115 (14.9%) were diagnosed with otomycosis. Out of this, males were 553 (49.6%) and females 562 (50.4%) with M: F ratio of 1:1.02. It had a dual peak with respect to age of occurrence. The first peak occurred at age 1-10 years accounting for 343 (30.7%) patients while the second occurred at age 21-30 years with 292 (26.2%) patients (table 1). The commonest 1108 (99.4%) symptom was itching in the ears followed by otalgia.998 (89.5%) (Table 2).The commonest 437 (39.2%) predisposing factor seen was prolong use of antibiotic ear drops (table 3). The commonest 1113 (%) otoscopic finding was whitish debris in the external auditory canal (Figure 1).

The commonest 560 (50.22%) treatment modality used was ear syringing with warm normal saline plus wick packing with antifungal cream and use of antifungal ear drop (figure 2). Majority (65%)



of patients responded to treatment after 6 weeks of uninterrupted management with the various antifungal agents used in this study.

Table 1: Age range of patients

Range (Years)	N (%)
< 1	64 (5.7)
1-10	343 (30.7)
11-20	101 (9.1)
21-30	292 (26.2)
31-40	149 (13.4)
41-50	98 (8.8)
51-60	39 (3.5)
61-70	22 (2.0)
71-80	7 (0.6)
Total	1115 (100)



Table 2: Patient symptoms at presentation

Symptoms	Number	Percentage (%)
Pruritus	1108	99.4
Otalgia	998	89.5
Tinnitus	403	36.1
Aural fullness	784	70.3
Otorrhoea	697	62.5
Hearing loss	735	65.9
Biting sensation in the ear.	326	34.6

Table 3: Predisposing factors

Predisposing factors	Number	Percentage %
Swimming	189	16.9
Prolong use of antibiotic ear drops	437	39.2
Use of ear phone	86	7.7
Immunosuppression	83	7.4
Excessive cleaning of ear	148	13.3
No identified risk factor	272	24.4

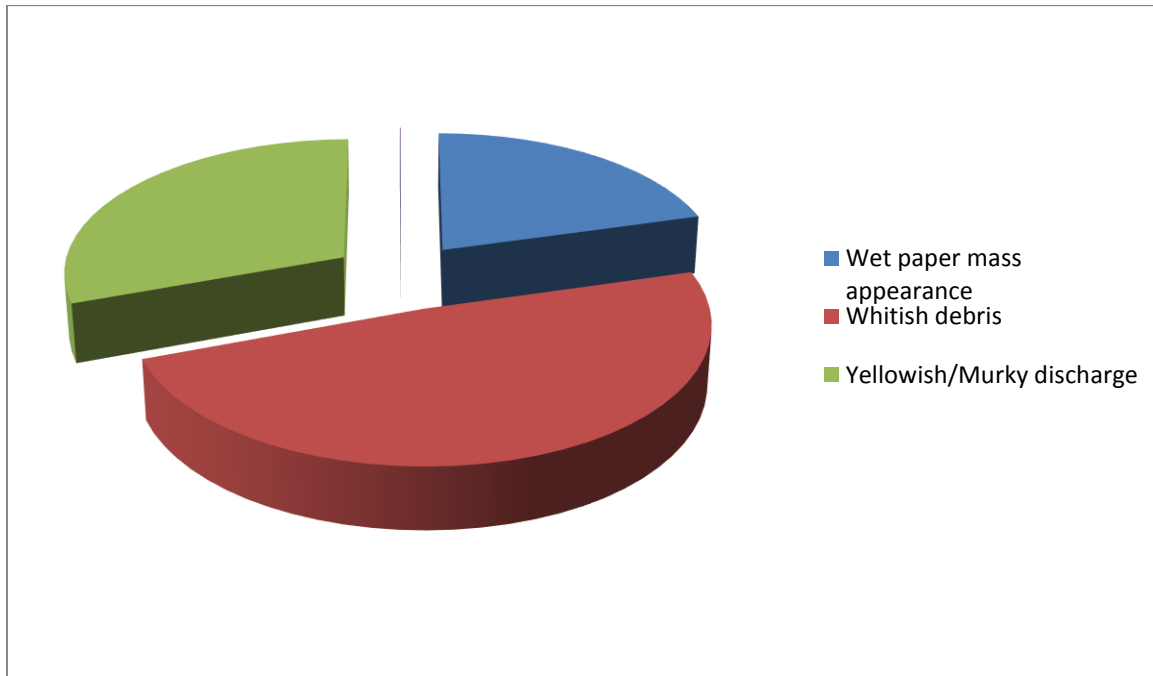


Figure 1: Otoscopic findings in the external auditory canal

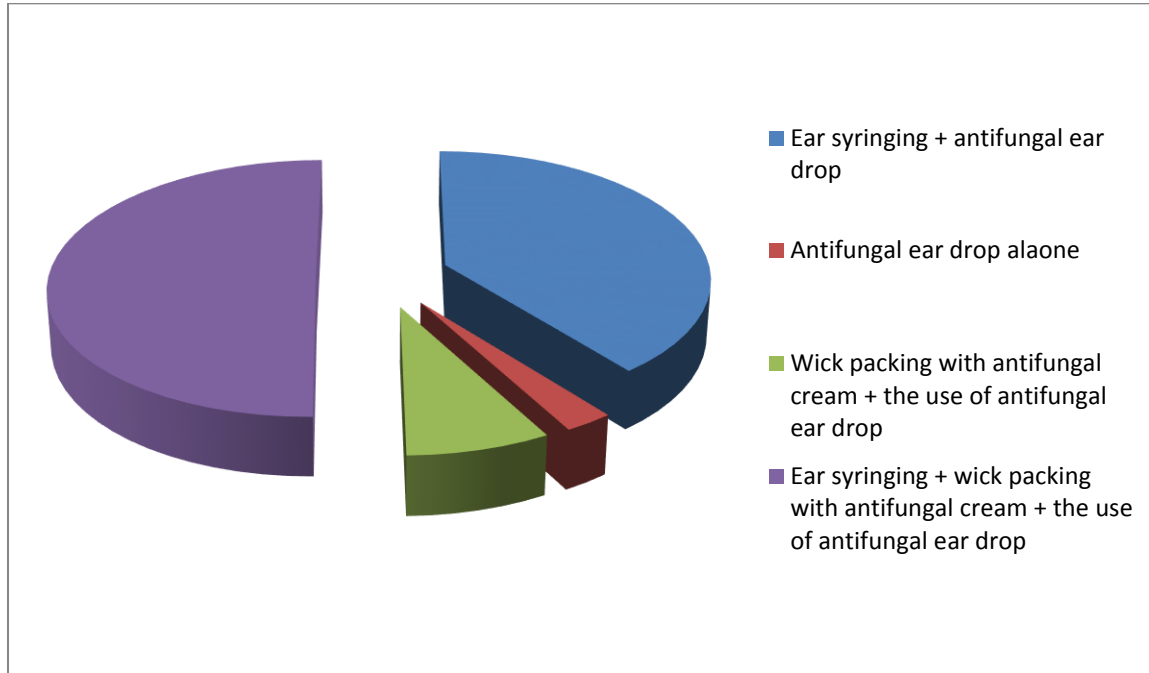


Figure 2: Modalities of treatment

DISCUSSION

The prevalence for otomycosis obtained in our study was higher than that obtained in a similar study by Fasunla et al carried out in Ibadan Western Nigeria.⁴ This may be attributed to the relatively higher humidity in the South-South of Nigeria. There was a slight female preponderance which was similar to the findings in the study by Panchal et al⁵ and Mgbe et al.⁶ This could be because females present themselves more for medical treatment, thus more cases seen with females in hospitals⁴. Some social and cultural practices such as the head scarf and hijab worn by some females can increase the humidity in the ear canal from a prolonged period of covering.^{5, 7,8} Furthermore, the practice of “washing and setting” of hair often done by females for hair beautification, increases the humidity in the ear canal when water enters into the ear canal.⁴

Some studies have found more males to have otomycosis than their female counterparts.⁴ This was attributed to the increased outdoor activities of the males. Studies carried out in areas where



females were restricted indoors gave a higher frequency of occurrence in males.^{3, 7, 8} These are all countries where their females have some level of restriction towards outdoor exposure or activities due to religious or traditional practices.

The dual peak of age of occurrence is corroborated by the findings of Pontes et al⁹, where 50% of the cases were diagnosed in patients aged 2-15years, and occurrence of 70%-41.1% in patients aged 16-30years. Factors responsible for the lower age peak can be attributed to the increased outdoor play of children at this age, both at home and in school.² *Aspergillus spp*, which is the commonest agents implicated in the cause of otomycosis by most researchers, is ubiquitous in sand or dust.^{4, 6, 10} On playgrounds, dust containing fungal spores, mix with air and act as predisposing agent for initiation of disease.³

However Panchal et al⁵ had a single peak at age 21-40 years. This is attributed to the fact that the age of their participants ranged from 20-65 years which excludes the younger age group. Satish et al⁷, also reported highest occurrence in age 21-30 years, while Fasunla et al⁴ noted peak occurrence in 20-49 years, Mgbe et al⁶ noted a peak occurrence at age 21-30 years. This finding is in keeping with our second peak at 21-30 years, which is the age when most individuals are most active in life. Swimming is in high practice in the South-South region of Nigeria, the people thrive in riverine occupations due to its coastal nature.

The commonest symptom was itching in the ears followed by otalgia. Similar findings were noted in the studies done by Mgbe et al in Calabar ⁶, Fasunla et al in Ibadan⁴ and Satish et al⁷ in India. However, Panchal et al⁵ and Farida et al had otorrhoea and otalgia respectively as their commonest symptom.

The commonest 437 (39.2%) predisposing factor seen in our series was prolong use of antibiotic ear drops. This was observed in patients with a perforated tympanic membrane, who have been on treatment with topical and systemic antibiotics. This has been reported in previous studies, especially from use of flouoroquinone ear drops.¹² Chronic and injudicious uses of antibiotic ear drops remain a likely source of predisposition to Otomycosis. These drops also alter the local environment, making it favorable for super infection by fungi.¹² Other predisposing factors noted in our study was excessive cleaning of the canal with sticks, pen covers, and contaminated fingers,



which predispose to otomycosis as a result of autoinoculation of ear canal in people with poor hygiene.^{4,12} It also breaches the lining epithelium, breaking the natural defense from such infections.^{8, 13, 14} In some cases there were no identifiable risk factors, which can be from inadequate records, a shortcoming of the retrospective study.

There were cases with background immunosuppression which increased their predisposition to otomycosis. This is in keeping with Fasanla et al findings where 6.08% had diabetes mellitus, 0.53% had retroviral infection, and 1.85% had malignancy.⁴

The commonest otoscopic finding was whitish debris in the external auditory canal. Others have found wet paper mass, black specks on whitish mass and dirty green mass obscuring the tympanic membrane as their predominant otoscopic findings.^{15,16,17,18} We are aware that a simple microscope can be used to view the hyphae of the fungus when the discharge or mass is prepared with potassium hydroxide. However, as simple as it may sound our department was not equipped to do such a side laboratory procedure. Furthermore, fungal studies were not done due to unavailability of the necessary materials in our Center at the time of study.

The commonest 560 (50.2.2%) treatment modality used in our series was ear syringing with warm normal saline + wick packing with antifungal cream + the use of antifungal ear drop. However, majority (65%) of patients responded to this treatment after 6 weeks of uninterrupted management. Other researchers have also reported similar experience in their management of otomycosis.^{4, 6, 10, 15} Notably, Mgbor and Gugnani in Enugu have used mercurochrome solution to successfully manage their patients with otomycosis.¹⁷

CONCLUSION

Properly diagnosing of otomycosis clinically and uninterrupted treatment using antifungal agents for 6 weeks after appropriate ear toileting can give good clinical outcome.

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