Section: DVL

Original Research Article

CLINICAL AND EPIDEMIOLOGICAL PROFILE OF DERMATOPHYTOSIS ALTERED BY MISUSE OF TOPICAL STEROID COMBINATIONS: A RETROSPECTIVE STUDY

Kumari Meenakshi[1], Prabhat Kumar[2], Sujata[3], Kumari Gayatri[4]

[1]*Rajendra Institute of Medical Sciences, Ranchi, Department of Dermatology, Venereology and Leprosy, India.*
[2]*HOD, Department of Dermatology, Venereology and Leprosy, Rajendra Institute of Medical Sciences, Ranchi, India.*
[3]*Senior Resident RIMS Ranchi, India.*
[4]*Senior Resident Kalyan Singh Cancer Hospital Lucknow, India.*

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Corresponding Author:
Dr. Kumari Meenakshi,
Rajendra Institute of Medical Sciences, Ranchi, Department of Dermatology, Venereology and Leprosy, India.
Email: kumarimeenakshi1999@gmail.com

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ABSTRACT

Background: Dermatophytosis has become a chronic, recurrent and increasingly atypical disease in India. Indiscriminate, over-the-counter use of topical fixed-dose combinations (FDCs) containing potent corticosteroids, antifungals and antibiotics is a major contributing factor, producing steroid-modified lesions and tinea incognito. **Aim:** To study the clinical and epidemiological profile of dermatophytosis with special reference to steroid-modified cases.

Materials and Methods: This retrospective study was conducted in the Department of Dermatology, Venereology and Leprosy, RIMS, Ranchi, and included records of 4703 patients with clinically diagnosed dermatophytosis seen between January 2025 and December 2025. Demographic details, clinical type and history of topical steroid/FDC use were extracted from case records and analysed.

Results: Out of 4703 patients, 2855 (60.7%) were male and 1848 (39.3%) female (M:F = 1.5:1). Tinea corporis was the commonest type (2133; 45.3%), followed by tinea cruris (998; 21.2%) and tinea incognito (680; 14.5%). Tinea pedis (4.3%), tinea unguium (4.2%), tinea manuum (3.5%), tinea faciei (2.8%), tinea capitis (2.2%) and tinea barbae (2.0%) were less common. Tinea incognito was significantly more frequent among females (408/1848; 22.1%) than males (272/2855; 9.5%) ($p < 0.001$). The most commonly affected age group was 21–40 years. Commonly misused preparations were FDCs of topical steroids with antifungal and antibiotic components.

Conclusion: A substantial proportion of dermatophytosis patients presented with steroid-modified disease, particularly women. Inappropriate use of topical steroid combinations contributes significantly to the rising burden of chronic, recurrent and atypical dermatophytosis. Public and prescriber awareness and stricter regulation of over-the-counter FDCs are essential for disease control.

Keywords: Dermatophytosis; tinea incognito; topical corticosteroids; fixed-dose combinations; steroid-modified tinea; India.

INTRODUCTION

Dermatophytosis is one of the most common superficial fungal infections encountered in dermatology practice, particularly in tropical and subtropical countries such as India.[1,2] It is caused by dermatophytes belonging to the genera Trichophyton, Microsporum and Epidermophyton, which infect the keratinised tissues of the skin, hair and nails.[1]

In recent years, there has been a marked increase in the prevalence, chronicity, recurrence and severity of dermatophytosis in India.[2,3] Several factors have been implicated, among which the rampant misuse of

over-the-counter topical fixed-dose combinations containing potent corticosteroids, antifungals and antibiotics is considered a major contributor.[3,4]

Topical steroids suppress the local cutaneous immune response, alter the classical morphology of the lesion, and promote fungal persistence. This results in steroid-modified lesions, tinea incognito, extensive disease and increased difficulty in treatment.[4,5] Such patients often lose the typical annular, scaly, centrally clearing plaques with raised margins, and are therefore frequently misdiagnosed and mismanaged.

Data describing the clinical and epidemiological profile of steroid-modified dermatophytosis from eastern India, particularly Jharkhand, are limited. We therefore undertook this retrospective study at a tertiary care centre to document the clinical spectrum of dermatophytosis and the burden of steroid-modified disease.

Aim and Objectives

Aim

- To study the clinical and epidemiological profile of dermatophytosis with special reference to steroid-modified cases.
- Primary objective
- To assess the clinical presentation and epidemiological distribution of dermatophytosis.

Secondary objectives

- To analyse the pattern and duration of topical steroid combination misuse.
- To assess the effect of such misuse on disease severity, extent and chronicity.

MATERIALS AND METHODS

Study design and setting

This was a retrospective, single-centre, record-based study conducted in the Department of Dermatology, Venereology and Leprosy, Rajendra Institute of Medical Sciences (RIMS), Ranchi, Jharkhand, a tertiary care teaching hospital.

Study period and population

Records of patients attending the dermatology outpatient department between January 2025 and December 2025 were reviewed. A total of 4703 patients with dermatophytosis were included.

Inclusion criteria

- Patients of all age groups and both sexes.
- Clinically diagnosed cases of dermatophytosis.
- History of prior topical steroid or fixed-dose combination use (for steroid-modified cases).

Exclusion criteria

- Incomplete medical records.

Data collection

Data were retrieved from outpatient case records, including age, sex, clinical type of dermatophytosis, history of prior topical medication (duration of use where recorded) and clinical photographs. Diagnosis was clinical; in some patients, in addition to the clinical diagnosis, KOH mount was performed, and in some patients fungal culture was done, in cases where there was diagnostic doubt. Cases with loss of classical morphology attributable to prior topical steroid use were labelled as steroid-modified tinea (tinea incognito).

Statistical analysis

Data were entered in Microsoft Excel and analysed using IBM SPSS Statistics for Windows, version 26.0 (IBM Corp., Armonk, NY, USA). Categorical variables are expressed as frequencies and percentages. Association between sex and clinical type was assessed with the chi-square test; $p < 0.05$ was considered statistically significant.

Ethical considerations

The study was approved by the Institutional Ethics Committee, RIMS, Ranchi. Informed consent was obtained from the patients, including for the use of their clinical photographs. Patient identity was kept confidential; no identifying features appear in the photographs.

RESULTS

A total of 4703 patients with dermatophytosis were included. There were 2855 males (60.7%) and 1848 females (39.3%), a male-to-female ratio of 1.5:1. Young adults aged 21–40 years were most commonly affected.

The clinical distribution is shown in Table 1 and Figures 1 and 2. Tinea corporis was the most common type (2133; 45.3%), followed by tinea cruris (998; 21.2%). Steroid-modified disease (tinea incognito) was seen in 680 patients (14.5%), making it the third most common presentation. Tinea pedis (202; 4.3%), tinea unguium (200; 4.2%), tinea manuum (166; 3.5%), tinea faciei (130; 2.8%), tinea capitis (102; 2.2%) and tinea barbae (92; 2.0%) accounted for the remainder.

Table 1: Clinical distribution and prevalence of various types of dermatophytosis in the study population (N = 4703)

Type of dermatophytosis	No. of cases	Percentage (%)
Tinea corporis	2133	45.3
Tinea cruris	998	21.2
Tinea incognito (steroid-modified)	680	14.5
Tinea pedis	202	4.3
Tinea unguium	200	4.2
Tinea manuum	166	3.5
Tinea faciei	130	2.8
Tinea capitis	102	2.2
Tinea barbae	92	2
Total	**4703**	**100**

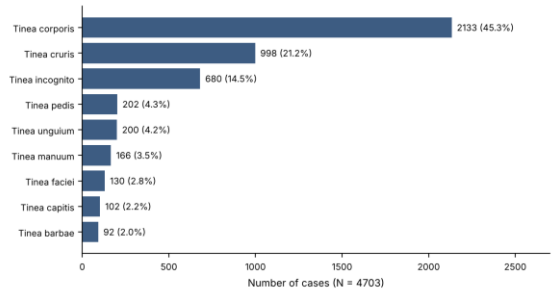


Figure 1: Distribution of clinical variants of dermatophytosis (N = 4703)

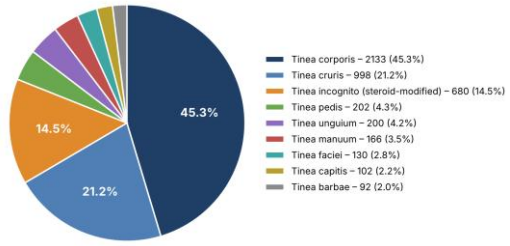


Figure 2: Pie chart showing the proportional distribution of the different types of dermatophytosis (N = 4703)

During the rainy season, an increase in the number of dermatophytosis cases was observed.

Sex-wise distribution is shown in Table 2 and Figure 3. Males predominated in tinea corporis (50.1% of males vs 38.1% of females), tinea cruris (24.8% vs 15.7%) and tinea barbae (all 92 cases were male). In contrast, tinea pedis, tinea manuum, tinea faciei and tinea unguium formed a larger proportion of cases among females. Tinea incognito accounted for 22.1% (408/1848) of female patients compared with 9.5% (272/2855) of male patients ($\chi^2 = 142.9$, df = 1, $p < 0.001$); females made up 60.0% of all tinea incognito cases.

Table 2: Sex-wise distribution of clinical types of dermatophytosis

Clinical type	Male n (%)	Female n (%)	Total
Tinea corporis	1429 (50.1)	704 (38.1)	2133
Tinea cruris	708 (24.8)	290 (15.7)	998
Tinea incognito	272 (9.5)	408 (22.1)	680
Tinea pedis	77 (2.7)	125 (6.8)	202
Tinea unguium	80 (2.8)	120 (6.5)	200
Tinea manuum	74 (2.6)	92 (5.0)	166
Tinea faciei	55 (1.9)	75 (4.0)	130
Tinea capitis	68 (2.4)	34 (1.8)	102
Tinea barbae	92 (3.2)	0 (0.0)	92
Total	**2855 (100.0)**	**1848 (100.0)**	**4703**

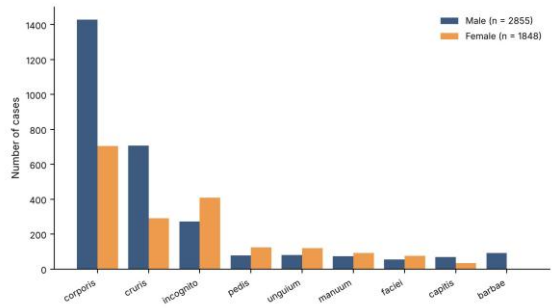


Figure 3: Sex-wise distribution of clinical variants of dermatophytosis (N = 4703)

Representative clinical photographs of steroid-modified dermatophytosis are shown in Figures 4–6. Patients showed extensive, ill-defined erythematous confluent plaques with loss of the classical annular margins and minimal scaling, involvement of intertriginous areas, and, in some, secondary bacterial infection.



Figure 4: Extensive, ill-defined erythematous confluent plaques over the lower abdomen and bilateral thighs with loss of classical annular margins and minimal scaling – features suggestive of steroid-modified tinea (tinea incognito)



Figure 5: Tinea incognito involving intertriginous areas – ill-defined erythematous plaques over the inframammary folds, groins and gluteal region



Figure 6: Extensive tinea incognito with secondary infection due to steroid misuse.

Pattern of topical steroid use: The most commonly misused preparations were fixed-dose combinations containing a potent steroid with antifungal and antibiotic agents. The duration of use varied among patients: in some patients it was less than 1 month, in some it was 1–3 months, and in others it was more than 3 months.

DISCUSSION

Dermatophytosis has shown a changing clinical pattern in recent years, largely attributed to the widespread misuse of topical corticosteroids and fixed-dose combinations.[2–4] In this large retrospective series of 4703 patients, tinea corporis (45.3%) and tinea cruris (21.2%) were the leading clinical types, in keeping with the pattern of the Indian epidemic of superficial dermatophytosis described by other authors.[2,3]

A notable finding was that 14.5% of all patients presented with steroid-modified disease (tinea incognito). Topical steroids suppress the local immune response, resulting in atypical morphology, extensive disease, poor response to treatment and frequent recurrences.[4,5] The high proportion observed here reflects the easy over-the-counter availability of potent topical steroids and steroid-containing combinations in the Indian market.[3,6]

Males constituted 60.7% of the study population, and young adults aged 21–40 years were most commonly affected. This is the economically active group, more likely to be exposed to heat, humidity, sweating, occlusive clothing and close contact, all of which favour dermatophyte infection, and may also self-medicate or seek quick relief from pharmacies. Interestingly, although males predominated overall, tinea incognito was proportionately more than twice as common in females (22.1% vs 9.5%). Possible explanations, which our data cannot test, include greater use of over-the-counter creams for cosmetic concern, involvement of covered and intertriginous sites, delayed presentation, or differences in health-seeking behaviour; this deserves prospective evaluation. The exclusive male occurrence of tinea barbae is expected on anatomical grounds.

The most commonly misused preparations were triple/quadruple FDCs. These combinations contain very potent or potent steroids and are frequently dispensed without prescription, or prescribed by non-dermatologists, for any itchy rash. Their use produces rapid initial symptomatic relief, encouraging repeated use, followed by relapse with larger and more atypical lesions. Local effects such as striae, atrophy, telangiectasia and secondary bacterial infection, as seen in our patients (Figures 4–6), add to the morbidity.[5,6]

Recalcitrant and recurrent dermatophytosis is multifactorial, and altered antifungal susceptibility of dermatophytes has also been reported from India.[2,3] Management of steroid-modified disease therefore requires cessation of steroid-containing creams, systemic antifungal therapy where appropriate, measures against reinfection, and counselling.[7] Our findings support calls for stricter regulation of over-the-counter sale of steroid combinations, restricting such FDCs, training of pharmacists and general practitioners, and public awareness campaigns.[3,6]

Strengths

The study is based on a very large sample from a tertiary referral centre in eastern India, a region from which such data are scarce, and it is supported by clinical photographs.

Limitations

- Retrospective design with possible incomplete records.
- Recall bias regarding steroid use.
- Mycological confirmation (KOH/culture) was not done in all cases.
- Single-centre study, limiting generalisability.

CONCLUSION

Inappropriate use of topical steroid combinations has significantly contributed to the rising burden of chronic, recurrent and atypical dermatophytosis. Tinea corporis and tinea cruris remain the commonest presentations, but steroid-modified disease accounted for nearly one in seven patients and was disproportionately common in women. Strengthening awareness among patients, pharmacists and prescribers, and regulating the misuse of over-the-counter steroid-containing fixed-dose combinations, are key to effective disease control. Prospective, multicentre studies with

mycological confirmation and antifungal susceptibility testing are recommended.

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