MYCOLOGICAL STUDIES IN
15 CASES OF OTOMYCOsis

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ABSTRACT
Otomycosis is a subacute or acute superficial mycotic infection of the outer ear canal that is caused by opportunistic fungi. The infection is usually unilateral and characterized by inflammation, pruritus, scaling and severe discomfort such as suppuration and pain. In this study 15 patients (11 female and 4 male) with symptomatic otomycosis were confirmed by direct microscopy and cultures. The most common fungal pathogens were Aspergillus niger (8 cases) followed by A. flavus (2 cases), A. fumigatus, Penicillium spp., Candida albicans, C. parapsilosis and Rhizopus spp. each 1 case.

KEY WORDS: Otomycosis, Aspergillus niger, Aspergillus, Penicillium, Candida, Rhizopus.

INTRODUCTION
Otomycosis is an acute, subacute or chronic fungal infection of the pinna, the external auditory meatus and the ear canal. However the disease may occur in the middle ear in case of perforated tympanic membrane. Infection is caused by some species of the saprophytic fungi, such as moulds and yeasts; especially Aspergillus niger. Other etiologic agents include: A. flavus, A. fumigatus, Allescheria boydii, Scopulariopsis, Penicillium, Rhizopus, Absidia and Candida spp. In addition, otomycosis is a secondary infection deals to predisposing factors such as bacterial otitis externa corticosteroids therapy and swimming. The presenting symptoms include: scaling, pain, pruritus and erythematous, etc. Wax formation can occur in both temperate and tropical environment. The prevalence of disease is greatest in hot, humid and in dusty areas. In this study, fungal agents, predisposing factors and sex distribution for otomycosis were investigated.

PATIENTS AND METHODS
Fifteen patients attending at the Jahad and Razi Laboratories supposed to be suffering from disease were involved in this investigation. It included 11 female (73.3%) and 4 males (26.7%). The ages of the patients ranged between 4-30 years with a mean of 17 years. All patients had one or more of the aural symptoms (itching, otalgia, hearing loss). Secretion and pus were collected from the ear by two sterile cotton wool swabs. One swab was used for direct microscopy and other for culture examination. Direct examination of the samples was carried out by staining the smears with methylene blue and Gram techniques. Otomycosis was confirmed by the presence of asceptate mycelium, septate mycelium, Aspergillus conidia, fruiting bodies, yeast and pseudohyphae (Figs 1-4). The presence of fungal elements in stained smears was re-confirmed by fungal culture fungal colonies. Any kind of clinical materials, especially liquid samples (swabs, pus) should be examined as quickly as possible. Swabs did not require processing and were directly used for
Otomycosis

culture. Swabs were rolled and inoculated over
the surface of Sabouraud’s Dextrose Agar with
chloramphenicol (SC). Cultures were
incubated at laboratory ambient (25-27°C) for
2-3 weeks, aerobically. Fungal isolates (moulds)
were identified on the basis of colonial
morphology and slide cultures. Yeast colonies,
also detected by germ tube test, production of
chlamydoconidia on corn meal agar and API
20 C AUX system.

RESULTS

This report includes 15 patients with
otomycosis. Mycelial elements, branching
mycelium, fruiting heads and brown spiny
conidia were observed in 12 samples. In the
direct smears of 8 patients and growth besides
in the culture medium showed A. niger. In
direct smears of 4 patients septate branching
mycelium conidia were seen and isolated
species from the culture medium were as
follow A. flavus (2 cases), A. fumigatus (1),
Penicillium Spp., (1). The direct smears of two
patients showed yeast cells, budding cells and
pseudo hyphae while in the culture medium C.
albicans and C. parapsilosis had grown re-
spectively. Broad aseptate mycelia were also seen
in direct smear and yielded Rhizopus Spp. in
culture. (Table-I)

DISCUSSION

Otomycosis occur more commonly in female
(especially housewife) than male and our find-
ing confirmed the results other researcher’s
have reported.5,7 Out of 15 patients, 11 were
female and 4 male. Otomycosis usually occurs
most frequently in adults, and less in children.3,7
In our study, we found that otomycosis was

<table>
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Fig-1: Yeast and budding cells.

Fig-2: Spiny brown conidia of A. niger.
more common in young men which is similar to the findings of the other researchers.\textsuperscript{2,3,5} Nine patients were housewife; two patients one each were student and baby. Four cases (male) had miscellaneous occupations.

Infectious mould agents which are present in environment including: \textit{A. niger}, \textit{A. flavus}, \textit{A. fumigatus}, \textit{Penicillium}, \textit{Scopulariosis}, \textit{Rhizopus}, \textit{Mucor}, etc. \textit{A. niger} has been reported as the most common causes of otomycosis. In two studies on otomycosis in Babol and north-western area of Iran, \textit{A. niger} was major cause of cases.\textsuperscript{7,8} Ozcan et al.\textsuperscript{2} and Hurst\textsuperscript{9} reported \textit{A. niger} as a major etiologic agent of otomycosis in Turkey and Australia, respectively. However in Kaur et al.\textsuperscript{3} study \textit{A. fumigatus} was reported as major agent, followed by \textit{A. niger}. Other species of \textit{Aspergillus} that have been associated with otomycosis are \textit{A. flavus}.\textsuperscript{5} Also \textit{Penicillium} Spp. has been reported by Pavelenko.\textsuperscript{10} Other fungi that have been associated with otomycosis are \textit{C. albicans} and \textit{C. parapsilosis}.\textsuperscript{5} In this study \textit{A. niger} was the most common isolate, followed by \textit{A. flavus}.

Otomycosis is a secondary infection of the ear and predisposing factors are responsible for the invasion of fungi. Secondary bacterial infection was one of the most common predisposing factors in the history of our patients followed previous antibiotic therapy for one to four months duration and lastly swimming was the causative factor. These factors may differ from region to region. Our patients were admitted in the spring and summer, when it is hot and humid in Ahwaz. In three patients an impairment of hearing (deafness) were observed too. All patients were refereed for treatment to physicians.

**CONCLUSION**

In this study we found that otomycosis is common in female than male and \textit{A. niger} is the major etiologic agent in Ahwaz.

**REFERENCES**