DERMATOMYCOSIS AT A TERTIARY CARE HOSPITAL: A CLINICOMYCOLOGICAL STUDY

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ABSTRACT Background: The term “dermatophytosis” describes a superficial keratinized tissue fungal infection brought on by dermatophytes. Dermatophytes do not infiltrate deeper anatomical areas; they exclusively colonise the suprafollicular regions of hair or the cornified layer of the epidermis. Dermatophytosis is not life-threatening or disabling, but it can be bothersome and persistent and is frequently mistaken for other skin conditions. Therefore, laboratory tests are crucial for accurate diagnosis, management, and cost reduction. Objective: Isolation and identification of the dermatophytes as well as examining the clinico-mycological characteristics of dermatophytosis. Materials and Procedures: For 130 clinically suspected cases of Dermatophytosis, samples including skin scrapings, nail clippings, hair, and hair stubs were analyzed. All of the samples was observed under the KOH mount and SDA culture. Results: The vast majority of the patients, 76 men (58.46%), exceeded the women, 54 (41.53%). 20–30-year-olds are the most frequently impacted age group. With 66 (50.76%) cases, tinea corporis was the most common kind, followed by tinea cruris (25.23%), tinea unguium (13.84%), and tinea capitis (07.69%). Trichophyton mentagrophytes (16.85%), Microsporum audouinii (15.42%), Microsporum gypseum (11.43%), Trichophyton violaceum (4.28%), and Epidermophyton floccosum (1.43%) were the next most common isolates, with 27 cases (38.57%) each. Trichophyton rubrum was the most common isolate. Conclusion: Infections with dermatophytes are particularly prevalent in our country because of the hot, humid weather, unfavourable hygienic conditions, and other factors. In different regions of India, distinct species are more or less isolated from one another. Trichophyton rubrum was the most common species, followed by Trichophyton mentagrophytes and Microsporum audouinii.

KEYWORDS Dermatophytosis, Microsporum spp., Tinea corporis, Trichophyton rubrum

Introduction

The most prevalent form of skin illness affecting millions of people worldwide is superficial fungal infections. Dermatophytes are mostly responsible for these illnesses [1]. A group of closely related keratinophilic fungi known as dermatophytes can penetrate the skin’s stratum corneum or other keratinized tissues derived from the epidermis, such as hair and nails, by producing keratinase.
Table 1 Showing Dermatophytes isolates in different clinical types of tinea.

<table>
<thead>
<tr>
<th>Fungal isolates</th>
<th>Tinea unguium</th>
<th>Tinea pedis</th>
<th>Tinea barbae</th>
<th>Tinea corporis</th>
<th>Tinea capitis</th>
<th>Tinea cruris</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidermophyton floccosum</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>01</td>
<td>00</td>
<td>00</td>
<td>01</td>
</tr>
<tr>
<td>Trichophyton rubrum</td>
<td>04</td>
<td>00</td>
<td>01</td>
<td>13</td>
<td>01</td>
<td>08</td>
<td>27</td>
</tr>
<tr>
<td>Microsporum audouinii</td>
<td>04</td>
<td>00</td>
<td>00</td>
<td>08</td>
<td>01</td>
<td>02</td>
<td>15</td>
</tr>
<tr>
<td>Trichophyton violaceum</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>01</td>
<td>01</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td>Microsporum gypseum</td>
<td>01</td>
<td>01</td>
<td>00</td>
<td>05</td>
<td>00</td>
<td>01</td>
<td>08</td>
</tr>
<tr>
<td>Trichophyton mentagrophytes</td>
<td>03</td>
<td>01</td>
<td>00</td>
<td>07</td>
<td>01</td>
<td>04</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>02</td>
<td>01</td>
<td>35</td>
<td>04</td>
<td>16</td>
<td>70</td>
</tr>
</tbody>
</table>

Methods

Our hospital’s dermatology and venereology outpatient departments saw 130 clinically suspected instances of Dermatophytosis during this retrospective investigation. A thorough history of the patient’s age, sex, occupation, site of the lesion, and related illnesses was collected, and patients underwent a clinical examination to determine the nature and location of the lesion. In addition, the patient received a detailed explanation of the process prior to sample collection.

A cotton swab soaked in regular saline was used to clean the area. Clinical specimens such as nails, infected hair, and skin scrapings were collected using sterile nail clippers, forceps for hair epilation, and sterilised scalpel blades. After an hour at room temperature, the hair and skin samples were analysed using a 10% KOH mount. After incubating the nail clippings at room temperature for 4-5 hours, the 40 percent KOH mount was used to evaluate the samples. Retractile, hyaline fungal filaments were looked for on all clinical samples.

Cycloheximide and chloramphenicol were used to inoculate the clinical sample into two rounds of Sabouraud’s dextrose agar (SDA). Both the inoculated agar slants were incubated, one at 37°C and the other at room temperature. After four weeks of observation, any growth was deemed unfavourable and discarded. Slide culture and tease mount techniques were used to identify the growth of SDA. [3]

Results

There are 130 participants in our study group with clinical diagnoses overall. Most of the patients were male, with 76 (58.46%) male and 54 female (41.53%) patients. 20–30-year-olds are the most frequently affected age group, followed by 30–40 years. Tinea corporis, comprising 66 (or 50.76 percent) of the 130 clinically suspected cases of Dermatophytosis, was the most common kind, followed by tinea cruris (25), tinea unguium (18), and tinea capitis (10). (07.69 percent).

98 (75.38%) of the 130 clinically diagnosed cases were KOH &/or culture positive. The remaining 32 (24.61 percent) patients had negative KOH and culture results. 04 (0.37%) cases were negative for KOH. Still, they produced fungal growth, compared to 28 (21.53%) cases that were positive for KOH but negative for culture. The remaining 66 (50.76%) instances had fungal filaments visible in KOH mounts and produced growth. All three dermatophyte species—Trichophyton, Microsporum, and Epidermophyton—have been produced in culture. According to Table 1, Trichophyton rubrum was the most common isolate, accounting for 27 cases (38.57%), followed by Trichophyton mentagrophytes (16 cases, 22.85%), Microsporum audouinii (15 cases, 21.42%), Microsporum gypseum (8 cases, 11.43%), Trichophyton violaceum (3 cases, 4.28%), and Epidermophyton floccosum (1 case, 1.43%).

Discussion

Infecting the skin, hair, and nails of people and animals with dermatophytes results in various cutaneous illnesses, including ringworm. The lesion appears grossly as an outside ring of active, spreading infection with a healing centre. [4] Since the turn of the century, there have been major changes in lifestyles, migration patterns, and socioeconomic conditions that have had an impact on the epidemiology of superficial fungal infections. Environmental factors may be to blame for the greater occurrence of Dermatophytosis. [5] In accordance with Sumathi S et al. and the current investigation results, dermatophytosis was shown to be most prevalent in those between the ages of 20 and 30. [4] Males had a higher incidence than females, 58.46 percent to 41.53 percent, which is in line with the majority of the others. Men are more likely to develop the condition, which may be related to their outdoor physical activity, trauma, hormone patterns, and perspiration. [5,6,7]

In our study, dermatophytosis afflicted manual workers more than other occupations. This could result from manual employees participating in greater physical activities, increasing their risk of exposure [2].

In this study, patients with lower socioeconomic status were more negatively impacted than other patients. For example, this might be caused by unsanitary living arrangements, congestion, sharing of linens and towels, or poor diet [8].

Out of 130 clinical samples, 98 (75.38%) patients had KOH and/or positive culture results. The remaining 32 (24.61 percent) patients had negative KOH and culture results. 04 (0.37%) cases were negative for KOH. Still, they produced fungal growth, compared to 28 (21.53%) cases that were positive for KOH but negative for culture. The remaining 66 cases, or 50.76 percent, are KOH positive and contributed to the increase. This result was consistent with that of Thongam Singh et al. [3,4]
Trichophyton rubrum, which accounts for 27 cases (38.57 percent) of the study’s fungal isolates, is the most common. It is followed by Trichophyton mentagrophytes (16 cases; 22.85 percent); Microsporum audouinii (15 cases; 21.42 percent); Microsporum gypseum (8 cases; 11.43 percent); Trichophyton violaceum (3 cases; 4.28 percent); and Epidermophyton floccosum (1). (1.43 percent ). Numerous writers have demonstrated comparable results, including Thongam Singh et al. [3] and Santhosh Krishna H et al. Still, according to Grover Sanjiv et al. [10], Trichophyton tansurans is the most common fungal isolate. The most prevalent fungal isolate was Trichophyton rubrum because of its superior adaptability, increased virulence, and simplicity in colonising hard keratin. [11]

Conclusion
Dermatophytosis is a minor illness with expensive treatment costs and psychological side effects. Infections with dermatophytes are prevalent in our country because of the hot, humid weather, unfavourable hygienic conditions, and other factors. Tinea corporis and tinea cruris were the two clinical types of Dermatophytes that were most prevalent. In different regions of India, distinct species are more or less isolated from one another. But in the majority of the experiments, Trichophyton was the main fungus. Trichophyton rubrum was the major species, followed by Trichophyton mentagrophyte and Microsporum audouinii. These fungi infections can be prevented with good hygiene, sanitation, and washing.

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Conflict of interest
There are no conflicts of interest to declare by any of the authors of this study.

References