

Pattern of Dermatophytes Isolated in the Medical Microbiology Laboratory of the University of Port Harcourt Teaching Hospital, Rivers State, Nigeria

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Abstract

Dermatophytoses are the most common dermatological conditions but they are however not life threatening or debilitating hence medical care is sought usually due to aesthetic reasons and chronicity of the lesions despite several self-medications. The purpose of this study was to determine the distribution pattern of dermatophytes isolated in the medical microbiology laboratory of University of Port Harcourt teaching hospital (UPTH). This is a 5-year desk review of the Dermatophytes isolated in the medical microbiology laboratory of UPTH. Relevant Patients' data were retrieved and analyzed. A total of seventy (70) dermatophytes were isolated over the five-year period as follows: *Trichophyton* species accounted for 55 (79%), *Epidermophyton* species were 8 (11%) and *Microsporum* species 7 (10%). The peak age range of patients from which dermatophytes were isolated was 31 - 40 years with a male to female ratio of 1:1.7. The majority of patients being 49 (70%) were referred from the dermatology outpatient clinic (DOPC) and the most frequent clinical diagnosis was Tinea corporis. *Trichophyton* species were the commonest cause of dermatophytoses in adult patients in Port Harcourt where the most common clinical presentation was Tinea corporis.

Keywords

Dermatophytes, Port Harcourt, Out-Patients, Tinea

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1. Introduction

Dermatophytes are a group of closely related fungi that belong to three genera: *Microsporum*, *Trichophyton* and *Epidermophyton*. They have the capacity to invade the keratinized tissues (the skin, hair, and nail) of humans and other animals to produce an infection called dermatophytosis which is commonly referred to as ring worm [1]. The infections are mainly cutaneous and restricted to the non-living cornfield layer. This is probably because of the inability of the fungi to enetrate deeper tissue or organs of immune-competent host [2].

They are also called superficial mycoses because only under exceptional conditions do they survive or grow in the deeper tissues of the body [3]. However, it is one of the most common cutaneous infections worldwide and poses a great public health problem to humans and animals [4] [5].

Dermatophytoses are neither life threatening nor debilitating but may be recurrent and require long term skin treatment with attendant skin depigmentation [1]. Studies have shown great correlation of dermatophytoses with immune-depression as evidenced by increased incidence of dermatophytoses in patients with HIV/AIDS and cancers as well as people on long term cytotoxic drugs and organ/stem cell transplantation patients [6].

The typical dermatophyte infections are also known as Tinea and named specifically according to the site of the lesions on the body e.g. Tinea capitis refers to ring worm infection of the head region.

Tinea infections are prevalent worldwide but much more in the tropics especially in geographical areas with high humidity, poor personal hygiene, overcrowding and poor nutrition [6].

Some Dermatophytes are spread directly from one person to another (anthropophylic organisms). Others live in and are transmitted to humans from the soil (geophilic organism) while some spread to humans from animal host (zoophilic organism). Transmission can also occur indirectly from fomites (e.g. clothing, hairbrush, underwear) [7].

Anthropophilic organisms are responsible for most fungal skin infections. Transmission can occur by direct person to person contact or from exposure to desquamated cells. Direct inoculation through breaks in the skin occurs more often in persons with depressed cell mediated immunity. Once fungi enter into the skin, they germinate and invade the superficial skin layer [7].

2. Materials and Methods

A desk review was done of all Dermatophytes isolated in the laboratory between 2010 and 2014 from patients referred from the out-patient clinics of the UPTH. Patients' data including age, sex, clinical diagnosis, site of infection and referring clinic were retrieved and analyzed.

3. Results

A total of seventy (70) Dermatophytes were isolated over the five-year period. *Trichophyton* was the most common isolate accounting for 78% while *Epidermophyton* and *Microsporum* accounted for 11% and 10% respectively (Figure 1).

Among the 70 patients from which Dermatophytes were isolated, 42 (67%) were female while the remaining 28 (33%) were male giving a female to male ratio of 1.7:1 (Table 1).

The age groups with the maximum isolates were the third and fourth decades of life accounting for 23.0% and 28.6% respectively while the modal age group was between 31 and 40 years i.e. 4th decade (20 patients). The sex distribution of patients with dermatophytosis according to age groups followed a similar pattern. Females were more in all age groups except for the first decade of life where the males were more predominant (Table 1).

Among the commonest presumptive clinical diagnosis made were Tinea corporis, Tinea vesicular, and Tinea pedis representing 36%, 28% and 16% respectively. The modal clinical diagnosis however, was Tinea corporis which accounted for 25 isolates (36%) while the least common were Paronychia, Tinea cruris, Tinea unguim and Tinea capitis (Figure 2).

Patients referred from the dermatology outpatient clinic accounted for the majority of Dermatophytes isolated being 49 (70%) (Figure 3).

4. Discussion

Dermatophytosis is the most common superficial skin infection and constitutes a huge burden on public health

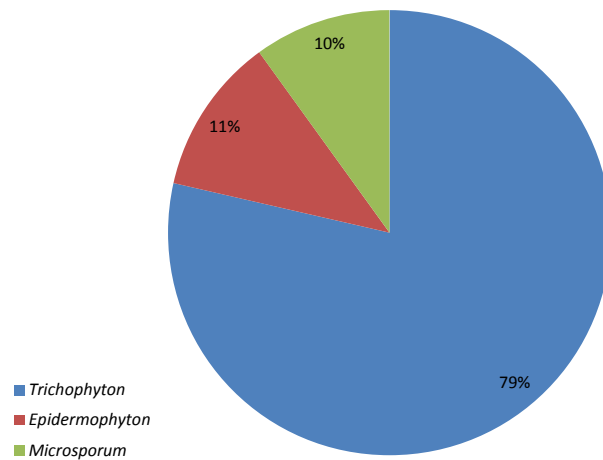


Figure 1. Distribution of dermatophytes isolated.

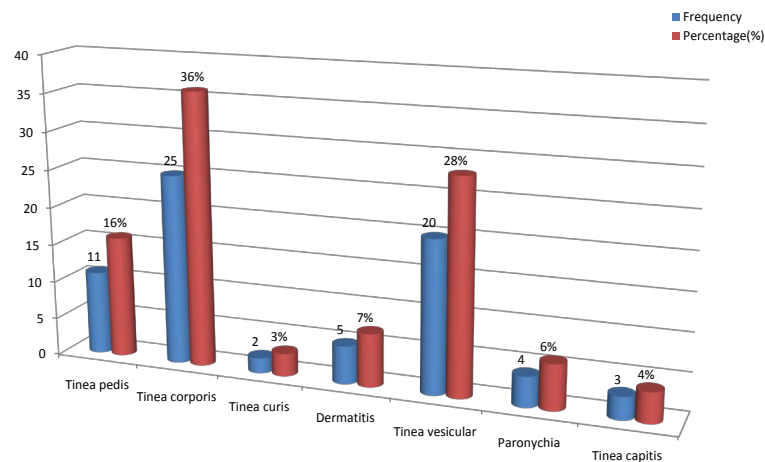


Figure 2. Distribution of patients according to presumptive clinical diagnosis.

Table 1. Sex and age distribution of patients from which dermatophytes were isolated.

Age group (years)	Frequency (%)	Number of males (%)	Number of female (%)
0 - 10	6 (8.6)	5	3
11 - 20	9 (12.9)	2	7
21 - 30	16 (23.0)	5	12
31 - 40	20 (28.6)	7	14
41 - 50	10 (14.0)	5	6
51 - 60	6 (8.6)	3	4
61 - 70	2 (2.9)	1	1
≥71	1 (1.4)	0	1
TOTAL	70 (100.0)	28 (33%)	42 (67%)

systems worldwide [8]. They are generally frequent in areas with high humidity and warm climate which favor the growth of these organisms.

The most frequently isolated dermatophytes according to most studies done worldwide are the *Trichophy-*

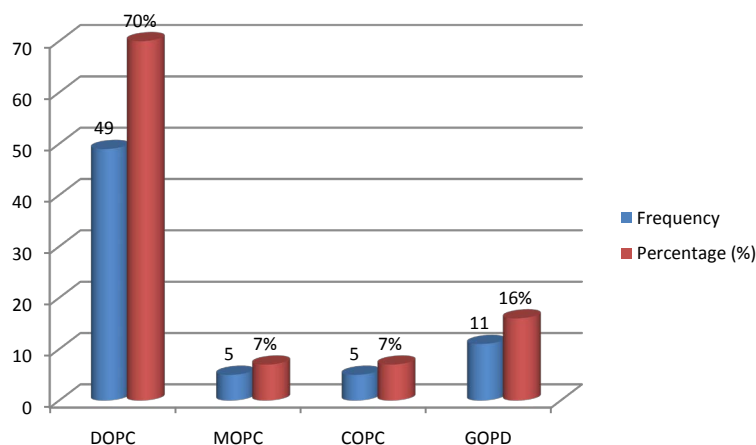


Figure 3. Distribution of patients according to referral clinic. DOPC: Dermatology out-patient clinic, MOPC: Medicine out-patient clinic, COPC: Child-ren out-patient clinic, GOPD: General out-patient department

ton species [9] [10]. This correlate with our study where the most prevalent dermatophyte isolated were *Trichophyton* species which accounted for 79% of isolates. The plausible explanation for this can be the fact that *Trichophyton* species can infect virtually all parts of the human body and are more associated with chronic infections [11].

Several studies carried out in Nigeria and other sub-saharan African countries showed a male preponderance as opposed to ours in which a higher number of infected patients were female [12]-[14]. This is probably due to the fact that this study was hospital based while the other studies were community based as well as the fact that females have been known to have a better health-seeking behavior than males [15].

The age group and sex most affected in this study being adult females also supports the rationale that the most probable reasons for patients presenting at the clinics with dermatophytoses are aesthetics and chronicity of some of these conditions because dermatophytic infections are generally neither lifethreatening nor debilitating.

Anthropophilic species of dermatophytes have been noted to be the main cause of dermatophytosis in the adult population [16]. This correlates with our study where the age group most frequently affected was the thirty to forty year age group *i.e.* the fourth decade of life. The most probable means of contacting this fungal infection would be human to human transmission and via formites which explains the high prevalence of *Tinea corporis* recorded. Poor hygiene and contact with soil or domestic animals are less likely predisposing factors among adult females in urban parts of Southern Nigeria though it may come into play among the low socio-economic class and those who rear domestic animals.

In other studies done in Nigeria [17], the target population was mainly of the Pediatric age group and the play pattern of the children especially boys tend to promote close person-to-person contact as well as contact with soil and formites, creating the appropriate environmental circumstances for easy transmission of dermatophytes between humans. This could also have largely accounted for the higher male to female ratio in those studies.

Tinea pedis (fungal infection of the interdigital toe web space as well as the skin of the feet) is caused solely by dermatophytes particularly *Trichophyton* species being the most frequently identified [6] [18]. Transmission of *tinea pedis* often involves the use of communal baths, showers or other aquatic facilities and the infection is promoted by prolonged wearing of covered shoes and contact with water/moisture as is common in our environment where high levels of rainfall occur. In our study, it was the third most common clinical presentation recorded (16%) and this is probably due to increased humidity from frequent wearing of shoes and prolonged exposure of the feet to water especially among males.

The majority of referrals (70%) were made from the dermatology out-patient clinic (DOPC), this supports the finding that dermatophytoses are usually cutaneous diseases. This is also the appropriate referring clinic and therefore shows improved patronage of specialists, particularly Dermatologists in Nigeria. It may also be a function of improved level of awareness among the patients and medical professionals to seeking specialist attention because our study centre is a tertiary institution located in an urban area and serves a large proportion of individuals and primary/secondary health institutions in southern Nigeria from which patients could be referred to it.

5. Conclusion/Recommendations

Trichophyton species were the commonest cause of dermatophytoses in adult patients in Port Harcourt, Nigeria. The commonest clinical variety encountered was *Tinea coporis* caused mainly by species of *Trichophyton*. Other common forms encountered were *Tinea vesicolor* and *Tinea pedis*. We therefore recommend increased awareness campaigns on improved personal hygiene, reduced sharing of clothing, the need to keep feet clean and dry as well as early treatment of dermatophytoses to prevent the transmission of these diseases.

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