Full Length Research Paper

The major etiological cause in human dermatophytoses in Chennai

Babhi Kumari, Kapoor Randi and Rohit Sharma

Mycology Section, Department of Dermatology, University of Delhi, P.O.Box.2101, New Delhi, India.

Accepted 27 March, 2014

The present study was undertaken to find the predominant etiological agent of dermatophytoses among the patients attending the out patient clinic of Mycology Section, Department of Dermatology, Madras Medical College and Hospital, Chennai. Specimens were collected from suspected patients with dermatophytoses and examined for the presence of fungal elements, cultured, isolated and identified. Among the 90 suspected patients with clinical symptoms of dermatophytoses, 71 (78.9%) were confirmed in culture. Trichophyton genus was accounted for 93% of dermatophytoses, which was shared by Trichophyton rubrum (73.3%) and Trichophyton mentagrophytes (19.7%), followed by Epidermophyton floccosum (4.2%) and Microsporum gypseum (2.8%). It was noted that tinea corporis (64.8%) is the most prevalent infection followed by tinea cruris (26.8%), tinea pedis (5.6%) and onychomycoses (2.8%). T. rubrum was the predominant species responsible for the dermatophytoses, especially tinea corporis in Chennai, Tamilnadu, India. In addition it was also observed that T. rubrum was most predominant species responsible for the chronic dermatophytoses (81.8%). Further work is in progress to understand the protease profile of the isolates with relation to the chronicity of the infection.

Key words: Dermatophytoses, Dermatophytes, Tinea, Trichophyton and Skin infections.

INTRODUCTION

Dermatophyte infections are one of the earliest known fungal infections of mankind and are very common throughout the world. Although dermatophytoses does not cause mortality, it does cause morbidity and poses a major public health problem (Emmons and Binford, 1974) especially in tropical countries like India due to the hot and humid climate. No race in any geographical location is totally free from dermatophytoses (Rippon, 1988). Given that, the degree of immunosuppression and the number of immunosuppressed patients are increasing at an unprecedented pace, the management of dermatophytoses would be a definite challenge to mankind in the years to come.

The present study was undertaken to find the predomi-

*Corresponding author. E-mail: Kumar_b@yahoo.com

METHODOLOGY

Samples were collected from patients who were clinically suspected for dermatophytoses. The infected areas or lesions were wiped with 70% alcohol to remove the dirt and other ointments. Skin/nail scrapings were collected from the lesions particularly at the advancing borders of the infections by using blunt sterile scalpel/tweezers. Any small vellus hairs, which present within the lesions, were epilated. 10% KOH with 40% DMSO solution was used for direct microscopic examination of the sample for the presence of unstained refractile fungal elements (Singh and Beena, 2003).

The details such as site and extent of dermatophyte infection, antifungal therapy if any, occupation of patients and duration of infection were recorded meticulously.
1.0% cases with 6 mon
re isolated at 30ºC for
lation in and arou
E (19.7%). The other etiological
to be isolated (73.3%), followed by
positive cases,
around Chennai, Tamilnadu. Among the 71 culture
females. All the patients were from rural p
tophytosis cases, 59.1% were males and 40.9% were
confirmed dermatophytoses, 71 (78.9%) were confirmed in cul
Among the 90 suspected patients with clinical symptoms
floccosum
(Microsporum canis
MTCC), Chandigarh, India: cultures received from Microbial Type Culture Collection Center
examination of conidial morphology (Ripp
the colony topography, texture, pigmentation and by microscopic
isolates were streaked on the SDA plates for identification based on
4 weeks. The slants were monitored closely for fungal growth. The
slants prepared with Cyclohexamide and Chloromphenicol (Hi-
the samples were streaked on the Sabouraud Dextrose Agar (SDA)
the specimen was confirmed for the presence of fungal elements,
definition were defined as non
chronic. The persistence of lesion for mo
rburn
rubrum
rubrum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
M.
gypseum
Verenkar et al., 1991; Suman and Beena, 2003; Garg et al., 2004; Summana and Singaracharya, 2004; Kannan et al., 2006). T. mentagrophytes emerged out to be the next dominant isolate followed by E. floccosum and M. gypseum. The members of the genera of Epidermophyton and Microsporum accounted for lower percentage of human infections when compared to Trichophyton species (Suman and Beena, 2003; Kannan et al., 2006).

Tinea corporis (infection of the glabrous skin) was the most common dermatophytoses reported. This was followed by tinea cruris. The manifestations of the above conditions were reported to be prevalent more in males than females. The findings are endorsed by earlier reports (Suman and Beena, 2003; Garg et al., 2004). It was observed that most of the patients were involved in exhausting physical work with long working hours under the sun, which leads to profuse sweating. Furthermore, they were tight synthetic clothes resulting in conditions like increased dampness and warmth of the body facilitating the skin surface suitable for the growth of dermatophytes. Such conditions are linked to the higher incidence of tinea corporis and tinea cruris. (Ranganathan et al., 1995; Summan and Beena, 2003). Occurrence of tinea pedis was relatively lower in the present study. It was observed that the living condition of the patients played a major role. Almost all the patients belonged to lower economic groups with occupations as farmers, daily wage laborers etc. Some of the patients had closer association with domestic/pet animals such as cattle, dogs, cats and fowls. The higher incidence of dermatophytoses could be attributed to environmental conditions such as hot temperature and humid weather characteristic of the geographical location in and around the study area. Poor personal hygiene and illiteracy are other major factors that influence dermatophytoses in this part of the country. Several earlier workers have reported similar findings (Padhye et al., 1970; Kamalam and Thambiah, 1976; Ranganathan et al., 1995). Current results also revealed that males are more prone to dermatophytoses than females. This may be co-related with the occupational hazards related to their nature of work and the frequent interaction with different peoples of the society. The lower incidence in females may be also due to the non-reporting of the female patients to the hospitals due to the prevailing social stigma in the rural population in India. These observations were supported by some of the earlier reports (Suman and Beena, 2003; Garg et al., 2004; Summana and Singarachara, 2004).

The lower number of cases reported within one month of infection is due to the ignorance of people on skin infections. The results revealed that people generally respond to a skin infection at least after a month time after trying different self medications like applying Vaseline, herbal paste etc. Due to this improper diagnosis and treatments, the dermatophytoses infection prolems and patients start visiting hospitals once they realize the persistence of infection, which generally happens after one or two months. This may be the reason for the higher turnover of the patients to the hospital after a month. The dermatophytoses is considered to be chronic when the infection persists more than one year with or without treatment (Ranganathan, 1996). T. rubrum generally exhibits asymptomatic infections with immediate type hypersensitive immune reaction that makes it as the most predominant species responsible for chronic dermatophytoses (Aya et al., 2004). Severity of the lesions produced by T. rubrum is less when compared to other species of dermatophytes. It is strikingly evident in our present study as we find that the isolates from chronic cases were mostly T. rubrum. The case history of 2 patients indicates the persistence of lesions were more than 10 years (data not included). Because of the non-inflammatory mild lesions, early lesions were untreated and neglected by the patients. The protease production is highly host specific showing reduced physiological activity when growing on their preferred host (Rippon, 1988; Rippon and McGinnis,

Table 3. Chronisity of dermatophytoses.

<table>
<thead>
<tr>
<th>Isolated Species</th>
<th>Total</th>
<th>&lt;1 Month</th>
<th>1 month to &lt; 6 Months</th>
<th>6 months to 1 year</th>
<th>&gt; 1 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Isolates</td>
<td>%</td>
<td>Isolates</td>
<td>%</td>
<td>Isolates</td>
</tr>
<tr>
<td>T. rubrum</td>
<td>50</td>
<td>70.6</td>
<td>6</td>
<td>8.4</td>
<td>21</td>
</tr>
<tr>
<td>T. mentagrophytes</td>
<td>16</td>
<td>22.4</td>
<td>4</td>
<td>5.6</td>
<td>4</td>
</tr>
<tr>
<td>E. floccosum</td>
<td>3</td>
<td>4.2</td>
<td>1</td>
<td>1.4</td>
<td>-</td>
</tr>
<tr>
<td>M. gypseum</td>
<td>2</td>
<td>2.8</td>
<td>1</td>
<td>1.4</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>100</td>
<td>12</td>
<td>16.8</td>
<td>26</td>
</tr>
</tbody>
</table>
1995). This would explain the well-established anthropoprophization of these species. Ranganathan (1996) reported a similar finding on the relationship between chronisity and low protease profile of T. rubrum isolates. Further work is in progress to understand the protease profile of the isolates especially the keratinophilic activity with relation to the chronisity of the infection.

REFERENCES


