Isolation of opportunistic fungi from skin samples at Gwalior, Madhya Pradesh, India

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**Abstract**

Mycosis is one of the commonest finding in India during rainy season. It is generally believed that the largest no. of mycotic cases occur in humid climatic conditions. A mycological study was conducted on 168 cases for the isolation of opportunistic fungi from skin infection in Gwalior (M.P). Direct microscopy by KOH mount and culture was undertaken to isolate the fungal pathogen in each case. 143 out of 168 cases were positive by direct microscopy in which 125 were positive by culture. Opportunistic fungi isolated from 72 patients, out of which 56 patients were male and 16 were female. The commonest age group for skin infection involved was 30-40 yrs. Non-dermatophytic fungus like *Aspergillus niger* was the most common clinical presentation and isolated in 15 cases and *Candida* species were isolated in 28 cases. It was concluded that opportunistic fungi are emerging as important causes of skin infection.

**Keywords:** opportunistic fungi, skin, infection, *Candida*, *Aspergillus niger*

**Introduction**

The incidence of fungal infections is increasing at an alarming rate, presenting an enormous challenge to healthcare professionals (Jain et al., 2010). The high prevalence of superficial mycotic infections shows that 20-25% of the world’s population has skin mycoses, making these one of the most frequent forms of infection (Havlickova et al., 2008). Fungal infections are extremely common in the tropical region and some of them are serious and even fatal. They produce diverse human infections ranging from superficial skin infections to internal organ invasion (systematic disease) (Patel et al., 2010). An increasing number of dermatophytes have been recognized as agents of skin infections in humans. Skin infections can also be caused by non-dermatophytic fungi and yeast-like fungi. In view of this consideration, the present study was designed with a view to see the occurrence of the opportunistic fungi causing skin infection in Gwalior.

**Materials and Methods**

In the present study, 168 cases were studied from the patients of local district hospital, Gwalior (M.P). Detailed history of the patients was taken and was examined clinically. Lesions were cleaned with 70% alcohol before collecting samples. Material was collected by scraping outwards from the edges of the lesions with a blunt scalpel blade. Direct microscopic examination was undertaken in 10% potassium hydroxide (KOH) wet mount for the specimens of skin scales. Fungal pathogens were isolated on Sabouroud’s dextrose agar (SDA), chloroformencil was added to inhibit bacterial growth. The plates were incubated for 3-7 days at 25°C and yeast was incubated for
48 hrs at 37°C after which the colonies were studied. The samples were identified on the basis of cultural, morphological and biochemical tests and special tests like chlamydospore formation and germ tube tests were performed using the literature of various manuals (Known-Chung and Bennett, 1992).

Table 1. Isolation of opportunistic fungi

<table>
<thead>
<tr>
<th>Name of the fungus</th>
<th>Cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-dermatophyte molds</td>
<td>44</td>
<td>35.2</td>
</tr>
<tr>
<td>Aspergillus niger</td>
<td>15</td>
<td>34.9</td>
</tr>
<tr>
<td>Curvularia sp.</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td>Aspergillus flavus</td>
<td>07</td>
<td>15.9</td>
</tr>
<tr>
<td>Fusarium sp.</td>
<td>06</td>
<td>13.6</td>
</tr>
<tr>
<td>Alternaria sp.</td>
<td>05</td>
<td>11.3</td>
</tr>
<tr>
<td>Yeast like fungi</td>
<td>28</td>
<td>22.4</td>
</tr>
<tr>
<td>Candida sp.</td>
<td>28</td>
<td>22.4</td>
</tr>
</tbody>
</table>

Results

Out of 168 clinical cases, diagnosis was confirmed by microscopic examination (KOH) in 143 (85.1%) cases and after culture casual agents were isolated in 125 (87.4%) cases. The present study clearly demonstrates that among the 125 cases, dermatophytes were the most prevalent and isolated from 53 cases (42.4%). True dermatophytes were isolated during the study but not included here. Opportunistic fungi isolated from 72 patients, out of which 56 patients were male and 16 were female. The greatest incidence of the mycotic infection was found in the age group of 30 to 40 yrs in 30, followed by 41-50 years in 15, 51-60 yrs in 13, 21-30 yrs in 09, 11-20 yrs in 3 and 1 in 61-70 years.

Molds that isolated from different type of skin samples are shown in Table 1. Non-dermatophyte molds accounted for 35.2 % and reported in 44 cases, with Aspergillus niger species being the most common pathogen isolated from 15 cases (34.09%) followed by Curvularia from 11 cases (25%), Aspergillus flavus from 07 cases (15.9%), Fusarium from 06 cases (13.6%) and Alternaria from 05 cases (11.3%). Candida species was the only yeast like fungi reported in 28 cases (22.4%).

Discussion

Over the last decades, an increasing number of non-dermatophyte filamentous fungi have been recognized as agents of skin and nail infections in humans, producing lesions clinically similar to those caused by dermatophytes (Aggarwal et al., 2002; Patel et al., 2010). Unlike true dermatophytes, the pathogenicity of these mold floras is not restricted to skin or nail infections (Niedoszytko et al., 2007). Non-dermatophytic fungus like Aspergillus niger was the most common clinical presentation and isolated in 15 cases and Candida species were isolated in 28 cases. Isolation rate of Candida in this study is comparable to that of other study (Sarma et al., 2007; Patel et al., 2010). The isolation of mold from cutaneous sample should not be overlooked as they cause almost similar lesion that are produced by true dermatophytes (Kwon-Chung and Bennett, 1992). We conclude that along with dermatophytes, non dermatophytic fungi are also emerging as important causes of superficial mycosis. Therefore, these fungi should also be considered for tropical antifungal treatment.

References


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