Otomycosis: A study from a tertiary care center

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ABSTRACT

Introduction: Otomycosis is a superficial mycotic infection of the external auditory canal that is caused by opportunistic fungi. It is common fungal infection of the ear that is world wide in distribution. It presents with nonspecific symptoms of itching, earache, ear discharge, hearing loss, aural fullness and tinnitus. Objective: To isolate and identify the fungal pathogen causing otomycosis and predisposing factors for otomycosis in our study. Materials and Methods: We conducted a hospital based cross sectional study which includes clinically diagnosed 246 patients attending ENT Out Patient Department of SRM Medical College Hospital and Research Centre. Out of 246 patients 36 were immunocompromised and remaining were immunocompetent. Each patient were studied for gender, age, presenting symptoms, site and fungal species identified. Result: Out of 246 patients 143 were female and 103 were male. In our study age group between 31-40 years were more affected. The infection was found to be unilateral in most of the cases in which right side of ear was more affected as compared to left. Diabetes mellitus (72.22%) was the most common disease among the immunocompromised patients. In our study among immunocompromised patient candida (47.22%) was the commonest and among immunocompetent patients Aspergillus niger (61.81%) was the commonest isolates. Conclusion: In this study we found that otomycosis is more common in females than males. Aspergillus niger is the major etiological agent. The major predisposing factors for otomycosis are trauma to the EAC, use of ear drops, unsterile oil and immunocompromised status. Treatment of otomycosis is mandatory to prevent recurrence.

Key words: Otomycosis, Aspergillus, Candida, KOH mount

INTRODUCTION:

Otomycosis is an acute, sub acute or chronic fungal infection of the Pinna, the external auditory meatus and the ear canal. The infection is usually unilateral and characterized by inflammation, pruritis, scaling and severe discomfort such as suppuration and pain. Andrall and Gaverret were the first to describe fungal infections of the ear. Approximately over 200 species can affect man. It is estimated that otitis externa makes up 5 to 20% of ear related visits to ENT; most of them caused by bacteria and in 9-25% otomycosis is the causative agents. The fungal agents responsible for this clinical entity are found as saprobes in the environment.

Various fungi which contribute to otomycosis includes saprophytic fungi, Aspergillus niger, A. fumigatus, A. flavus, Penicillium, Mucor, Rhizopus. In addition candida spp among yeast is most common. Predisposing factors of otomycosis includes chronic infection of ear, use of oils, ear drops, excessive accumulation of cerumen, steroids, swimming, fungal infection elsewhere in the body like dermatomyositis or vaginitis, immunocompromised state, malnourishment in children and hormonal changes precipitating flaring up of the infection as seen during pregnancy or menstruation. Following above mentioned factor encourages infections like changes in epithelial covering, increase in pH of bathing, alteration of cerumen, systemic factors(alteration in immunity, debilitating disease, steroids, antibiotic, neoplasia), environmental factor, Chronic secretory otitis media, broad spectrum antibiotic therapy, history of bacterial infections etc.

An immunocompromised host is more susceptible to otomycosis. Patient with AIDS, diabetes, lymphoma, and patients undergoing or receiving chemotherapy are at increased risk for complication for otomycosis. Pathologically, fungal infection of the EAC and TM lead to small intradermal abscess. Hemorrhagic granulations can cause thrombosis of adjacent blood vessels leading avascular necrosis and perforation of TM.

MATERIAL AND METHODS:

Hospital based cross-sectional study was done where the symptomatic patients suspected to otomycosis were sampled from SRM Medical College Hospital & RC, Kattankulathur, tamilnadu, India during the period from December 2012 to October 2013.
Inclusion criteria:
The study included patients of all age group and either sex with clinical diagnosis of otomycosis.

Exclusion criteria:
Only new cases of otomycosis was taken for the study. The patients who were already on treatment for otomycosis were excluded from the study.

Mycological study was carried out on debris, scrapping or exudates samples from auditory canal(s). Two cotton swabs were also used for sampling from ear, one for direct examination and another for culture. Direct microscopic examination was carried out for detection of fungal elements. For this KOH (10%) and Gram stain were used. For culture samples were inoculated on Sabouraud’s Dextrose Agar (SDA) with antibiotic (gentamicin) and incubated at 25°C and 37°C for minimum period of 4 weeks. Culture tubes were examined for growth every 2-3 days. Identification was done by direct microscopy from culture growth by using LactoPhenol Cotton Blue (LPCB) mount preparation and Gram stain. Slide culture were done to differentiate the morphology and detection of chlamydospore formation on Corn meal agar.

RESULT:
Total 246 number of clinically diagnosed samples were collected from the ENT department from SRM Medical College Hospital and Research centre. In our study the predominant complaints includes itching, ear discharge, blocking of ear, loss of hearing, earache and tinnitus. These patients were not having any history of such ear pain or otitis media before.

Age and sex distribution

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10 yrs.</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>11-20 yrs.</td>
<td>13</td>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>21-30 yrs.</td>
<td>31</td>
<td>39</td>
<td>70</td>
</tr>
<tr>
<td>31-40 yrs.</td>
<td>37</td>
<td>66</td>
<td>103</td>
</tr>
<tr>
<td>41-50 yrs.</td>
<td>16</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>&gt;51 yrs.</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>143</td>
<td>246</td>
</tr>
</tbody>
</table>

Laterality distribution in study population:
In this study the incidence of otomycosis was 95.12% unilateral in which the right side showed 136(58-11%) predominance over the left side 98(41.88%). Bilateral involvement was seen in 12(4.87%) of the cases, among which 9 were immunocompromised individuals.

Fungal isolates in the immunocompromised group and immunocompetent group in study population
In our study out of 246 samples 201 showed culture positive. Among which 165 were from immunocompetent patients and 36 were from immunocompromised patients.

Associated medical history:
The above graph shows the list of associated medical history, in which 36 were immunocompromised patients. Diabetes was the commonest seen in 26 followed by cirrhosis(5), on steroid therapy(2), HIV (2) and patient who were on post transplant(1).
Correlation between KOH preparation and culture

<table>
<thead>
<tr>
<th>KOH positive</th>
<th>KOH negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture positive</td>
<td>190</td>
<td>11</td>
</tr>
<tr>
<td>Culture negative</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>53</td>
</tr>
</tbody>
</table>

DISCUSSION:
Otomycosis infection can be acute or sub acute and is characterized by itching, earache, blocking sensation and discomfort. This infection is worldwide in distribution but more common in tropical and subtropical region. An analysis of the age group revealed that otomycosis can affect any age from one year through more than 80 years. Whereas the incidence was found to be low below 10 years and above 50 years. In our study the incidence was high in the age group 31-40 years.

The current study demonstrated that otomycosis occurred in 81.70% of the suspected patients. In this group 190 cases were smear and culture positive, where as 11 cases were smear negative but culture positive for fungal elements. 4 samples didn’t show any growth on media though they were positive for fungal elements on direct smear, probably because of stringent requirement of fungi for some essential nutrient. Females were affected more than the males and such finding was consistent with studies conducted in other part of the world. But Kaur et al and Than et al observed that otomycosis was more common in young men then female.

Otomycosis is predominantly unilateral. Our study showed unilateral involvement in 95.12% which almost correlates with Paulose K et al study (87%). Right ear involvement was more common in our study which corresponds to the study described above. Bilateral involvement was seen only in 8 cases of immunocompromised patients and 4 cases from the immunocompetent patients. In this study immunocompetent patients were found to be more infected with otomycosis. Among the immunocompromised patients in our study Candida was seen in 47.22%which correlates with the study done by Viswanatha B et al. Whereas in immunocompetent group Aspergillus niger (50.74%) was found to be commonest etiological agent. In a study carried out by Chander et al. A. niger was the commonest cause of otomycosis in 57.5% of cases.

CONCLUSION:
Otomycosis is fungal infection of the external auditory canal that is frequently encountered in patients attending otolaryngology clinics. In our study, we found the disease to be more common in females. The major predisposing factors for otomycosis are trauma to the EAC, use of ear drops, unsterile oil and immunocompromised status. Though the disease is unilateral even bilateral involvement is seen in immunocompromised groups. Microscopic smear examination cannot be taken as evidence of negativity for fungal presence and has to be confirmed with culture investigation of the specimen. Predisposition of otomycosis and subsequent relapse is clearly connected to individual predisposing factors localized in external auditory canal and with indiscriminate use of topical antibiotic. Treatment of otomycosis is mandatory to prevent recurrence.

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