Otomycosis In The Fishermen Community: A Survey At Bénisaf Harbour, Aïn Témouchent, Algeria

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Abstract
Otomycosis, is called “swimmers ear”, it is a common ear disease in moist environment. The aim of this survey was to detect otomycosis among the fishing community of Bénisaf harbour, Ain-Témouchent (Algeria). The study involved 220 artisanal fishermen, 18 specimens of ear swabs, and ear scrapings from individuals with clinical otitis were examined from June to August 2015. These specimens were submitted for mycological investigation for reasons such as pruritus, ear blocking or tinnitus. Prevalence of otomycoses among fishermen with otitis was 38.9% (7 positive cases). The maximum of positive patients was seen in the age group above 41 years (57.1%), and 57.1% of positive cases had over 21 years’ experience of working as a fisherman. Candida genus was the most encountered fungi (57.14%), followed by moulds (42.58%). Fishermen work in aquatic environment and are exposed to heat and moisture.

In summary, this study demonstrates that the diagnosis of otomycoses among fishermen requires vigilance from clinician given its non-specific symptoms.

Keywords
otomycosis, fishermen, candida, Algeria

Introduction
Andrall and Gaverret were the first to describe fungal infections of the ear, otomycosis is a superficial fungal infection of the outer ear canal¹, the disease is worldwide in distribution with a higher prevalence in the hot, humid and dusty areas of tropics and subtropics²-⁵. Prevalence is estimated that approximately 5-25%⁶.

Various factors have been proposed as predisposing factors of otomycoses, including a humid climate, and swimming⁷,⁸.

Most patient suffering from otomycoses complain of severe itching which often progress to pain, or hearing loss. Since clinical features are not specific, laboratory diagnosis is important to know the exact aetiology of otomycosis to institute appropriate antifungal therapy.

Aspergillus niger and Candida albicans are by far the most common fungi encountered⁹.

Otomycosis is not an uncommon problem in Algeria, but little has been done in the way of characterisation of the etiological agents. This report presents a review of the species of fungi isolated from suspected cases of otomycosis in artisanal fisherman community of Bénisaf harbour, Ain-Témouchent.

Material and methods
A cross sectional study was done in Bénisaf harbour, during 3 months from June to August 2015.

The study involved 220 artisanal fishermen who attended the medical consultation at occupational health service of Bénisaf harbour.

Among artisanal fishermen, there were a total of 18 patients with clinical otitis based on otoscopic findings, which were included in the study.

Data were collected on age, professional experience by years and clinical signs.

Samples were collected from external auditory canal of patients with the help of sterile cotton swab, and scraping, direct microscopic examinations of obtained specimens were carried out in the department of parasitology-mycology of “Hassani Abdelkader” hospital, detection of fungal elements was performed by using KOH, and Blue Lacto-Phenol.

All specimens were inoculated onto duplicate tubes Sabouraud’s Dextrose Agar, SDA and incubated at 25°C and 37°C for a minimum period of 6 weeks.

Culture bottles were examined for presence of growth every 3-4 days.

Fungal isolates were identified by a combination of their macroscopic and microscopic criteria as described in the mycology note books¹⁰-¹⁵, biochemical Auxcolor® tests were used to identify yeasts that failed to produce filaments in serum.

Results
A total of 18 specimens were collected from patients with otitis based on clinical featuresFigure 1 and otoscopic

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4 Hospital of Bénisaf, Ain-Témouchent, Algeria
results, the prevalence of otomycoses among fishermen with clinical otitis was 38.9% (7 cases were positive for fungal elements).

The maximum of positive patients rate was seen in the age group above 41 years (57.1%).

57.1% of positive cases had a professional experience of 21 years or more as a fisherman, 28.6% had an experience between 11 and 20 years, and 14.3% had professional experience of less than 10 years.

Clinical signs of positive cases were pruritus (85.7%) and tinnitus (14.3%).

Out of 18 specimens collected, 7 (38.9%) specimens yielded single organism. *Candida sp* was the predominant species (n=4; 57.2%) (Figure 1) among total fungal isolates,

Aspergillus candidus, Acremonium sp, Penicillium sp were other fungi isolated in this study Table 1.

Concomitant onychomycosis was found in two cases, fingernails onyxis were caused by *Candida albicans* and *Acremonium sp*.

Figure 1. Macroscopy of otomycosis in a fisherman (A), direct examination with blue Chloral-lactophenol wet amount X10, (B), Candida albicans cultures (C)

Table 1. Species isolated from the external auditory canal

<table>
<thead>
<tr>
<th>Culture</th>
<th>positive cases (nbr)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candida sp</td>
<td>2</td>
<td>28.60%</td>
</tr>
<tr>
<td>Candida albicans</td>
<td>1</td>
<td>14.30%</td>
</tr>
<tr>
<td>Candida parapsilosis</td>
<td>1</td>
<td>14.30%</td>
</tr>
<tr>
<td>Aspergillus Candidus</td>
<td>1</td>
<td>14.30%</td>
</tr>
<tr>
<td>Acremonium sp</td>
<td>1</td>
<td>14.30%</td>
</tr>
<tr>
<td>Penicillium sp</td>
<td>1</td>
<td>14.30%</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>100%</td>
</tr>
</tbody>
</table>

Discussion

*Bénisaf* (35° 18’ 08” north, 1° 23’ 01” south), is a town on the west coast of Algeria. Its population is composed by 42,284 inhabitants. This area has a particular geographical condition with moderate and subtropical climate with 85% relative humidity, 18 °C average temperature and 401 mm annual rain fall.

The current study showed a relatively high prevalence of otomycoses amongst fishermen community (38.9%). In a study conducted in coastal region of Iran, maximum numbers of positive patients were from fishermen community and the prevalence of otomycosis was 82%16; another study was conducted by Prasad and al., in a rainy and humid coastal city in south India and the prevalence of otomycosis was 63%17.

Predominant otomycosis was found in age group above of 41 years, which is in accordance with other studies in Mediterranean Sea18.

Beany and Broughton have attributed the greater frequency of otomycosis in the tropical countries to changes in the composition of cerumen induced by sweating, physical effort will dissolve cerumen especially in summer, this will reduce the protective properties of the skin of auditory canal19-21.

Other contributing factors to external otitis are the absence of protective coating of cerumen by repeated washing, cleaning ear canal, or swimming. The fishermen work in aquatic environment and prolonged water exposure and wetness predispose to fungal infection7,21-24; moreover, excessive moisture and ear trauma, both impair the ear canal’s natural defences9.

The Mediterranean basin has been identified as a major source of moisture and precipitation to the surrounding land area and to the basin itself18, this may explain high prevalence of otomycoses in Bénisaf, fishermen are also exposed to wind another risk factor for otomycosis9,18,25.

A high incidence of otomycosis has been reported among turban users6,9,26; it’s a common predisposing factor for development of otomycoses and most fishermen wear hats and caps which increases humidity and heat around the ears26.

The study showed that most common symptoms of otomycosis is pruritus (92%); this is in agreement with other studies5,18,27 and specially in humid coastal cities17,18, in our study itching was followed by tinnitus (8%), only unilateral involvement was found, this is in accordance with the study conducted by Fontes et al.28; furthermore, the occurrence rate of bilateral otomycosis is low10.

In our sample, *Candida sp* were the most predominant (57.2%; n=4); among total fungal isolates, this is in accordance with other studies; Candida is the most frequent agent of otomycosis in the Mediterranean environment18.

In Abidjan another coastal town *Aspergillus flavus* was the most common fungi followed by *Candida sp*, swimming was the main factor risk23.

Other etiologic agents include *Acremonium sp* and *Penicillium sp*9,16, in accordance with our results.

*Aspergillus candidus* was encountered in the coastal country of Cadiz in Spain (7.1%)29, and fungal infections were the most common skin disorder in the fishermen community of Morocco40.

Conclusion

In our study, a relatively high prevalence of otomycosis has been encountered in the fishing community of Bénisaf Harbour. The diagnosis of otomycoses among fishermen requires vigilance from clinician given its non-specific symptoms. Candida species were found to be the commonest fungi involved in otomycosis.

This is a neglected pathology, part of the reason for this is that the symptoms of otomycosis are not fatal. Educating the fishermen population about the risks of otomycosis is an important concern and needs to be addressed.

Acknowledgements

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Conflicts of interest

None to declare

References