

Some Epidemiological Aspects of Dermatophyte Infections in Southwest Iran

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SUMMARY Distribution and prevalence of various species of dermatophytes are not the same in different areas of the world. The aim of the present study was epidemiologic evaluation of dermatophytic infections in our area. A retrospective epidemiologic study was carried out and all patients with dermatophyte positive smears identified at the Referral Center of Southwest Iran located in the city of Ahvaz between March 2005 and March 2007 were investigated. Body was divided into nine areas and information on age, sex, dermatophyte species and clinical presentation were recorded. The study included 428 patients, 233 (54.43%) men and 195 (45.56%) women, most of them aged 20-29 (29.8%). Regarding the body area involved, the groin, trunk and hands were the most prevalent areas. Tinea cruris and tinea corporis were the most common clinical presentation in both men and women. *Epidermophyton floccosum* was the most frequently isolated dermatophyte (39.25%), followed by *Trichophyton verrucosum* (27.33%) and *Trichophyton rubrum* (8.41%). Epidemiologic characteristics of dermatophytic infections in southwest Iran in comparison with other areas of the world and even Iran have changed significantly. As many factors such as area, weather conditions, occupation, and environmental factors are implicated in dermatophytic infections, it seems that dermatophytic infections change epidemiologically from time to time even in different areas of a country such as Iran. Accordingly, we think that the reason for this phenomenon in our area may change related to seeking healthy behaviors and hygiene in southwest Iran. We propose to do additional and larger epidemiologic studies regarding these variables.

KEY WORDS: dermatophytic infection, epidemiology, southwest Iran

INTRODUCTION

Dermatophyte infections are the most common skin fungal infections, and age, sex, genetics, racial factors, lifestyle, drug therapy, metabolic-endocrine disorders such as diabetes mellitus, contact with ani-

mals and environmental factors are involved in these infections (1-3). Distribution and prevalence of various species of infective dermatophytic agents vary among different areas (3,4). Accordingly, accurate

diagnosis, appropriate treatment of these infections, health seeking behaviors and hygiene reduce their transmission and complications (5).

In some studies, dermatophytic infections were more prevalent in men (6,7) and the most frequent areas of involvement were the scalp, groin and trunk (6). As there is no study on the epidemiology of fungal infections in our area, we decided to do a survey of the prevalence of fungal infections in southwest Iran.

MATERIAL AND METHODS

A retrospective epidemiologic study was carried out and all patients with dermatophyte positive samples identified at the Referral Center of Southwest Iran, Dermatology Outpatient Clinic, Jundishapur University of Medical Sciences, located in the city of Ahvaz, between March 2005 and March 2007, were analyzed. Both KOH and culture methods of mycological workup were used in study patients. Patients were divided into six age groups of <10, 10-19, 20-29, 30-39, 40-49 and >50 years; and body was divided into nine areas. Additionally, data on patient age, sex, area of skin involvement, species of dermatophyte and clinical presentation were recorded.

The SPSS software was used on data statistical analysis.

RESULTS

The study included 428 patients, 233 (54.43%) male and 189 (45.56%) female, most of them aged 20-29 years (29.8%). Tinea cruris (37.78%), tinea corporis (21.26%), tinea manum (12.38%) and tinea capitis (10.98%) were the most common clinical presentations (Table 1).

Interestingly, tinea cruris was most frequent in men and tinea corporis in women.

Epidermophyton (E.) floccosum was the most common (39.25 %) cause of infection, followed by *Trichophyton (T.) verrucosum* (27.33%) and *T. rubrum* (8.41%), whereas *Microsporum (M.) gypseum* was the least common (0.46%) causative agent (Table 2).

Fifty-three (12.6%) patients had positive smears but negative cultures. The most common pathogen found in female and male patients was *T. verrucosum* and *E. floccosum*, respectively.

E. floccosum was the most common pathogen in the >20 age group and *T. verrucosum* in the <20 age group. *E. floccosum* as the most frequent pathogen was more common in groin and body lesions, whereas *M. gypseum* as the least frequent pathogen was found in only two cases of groin and hand lesions.

Table 1. Frequency of clinical presentation of dermatophytic infections

Clinical presentation	Number	Percent
Tinea cruris	166	38.78
Tinea corporis	91	21.26
Tinea manum	53	12.38
Tinea capitis	47	10.98
Tinea pedis	33	7.71
Tinea faciei	26	6.07
Tinea unguium	12	2.80
Total	428	99.98

According to species frequency in different areas of involvement, *T. verrucosum* was the most common pathogen in the trunk, hand, face and scalp dermatophytic infections, whereas *E. floccosum* was the most common pathogen in tinea cruris and tinea corporis. Notably, the most common pathogen in tinea pedis was *T. mentagrophytes*. Nine out of 11 cases of tinea unguium cultures results were negative, while *T. rubrum* and *T. mentagrophytes* were responsible and in the remaining two cases. The most common area of involvement was scalp, groin and trunk in the <10, 10-19 and >20 age group, respectively.

DISCUSSION

Distribution and prevalence of various species of dermatophytic infection vary among different areas (3,4). In the study by Nowicki from 1996, out of 1195 patients with dermatophytosis in Poland, 55% were male and 45% female. Notably, most of them were older than 15 (6). In another study carried out in Tehran, most of the patients were male and aged 20-29 (7). Our results were similar to those reported from the above studies (6,7). However, in another study in Singapore 72.3% of patients were male (8).

Table 2. Frequency of isolated dermatophytic species

Species	Number	Percent
<i>Epidermophyton floccosum</i>	168	39.25
<i>Trichophyton verrucosum</i>	117	27.33
Negative	53	12.38
<i>Trichophyton rubrum</i>	36	8.41
<i>Trichophyton mentagrophytes</i>	33	7.71
<i>Microsporum canis</i>	12	2.80
<i>Trichophyton violaceum</i>	7	1.63
<i>Microsporum gypseum</i>	2	0.46
Total	428	100

Interestingly, in the study by Falahati carried out in Tehran, Iran, body, groin and scalp were the most common areas of involvement, and *E. floccosum* was the most frequently isolated dermatophyte, followed by *T. rubrum* and *T. mentagrophytes* (7); we found rather dissimilar results considering the area of involvement and frequency of pathogens. In our study, groin, trunk and hand were the most common clinical presentations, and *E. floccosum*, *T. verrucosum* and *T. rubrum* were the most prevalent pathogens.

In a previous study in Iran from 1994, scalp, body and foot were the most common areas of involvement, while the most frequent pathogens were *M. canis*, *T. rubrum* and *E. floccosum* in this order (9). *M. canis*, *T. mentagrophytes* and *E. floccosum* were the most common pathogens in Cordoba, Spain (10), and *M. canis*, *T. rubrum*, and *T. mentagrophytes* in Slovenia (11). *T. verrucosum* was one of the least common pathogens in the latter (11). These findings differ from our results. In another study carried out in Italy, *T. rubrum* was the most frequent dermatophyte isolated (42.3%), followed by *M. canis* (31%), *T. mentagrophytes* (14.5%) and *M. gypseum* (9.2%). Less frequently isolated were *E. floccosum* and *T. violaceum* (12). In this study, the most common dermatophyte infection was tinea corporis, followed by tinea pedis, tinea unguium, tinea capitis and tinea cruris (12).

In the present study, most of the patients were men and aged 20-29 years. The most common presentation was tinea cruris in men and tinea corporis in women. Notably, the most common pathogen was *E. floccosum* in men and *T. verrucosum* in women.

CONCLUSION

Epidemiologic characteristics of dermatophyte infections in southwest Iran in comparison with other areas of the world and even Iran have changed significantly. Notably, southwest Iran has humid and warm weather, which could be a predisposing factor for dermatophyte infection. As many factors such as area, contact with animals, hygiene, weather conditions, occupation and environmental factors are effective in dermatophyte infections (1-3), it seems that dermatophyte infections have changed epidemiologically from time to time, even in different areas of a country such as Iran. Accordingly, we think that the

reason for this phenomenon in our area may be due to changes associated with seeking healthy behaviors and hygiene in southwest Iran. We propose to do additional and larger epidemiologic studies regarding these variables.

References

1. Hay RJ, Moore MK. Mycology. In: Burns T, Breathnach S, Cox N, eds. Rook's Textbook of Dermatology. Boston: Blackwell; 2004. pp. 31.19-31.37.
2. Hermoso de Mendoza M, Hermoso de Mendoza J, Alonso JM, Rey JM, Sanchez S, Martin R, Bermejo F, *et al.* A zoonotic ringworm outbreak caused by a dysgonic strain of *Microsporum canis* from stray cats. *Rev Iberoam Micol* 2010;27:62-5.
3. Ameen M. Epidemiology of superficial fungal infections. *Clin Dermatol* 2010;28:197-201.
4. Noble SL, Forbes RC. Diagnosis and management of common tinea infection. *Am Fam Physician* 1998;58:163-74, 177-8.
5. Chepchirchir A, Bii C, Ndinya-Achola JO. Dermatophyte infections in primary school children in Kibera slums of Nairobi. *East Afr Med J* 2009;86:59-68.
6. Nowicki R. Dermatophytoses in the Gdansk area, Poland: a 12 year survey. *Mycoses* 1996;39:399-402.
7. Falahati M, Akhlaghi L, Lari AR, Alaghebandan R. Epidemiology of dermatophytoses in an area south of Tehran, Iran. *Mycopathologia* 2003;156:279-87.
8. Tan HH. Superficial fungal infections seen at the National Skin Center, Singapore. *Nippon Ishinkin Gakkai Zasshi* 2005;46:77-80.
9. Khosravi AR, Aghamirian MR, Mohmoudi M. Dermatophytoses in Iran. *Mycoses* 1994;37:43-8.
10. Casal M, Linares MJ, Fernandez JC, Solis F. Dermatophytes and dermatophytosis in Cordoba (Spain). *Enferm Infecc Microbiol Clin* 1991;9:491-4.
11. Dolenc-Voljc M. Dermatophyte infection in the Ljubljana region, Slovenia, 1995-2002. *Mycoses* 2005;48:181-6.
12. Asticcioli S, Di Silverio A, Sacco L, Fusi I, Vincenti L, Romero E. Dermatophyte infections in patients attending a tertiary care hospital in northern Italy. *New Microbiol* 2008;31:543-8.