

## Otomycosis in Jos: Predisposing factors and management

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### Abstract:

**Background:** Otomycosis is a challenging and frustrating common Otolgic condition to both patients and managing clinician. This fungal infection most often involves the squamous epithelium of the external auditory canal and is characterized by pruritus, occasional otalgia and hypoacusis.

**Objectives:** To highlight the predisposing factors and management of Otomycosis in our center.

**Study design:** Retrospective review of 35 patients with a clinical diagnosis of otomycosis treated from January 2012 to March 2013.

**Setting:** The study was carried out at the Jos University Teaching Hospital, in the outpatient clinic of the department of Ear Nose Throat & Head

**Participants:** Thirty-five patients diagnosed with otomycosis had their medical data analyzed for this study.

**Intervention:** Antifungal eardrop was used for dressing the ears.

**Result:** 35 patients were seen within 15 months period (Jan. 2012- Mar. 2013). There were 11 males: 24 females given a gender ratio of 1:2.1. The commonest age group involved was 41-50 (25.71%). There were 13, 10 and 6 cases of right, left and bilateral cases of Otomycosis respectively. 16 cases were seen during the wet season and 19 cases during the dry season. In terms of occupation, house wives and civil servants constitute 28.60 and 17.15 % respectively. Diabetic mellitus was noted in 1 (2.86%) patient.

**Conclusion:** The predisposing conditions for Otomycosis are present in Jos environment and can usually be diagnosed by clinical examination. This study suggested that otomycosis found are predominantly unilateral, more common in older age group, in female mainly housewives, civil servants and Candida species is the most common causative organism implicated in causation of otomycosis and treated with

clotrimazole containing drugs. Discontinuation of antifungal agent is most appropriate in antibiotic induced otomycosis.

**Keywords:** Otomycosis; predisposing factors; management; Jos.

### Résumé :

**Contexte:** L'otomycose est une condition otologique commune, difficile et frustrant pour le patient et de même au clinicien en charge de sa gestion. Cette infection fongique implique le plus souvent l'épithélium du canal auditif externe et est ; caractérisé par un prurit, otalgie occasionnelle et hypoacousie.

**Objectifs:** Pour mettre en évidence les facteurs prédisposant et la gérance de l'otomycose dans notre centre.

**Concept d'étude:** Etude rétrospective de 35 patients avec un diagnostic clinique d'otomycose traité de Janvier 2012 à Mars 2013.

**Cadre:** L'étude a été exécutée à l'Hôpital d'enseignement universitaire de Jos, dans le dispensaire du département pour le traitement de l'oreille, du nez, la gorge et la tête.

**Participants :** Trente-cinq patients diagnostiqués avec otomycose avaient leurs données médicales analysés pour cette étude.

Goutte antifongique pour oreille a été utilisé pour traiter les oreilles.

**Résultat:** 35 patients ont été vus dans une période de 15 mois (Janvier 2012 - Mars 2013). Il y avait 11 hommes : 24 femelles ayant reçu une ration de sexe de 1 : 2.1. Le groupe d'âge fréquent impliqué était 41-50 (25.71%). Il y avait 13, 10 et 6 cas de droit, gauche et bilatéraux d'otomycose m respectivement. 16 cas ont été observés au cours de la saison humide et 19 cas pendant la saison sèche. En termes d'occupation, les femmes ménagères de foyer et les fonctionnaires constituent 28,60 et 17,15% respectivement. Le Diabète de Mellites a été noté dans 1 (2,86%) patient.

**Conclusion:** Les conditions prédisposant à l'otomycose sont présentes dans l'environnement de Jos et peuvent généralement être diagnostiqués par l'examen clinique. Cette étude suggère que les otomycose aperçus sont principalement

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unilatérales, plus fréquente chez les plus vieux groupe d'âge, dans le sexe féminin essentiellement les femmes de ménages, les fonctionnaires et l'espèce *Candida* est l'organisme responsable le plus commun impliqués dans la causalité des otomyose et traitée avec des médicaments contenant clotrimazole. L'arrêt de l'agent antifongique est plus approprié dans les otomyose induit par les antibiotiques.

**Mots-clés:** *otomyose; facteurs prédisposant ; gérance ; Jos.*

### Introduction

Otomycosis is a challenging and frustrating common Otologic condition to both patients and managing clinician, often running a protracted course and associated with frequent recurrence. This fungal infection most often involves the squamous epithelium of the external auditory canal, characterized by pruritus, occasional otalgia and hypoacusis. [1, 2]

Otomycoses though worldwide in distribution; are frequent in tropical and sub tropical countries of Africa, Middle East, Asia, Europe and South America especially in regions with frequent heat and high level of humidity. [3-6] 5 to 25% of otomycosis results in Otitis externa [7]

The Predisposing factors includes changes in ear pH and cerumen, bacterial infection, wearing hearing aid or ear prosthesis, minor ear trauma, swimming, broad spectrum antibiotics, steroids, neoplasia and immune disorders [8-10]. Although these predisposing factors are prevalent in our environment, there is limited information on their contribution to otomycosis in North-central Nigeria.

This study highlights the predisposing factors and management of Otomycosis in my center.

### Methods

#### Study Setting

The study was carried out at the Department of Ear Nose Throat(ENT) Head and Neck Surgery of the Jos University Teaching Hospital, Jos; Plateau State. The Jos University teaching Hospital is located within the City of Jos is in the North Central geopolitical zone of Nigeria. It is a cool and dry environment compared to the South - Western and South-Southern Nigeria. It has a population of five hundred and ten (510,000) people, a tertiary health facility. Apart from Jos

inhabitants, this center serves patients from neighboring states of Nassarawa, Benue, Adamawa, Taraba and parts of Kaduna.

#### Study design

Retrospective review of 35 patients with a clinical diagnosis of otomycosis treated from January 2012 to March 2013. Data sorted for were age, sex, occupation, predisposing conditions, species of fungus and antifungal agent used.

### Result

35 patients were seen within 15 months period (Jan. 2012- Mar. 2013), comprising 11 males and 24 females; given a gender ratio of 1:2.1. The age ranges was 4 months to 86yrs. The mean age was 21.5 yrs  $\pm$  2.48. The commonest age group involved was 41-50(25.71%) followed by 0-10(14.28%) years. Table. 1. There were 13, 10 and 6 cases of right, left and bilateral cases of Otomycosis respectively. Sixteen (16) cases presented during the wet season and 12 cases during the dry season. Table 2. In terms of occupation, house wives and civil servants constitute 28.60 and 17.15 % respectively. Fig.1. Diabetic mellitus was noted in 1 (2.86%) patient. Four (4) patients (11.43%) used Gentacin ear drop for otalgia 2 weeks prior to presentation.

### Discussion

This study is in favour of feminine gender with 68.6% suffering from otomycosis. This study was to determine frequency of established risk factors for otomycosis among our patient population, and evaluate treatment of otomycosis in our facility. We found that 68.6% of persons diagnosed with otomycosis during the period in review were females. This finding is close to that

**Table 1:** Age Group Distribution by Frequency of patients managed for otomycosis at the Jos University Teaching Hospital ENT Clinic (January 2012-March 2013).

S/No	Age Group (Years)	No. of patients	Percentage (%)
1.	0-10	5	14.28
2.	11-20	4	11.42
3.	21-30	3	8.57
4.	31-40	4	11.42
5.	41-50	9	25.71
6.	51-60	4	11.42
7.	61-70	3	8.57
8.	>70	3	8.57
Total		35	100



**Table 2:** Seasonal distribution of otomycosis presentation at the Jos University Teaching Hospital ENT Clinic (January 2012-March 2013).

S/No	Month of the year	No. of patients	Percentage (%)
1.	January – March	7	20.0
2.	April - June	5	14.3
3.	July - September	11	31.4
4.	October- December	12	34.3
Total		35	100.0

observed by Zaror *et al*<sup>[11]</sup> in Sao Paolo-Brazil where 65.0% of women were affected by otomycosis and Adoubryn *et al* in Cote d’ivoire with predominant female gender of 1:2. In contrast, Kaur<sup>[13]</sup> and Ho *et al*<sup>7</sup> in India and Houston Texas respectively found male dominances of 60.0 and 56.0% respectively.

The age range from our study was 4 months to 86.0 years with a mean of 21.5 yrs +\_ 2.48. The commonest age group involved was 41.0-50.0(25.7%) followed by 0.0-10.0(14.3%) years. Table 1. Zaror *et al*<sup>[11]</sup> had lower age of 2.0 years, our finding of 4 months in this study was much younger; their commonest age group agrees with our second commonest age group of our under 20's but differ from ours with lower maximum age of 66.0 years compared to 86.0 years found in our study. In contrast to our commonest age group, studies by Desai,<sup>[1]</sup> Fasunla<sup>[9]</sup>, Pontes<sup>[14]</sup>, Aneja<sup>[15]</sup> and Jamro<sup>[16]</sup> *et al* respectively reported Otomycosis as being commoner in the lower age group of 16.0-30.0 and 21.0-40.0 years.

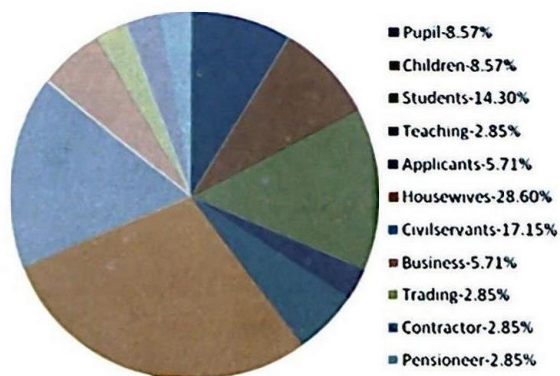
In considering the sites of involvement, there were 13, 10 and 6 cases of right, left and bilateral cases of Otomycosis respectively. Unilateral ear therefore constitutes 23(65.7%) cases against 6(34.3%) cases (12 ears). Our study

suggests that unilateral cases are commoner than bilateral cases. This finding agrees with Desai<sup>1</sup> and Jamro<sup>[16]</sup> *et al* even though Jamro and co had higher figure of 91.0% of unilateral cases.

Our lower bilateral cases of 34.3% is also in abeyance to the findings by Yehia<sup>[4]</sup>, Ho<sup>[7]</sup>, Zaror<sup>[11]</sup>, Kaur<sup>[13]</sup> *et al* but they had lower values of 7.0-20.0% in comparison. Though unilaterality may be associated with handedness of many populace, however no reason was found in this study.

In terms of occupation, house wives and civil servants constitute 28.60 and 17.15 % respectively in this study. Fig. 1. The finding in this study is in accordance with that by Desai<sup>[11]</sup> *et al* in India who noticed higher incidence in House wives leaving in damp environment and cold conditions of housing which encourages fungal growth followed by farmers attributed to unhygienic cleaning of ears canals with dirty fingers, hair pins and match sticks, but their second place occupation contradicts that of our second place civil servant observed in the present study.

Based on seasonal variation, 11(31.4%) cases were seen during the middle of wet season out of the total of 16(45.7%) cases observed in the rainy season and 12(34.3%) cases during the early dry season out of 19(54.3%) cases during the entire dry season. Table 2. This seasonal incidence is only at slight variance with dry season having an upper edge. Unlike the observation by Desai<sup>[11]</sup>, Pontes<sup>[14]</sup> and coworkers who noticed higher preponderance in the rainy season and summer, this study is in alliance with Barati<sup>[17]</sup> and Ahmad<sup>[18]</sup> *et al* in Iran where they had more occurrences in the dusty dry season or autumn. However, the close difference may be due to the fact that the symptoms may start in the rainy season; but patients did not present on time to the clinic until dry season.



**Fig. 1:** Frequency of distribution of occupation.



Most of our diagnosis were clinical in 31(88.0%), only 4(11.4%) had *Candida Species* as an incidental finding following request for bacteriology. The symptoms were mainly otalgia in 32(91.4%) and pruritus in 34(97.1%) and otorrhoea in 25(71.4%) at presentation with whitish fine finger-like growth or wet newspaper appearance. This presume diagnosis agrees with some literate findings by Ho<sup>[7]</sup>, Kaur<sup>[13]</sup>, Pontes<sup>[14]</sup> and Jamro<sup>[16]</sup> and fellow workers who followed up with positive cultures ranging from 19.4-74.4% only. The predominant *Candida Species* concurs with the work of Adoubryn<sup>[2]</sup> and co at Abidjan where they had *Candida species* as the commonest fungus but in lesser amount of (47.7%) compared to this study and with specific species of *Aspergillus flavus* (28.4%) but; strongly disagrees with Desai<sup>[11]</sup>, Yehia<sup>[4]</sup>, Kaur<sup>[13]</sup> and Jaiswal<sup>[19]</sup> and colleagues respectively who all had *Aspergillus species* as predominant isolate ranging from 90.0-50.0%.

Diabetic mellitus was the only systemic factor noted in 1(2.84%). This is in tandem with Ho<sup>[7]</sup>, Jia<sup>[20]</sup>, and colleague in Shanghai, Ozcan<sup>[21]</sup> and Fasunla<sup>[9]</sup> and colleagues respectively in Turkey and Ibadan, South Western Nigeria.

Otological antibiotic use prior to presentation was noticed in 4(11.43%) cases that had otalgia and prescribed Gentamicin ear drop from medical stores. Similar cases of aural antibiotic use leading to otomycosis was noticed by Ho<sup>[7]</sup> and in significant quantity by Fasunla<sup>[9]</sup> who had 52(13.76%) in Ibadan, Nigeria.

The treatment consists of aural toileting, application of combined topical antifungal preparation mainly clotrimazole, Chloramphenicol, lignocaine hydrochloride, Beclomethasone, glycerine (Candibiotic<sup>®</sup>) in 98.0%, Clotrimazole/Fluomethasone (locacortenvioformes<sup>®</sup>) in 2.0%. This agrees with Mgbe<sup>[22]</sup> and Ologe<sup>[23]</sup> *et al* in South-Southern and South Western part of Nigeria where both drugs were used but Mgbe differ in the additional use of Gentian violet in their study. It also contradicts Mgbo<sup>[24]</sup> and co and Shraga<sup>[2]</sup> *et al* in South Eastern Nigeria and Israel respectively where mercurochrome and Griseofulvin were their choice of treatment. For the Otological antibiotic

induced otomycosis; both antibiotic and antifungal agents were discontinued together with only aural toileting carried out and mycosis resolved within 2 weeks. Ho<sup>[7]</sup> and co applied similar measure with resolution of antibiotic induced otomycosis.

## Conclusion

The predisposing conditions for Otomycosis are present in Jos environment and otomycosis can usually be diagnosed by clinical examination. This study suggested that otomycosis found are predominantly unilateral, more common in older age group, in female mainly housewives, civil servants and *Candida species* is the most common causative organism implicated in causation of otomycosis and treated with clotrimazole containing drugs.

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**Conflict of Interest:** None declared.

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