



CLINICO-MYCOLOGICAL PROFILE OF DERMATOMYCOSIS IN HADOTI REGION.

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ABSTRACT

Introduction: Dermatophytes are by far the most significant fungi because of their widespread involvement of population and their prevalence all over the world. They are assuming greater significance both in developed and developing countries. Hot and humid climate in the tropical and subtropical countries like India makes dermatophytosis a very common superficial fungal skin infection.

Aims and objective: The present study was undertaken to detect prevalence and mycological profile of dermatomycosis which include Dermatophyte, Pityriasis versicolor and Candidiasis in hadoti region.

Materials and Methods: A total of 100 patients of dermatophytosis from skin department were studied. Skin, nail and hair specimens taken from the patients were processed by potassium hydroxide preparation (KOH) for direct microscopy and culture.

Result: Dermatophytosis was more common in the age group of 21-30 years (28%) and in males (64%). 65 cases (65%) were positive by both microscopy and culture. Five cases (5%) were negative by microscopy but culture positive. Tinea corporis 45 (45%) was the commonest clinical type followed by Tinea cruris 19 (19%). Overall out of the 70 (70%) culture isolates, *Trichophyton rubrum* was the most common isolate with 33 (47.14%) cases followed by *Malessezia species* with 13 (18.57%) cases, *Candida species* 12 (17.14%) cases, *Trichophyton mentagrophyte* with 6 (8.57%) cases.

Conclusion: males are predominantly affected. *Trichophyton rubrum* was the most common isolate.

KEYWORDS : Dermatophytosis, Tinea corporis, *Trichophyton rubrum*

INTRODUCTION

Superficial fungal infection are common skin disease affecting million of people worldwide.¹ Superficial mycosis refer to the disease of skin and its appendages caused by fungi. The prevalence of superficial mycotic infection has raised to such level that skin mycosis now affect 20-25% of the world population and approximately 90% of fungal skin infection are caused by dermatophytes.² Dermatophytosis which ranked as one of the most common cutaneous condition all over the world is simply a fungal related infection of stratum corneum of epidermis and keratinized tissue such as skin, hair, nail of human and animal.³ Dermatophytes are keratinophilic fungi, all of which produce keratinases, that cause infections of the skin, hair and nails called "dermatophytosis" or "ring worms". These infections generally remain limited to non-living keratinized layers, but the infection may proceed more deeply than for the superficial mycoses, and a variety of pathologic changes can occur depending on the fungus, the site of infection, and the immune status of the host.⁴ A group of closely related fungi comprising of 40 identified species in dermatophytic genera that include *Trichophyton*, *Microsporum*, *Epidermophyton* are potential etiologic agent of dermatophytosis.⁵ They are ecologically classified into zoophilic (animal loving), anthrophilic (human loving) and geophilic (earth loving) with *Trichophyton*, *Microsporum*, *Epidermophyton* constituting prominent dermatophytes globally.⁶ The present study was undertaken to detect prevalence and mycological profile of dermatomycosis which include Dermatophyte, Pityriasis versicolor and Candidiasis in hadoti region.

MATERIAL AND METHODS

A total of 100 cases was selected for this study from patients attending dermatology OPD of New Medical College Hospital, Government Medical College Kota, Rajasthan from Jan 2017 to Dec 2017. Skin, Hair & Nail samples were taken from clinically suspected case of dermatomycosis. A detailed clinical history of Age, Sex, Duration and type of lesion, Socio-economic status of the patients was included. Patients were examined and group in different clinical

type depending upon site if involvement. Affected area was cleaned with 70% w/v ethanol. The clinical specimen (like skin scraping, infected hair taken by plucking, clipped nails) were collected in fold of paper. Collected sample were observed under microscope. A portion of each sample collected from affected part was used for KOH preparation and other parts was inoculated on Sabourad's Dextrose Agar with Chloramphenicol and Dermatophyte Test Medium. If KOH finding suggest meatball and spaghetti appearance, then sample was inoculated on SDA with olive oil media. Two bottle of SDA incubated at 25°C and other 37°C for 4 weeks and observed daily for fungal growth. Tease mount, cellophane tape mount, and slide culture were undertaken for microscopic morphology. The microscopic examination of dermatophytes was characterized by duration of growth, surface morphology and pigment production. Hair perforation test was carried out to distinguish between *T. rubrum* and *T. mentagrophytes*. Nature of mycelia and conidia formation help in distinguishing species.

RESULT

Out of 100 clinically suspected cases of dermatomycosis, most common age group affected was 21-30 years with 28 cases (28%) followed by 31-40 years with 18 cases (18%). Males were more commonly affected with 64 cases (64%) than females with 36 cases (36%). Male to female ratio was 1.78:1. Microscopy and culture both were positive in 65 cases (65%). Five cases (5%) were negative by microscopy but culture positive. [Table 1]

Tinea corporis 45 (45%) was the commonest clinical type followed by tinea cruris 19 (19%), Tinea unguium 17 (17%), Pityriasis Versicolor 8 (8%), Tinea capitis 6 (6%), Tinea pedis 2 (2%), Tinea faciei 2 (2%) and Tinea manuum 1 (1%). [Table 2]

Overall out of the 70 (70%) culture isolates, *Trichophyton rubrum* was the most common isolate with 33 (47.14%) cases followed by *Malessezia species* with 13 (18.57%) cases, *Candida species* 12 (17.14%) cases, *Trichophyton mentagrophyte* with 6 (8.57%)

cases, *Trichophyton verrucosum* 5 (7.14%) cases and *Microsporum gypsum* with 1 (1.42%) cases. [Table 3]

DISCUSSION

The present study shows that dermatomycosis was more common in the age group of 21-30 years (28%) followed by 31-40 years (18%), which is comparable with other studies done by Madhuri JT¹², Sen SS¹⁵, Mishra M⁷, whereas Veer P¹⁶ has reported that the most common age group affected was 31-40 years followed by 41-50 years.

The highest incidence in young adults aged 21-30 years may be due to increased physical activity and increased opportunity for exposure. In the present study, males (64%) were more commonly affected than females (36%). Male to female ratio was 1.78:1, which is comparable with other studies done by Karmakar S¹⁰, Bindu V¹¹, Singh S¹³, whereas Nada H¹⁴ reported that females were more commonly affected than males, with male to female ratio being 0.31:1 and 0.69:1 respectively. Male predominance may be due to increased outdoor physical activities and increased opportunity for exposure to infection than females. In the present study, out of 100 clinically diagnosed cases of dermatophytosis, Sixty five cases (65%) were positive by both KOH and culture, 12 cases (12%) were positive by KOH and negative by culture, 5 cases (5%) were negative by KOH but culture positive, 18 cases (18%) were negative by both KOH and culture [Table 3], which is comparable with other studies done by Nada H¹⁴ and Singh S¹³. This variation could be due to non-viability of

fungal elements in some cases. In the present study, *T. rubrum* 33 cases (47.14%) was the commonest aetiological agent in majority of clinical types followed by *Malassezia species*. 13 cases (18.57%), *Candida species* 12 cases (17.54%), *T. mentagrophyte* with 6 cases (8.57%), *T. verrucosum* 5 cases (7.14%) and *M. gypsum* with 1 (1.42%) cases, which is comparable to other studies done by Bindu V¹¹, Siddappa K et al⁸, Ranganathan S et al⁹, reported *T. rubrum* as the predominant isolates respective.

CONCLUSION:

The present study shows that males are predominantly affected. KOH examination is shown to be more sensitive than culture. Majority of cases were from *T. corporis* and most common etiologic agent is *T. rubrum*. Although the findings of this study matches with many studies across India, it differs significantly with some studies suggesting the role of geographical variation in clinical and mycological pattern.

Table 1: KOH and culture findings

	KOH +ve and culture +ve	KOH +ve and culture -ve	KOH -ve and culture +ve	KOH -ve and culture -ve
Number of cases	65	12	5	18
Percentage	65	12	5	18

Table 2: Age and sex wise distribution in relation to clinical types

S. N.	Clinical Types	Age Group (in Years)							Sex		Total	%
		<10	11-20	21-30	31-40	41-50	51-60	61-70	Male	Female		
1	Tinea Corporis	5 (11.11%)	7 (15.56%)	14 (31.11%)	6 (13.33%)	8 (17.78%)	3 (6.67%)	2 (4.44%)	34 (75.56%)	11 (24.44%)	45	45
2	Tinea Cruris	—	4 (21.05%)	5 (26.32%)	4 (21.05%)	4 (21.05%)	1 (2.22%)	1 (2.22%)	10 (52.63%)	9 (47.37%)	19	19
3	Tinea Unguium	—	2 (11.76%)	6 (35.29%)	4 (23.53%)	3 (17.65%)	—	2 (11.76%)	10 (58.82%)	7 (41.18%)	17	17
4	Tinea Capitis	5 (83.33%)	1 (16.67%)	—	—	—	—	—	5 (83.33%)	1 (16.67%)	6	6
5	Tinea Pedis	1 (50%)	—	—	—	1 (50%)	—	—	0	2 (100%)	2	2
6	Tinea Faciei	2 (100%)	—	—	—	—	—	—	0	2 (100%)	2	2
7	Tinea Manuum	—	—	1 (100%)	—	—	—	—	1 (100%)	0	1	1
8	Tinea Versicolor	—	—	2 (25%)	4 (50%)	—	2 (25%)	—	4 (50%)	4 (50%)	8	8
	Total	13 (13%)	14 (14%)	28 (28%)	18 (18%)	16 (6%)	6 (6%)	5 (5%)	64 (64%)	36 (36%)	100	100

Table 3: Fungal species isolated in relation to clinical types

Clinical types	No.	<i>T. rubrum</i>	<i>T. verrucosum</i>	<i>T. mentagrophyte</i>	<i>M. Gypseum</i>	<i>Candida species</i>	<i>Malassezia Species</i>	Total isolated
Tinea Corporis	45	19 (61.3%)	—	3 (9.67%)	01 (3.22%)	03 (9.67%)	05 (16.12%)	31 (68.89%)
Tinea Cruris	19	11 (84.61%)	—	1 (7.69%)	—	01 (7.69%)	—	13 (68.42%)
Tinea Unguium	17	—	0	2 (20%)	—	08 (80%)	0	10 (58.82%)
Tinea Capitis	6	—	4 (100%)	—	—	0	0	04 (66.67%)
Tinea Pedis	2	1 (100%)	0	—	—	0	0	01 (50%)
Tinea Faciei	2	1 (50%)	1 (50%)	—	—	0	0	02 (100%)
Tinea Manuum	1	1 (100%)	—	—	—	0	0	01 (100%)

Tinea Versicolor	8	0	0	0	-	0	08(100%)	08 (100%)
Total	100	33 (47.14%)	05 (7.14%)	06 (8.57%)	01 (1.42%)	12 (17.14%)	13 (18.57%)	70 (70%)

REFERENCES

1. Pierard GE, Arrese JE, Pierard Franchimont C. Treatment and prophylaxis of tinea infections. *drug*.1996;52(2):209-224
2. Jahromi SB and Khaksari AA. Epidemiological survey of dermatophytosis in Tehran, Iran from 2000-2005. *Indian J Dermatol Venereol Leprol*.2009;75(2):142-7.
3. Popoola SOT, Ojo AD, Alabi OR (2006). Prevalence of dermatophytosis in junior secondary school children in Ogun State, Nigeria. *Mycoses* 49: 499-503.
4. Woods JP. Superficial and cutaneous mycoses. 2002.
5. Nweze EI (2010a). Dermatophytosis among children of Fulani/Hausa living in Southeastern Nigeria. *Revista Iberoamericana de Micol*. 27(4): 191-194.
6. Weitzman I, Summerbell RC (1995). The dermatophytes. *Clin. Microbiol. Rev.* 8: 240-259.
7. Mishra M, Mishra S, Singh PC, Mishra BC. Clinico- mycological profile of superficial mycoses. *Indian J Dermatol Venereol Leprol* 1998; 64:283-5.
8. Siddappa K, Mahipal OA. Dermatophytosis in Davangere. *Indian J Dermatol Venereol Leprol* 1982; 48(5):254-9.
9. Ranganathan S, Menon T, Selvi GS, Kamalam A. Effect of socio-economic status On the prevalence of dermatophytosis in Madras. *Indian J Dermatol Venereol Leprol* 1995; 61:16-8.
10. Karmakar S, Kalla G, Joshi KR. Dermatophytosis in a desert district of Western Rajasthan. *Indian J Dermatol Venereol Leprol* 1995; 61:280-3.
11. Bindu V, Pavithran K. Clinico-mycological study of dermatophytosis in Calicut. *Indian J Dermatol Venereol Leprol* 2002; 68(5):259-61
12. Madhuri JT, Rama RGR, Joga LD, Ratna KG. Onychomycosis: A significant medical problem. *Indian J Dermatol Venereol Leprol* 2002; 68(6):326-9.
13. Singh S, Beena PM. Profile of dermatophyte infections in Baroda. *Indian J Dermatol Venereol Leprol* 2003; 69:281-3.
14. Allah SS, Nada H, Mokhtar M. Yeast infections as a cause of nail disease in the Western province of Saudi Arabia. *Egypt J Med Lab Sci* 2005; 14:2.
15. Sen SS, Rasul ES. Dermatophytosis in Assam. *Indian J Med Microbiol* 2006; 24:77-8.
16. Veer P, Patwardhan NS, Danle AS. Study of onychomycosis: prevailing fungi and pattern of infection. *Indian J Med Microbiol* 2007; 25:53-6.