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ATYPICAL AND UNUSUAL PRESENTATIONS OF DERMATOPHYTOSIS—RISK FACTORS, CHRONICITY, AND RECURRENCE RATES AT A TERTIARY CARE CENTRE IN BIHAR.

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Abstract

Background: Dermatophytosis, a superficial fungal infection caused by keratinophilic fungi, has evolved from a self-limiting infection to a chronic, relapsing disease in India. The rising trend of atypical morphologies and treatment resistance has become a major public health concern. Data from Eastern India, particularly Bihar, remain scarce.

Aims:

To document atypical and unusual clinical presentations of dermatophytosis and to identify risk factors associated with chronicity and recurrence in patients attending a tertiary care centre in Bihar.

Methods:

A hospital-based, cross-sectional study was conducted over six months (February–July 2025) in the Department of Dermatology, Venereology, and Leprosy. All consecutive patients with clinically diagnosed dermatophytosis were included. Clinical data regarding lesion morphology, duration, recurrence, comorbidities, and risk factors such as topical steroid use and hygiene practices were recorded. Fungal confirmation was done by 10% KOH and culture in doubtful cases. Statistical analysis was performed using the Chi-square test and logistic regression, with $p < 0.05$ considered significant.

Results:

Of 788 enrolled patients, the mean age was 32 ± 7 years, with a male-to-female ratio of 3:2. The predominant forms were tinea corporis (55.7%) and tinea cruris (37%), while 26% showed atypical morphologies such as steroid-modified (21%), pseudoimbricata-like (3%), and follicular variants (2%). Chronic dermatophytosis (>6 months) was seen in 44%, and recurrence within six weeks occurred in 23%. Significant risk factors for chronicity included topical steroid misuse ($p < 0.01$), diabetes mellitus ($p < 0.05$), and positive family history ($p < 0.05$). Recurrence correlated with poor adherence, short treatment duration, and the presence of infected household contacts.

Conclusion:

Dermatophytosis in Bihar exhibits a high burden of chronic, recurrent, and atypical cases. Misuse of topical corticosteroid combinations, metabolic comorbidities, and familial clustering contribute significantly to persistence and relapse. Early diagnosis, regulation of steroid misuse, patient education, and antifungal resistance monitoring are essential to control this emerging epidemic.

Keywords: Dermatophytosis, chronic tinea, recurrent tinea, steroid misuse in tinea, and antifungal resistance

Introduction

Dermatophytosis, a superficial fungal infection caused by keratinophilic fungi, has become a significant public health concern in India, with reports of an epidemic-like surge in prevalence and severity over the past decade. Traditionally considered a mild and self-limiting infection, it is now increasingly observed with chronic, recurrent, and atypical clinical morphologies, particularly in the Indian subcontinent (1,2).

Multiple factors have contributed to this epidemiological shift. Widespread misuse of over-the-counter topical corticosteroid–antifungal–antibacterial combinations has resulted in steroid-modified and bizarre presentations (3). Hot and humid climate, overcrowding, poor hygiene, and clothing habits act as local risk enhancers (4). Host-related factors, including diabetes, obesity, anaemia, and immunosuppression, have also been implicated (5). Further, antifungal resistance, particularly against terbinafine, has been increasingly documented in India (6).

Studies from different regions of India have reported unusually high rates of chronic and recurrent dermatophytosis, with persistence of lesions for months to years and frequent relapses shortly after therapy (7,8). However, regional variations exist, and there is a paucity of systematically collected data from Eastern India, especially Bihar, where climatic conditions, socio-economic factors, and healthcare practices may contribute uniquely to the clinical burden.

This study was undertaken to document atypical and unusual presentations of dermatophytosis, identify associated risk factors, and assess chronicity and recurrence rates among patients attending a tertiary care centre in Bihar.

Methodology

Study design and setting

This was a hospital-based, observational, descriptive cross-sectional study conducted in the Department of Dermatology, Venereology, and Leprosy at a tertiary care teaching hospital in Bihar over 6 months (February 2025 – July 2025).

Study population

All consecutive patients presenting with clinically suspected dermatophytosis were screened. Those fulfilling eligibility criteria and providing informed consent were included.

Inclusion criteria

- Patients of any age and gender with clinically diagnosed dermatophytosis.
- Patients consenting to participate and follow-up.

Exclusion criteria

- Patients with other dermatoses mimicking dermatophytosis (psoriasis, eczema, pityriasis rosea) without mycological confirmation.
- Patients who had received systemic antifungals in the preceding 4 weeks.
- Severely immunocompromised patients (advanced HIV, chemotherapy) to reduce confounding.

Data collection

A structured proforma was used to record demographic details, clinical history (duration, recurrence, family history, hygiene practices, clothing habits, topical steroid use, prior antifungal therapy), and comorbidities (diabetes, obesity, anaemia, etc.).

Clinical evaluation
All patients underwent a detailed dermatological examination. Morphology, distribution, and extent of lesions were recorded. Atypical or unusual variants (steroid-modified, pseudoimbricata-like, follicular, eczematized, extensive, facial/periorbital, and nail/hair involvement) were specifically documented (1,7). Chronicity was defined as persistence of lesions beyond 6 months despite treatment, while recurrence was defined as reappearance within 6 weeks after clinical cure (8).

Laboratory confirmation
Skin scrapings, nail clippings, and hair samples were subjected to a 10% potassium hydroxide (KOH) mount and fungal culture on Sabouraud's dextrose agar for confirmation in doubtful cases (9).

Statistical analysis
Data were entered into Microsoft Excel and analysed using SPSS version 26.0. Descriptive statistics were applied for baseline characteristics. Chi-square test and logistic regression were used to identify risk factors associated with chronicity and recurrence. A *p-value* <0.05 was considered statistically significant.

Ethical considerations
Institutional Ethics Committee approval was obtained before study initiation. Written informed consent was taken from all participants or guardians (in case of minors). Confidentiality and anonymity of data were maintained.

Results
A total of ***788 patients*** with clinically suspected dermatophytosis were enrolled, of which most were clinically diagnosed, and ***76 (9.6%)*** were confirmed by KOH and/or culture. The mean age was ***32 ± 7 years***, with a male-to-female ratio of ***3:2***. The majority (***81%***) belonged to the 15–45 years age group.

Clinical spectrum
- The most common presentation was tinea corporis (***55.7%***), followed by tinea cruris (***37%***).
- A majority of the patients ***(74%)*** presented with *Tinea corporis et cruris.*
- Atypical morphologies were observed in ***26%*** patients, including steroid-modified tinea (***21%***), pseudoimbricata-like (***3%***), follicular dermatophytosis (***2%***), and eczematized forms.
- Extensive involvement (>20% BSA) was recorded in ***14%*** cases.

Risk factors
- Topical steroid/combination cream misuse: ***21%***.
- Family history/household clustering: ***14%***.
- Comorbidities: diabetes mellitus-***37%***, obesity ***22%***, anaemia ***8%***.
- Behavioural: sharing clothes/towels, poor hygiene, occlusive clothing.

Chronicity and recurrence
- Chronic dermatophytosis (>6 months duration) was seen in ***44%***.
- Recurrence within 6 weeks of cure occurred in ***23%*** cases.
- Multivariate analysis revealed steroid misuse ($p < 0.01$), diabetes ($p < 0.05$), and family history ($p < 0.05$) as significant predictors of chronicity.
- Recurrence correlated with poor adherence ($p < 0.05$), short treatment duration ($p < 0.01$), and household contacts with active infection ($p < 0.05$).

Table 1. Demographic and clinical profile of study participants

Variable	n (%)
Mean age (years)	32 ± 7 years
Male : Female ratio	3:2
Common clinical forms	Tinea corporis (55.7%), tinea cruris (37%), tinea faciei (11%)
Atypical variants	Steroid-modified (21%), pseudoimbricata-like (3%), follicular (2%)

Table 2. Risk factors associated with chronicity and recurrence

Risk factor	Chronic cases (%)	Recurrent cases (%)	p-value
Topical Steroid Use	**32**	**47**	**<0.01**
Diabetes Mellitus	**21**	**37**	**<0.05**
Family History	**18**	**11**	**<0.05**
Occlusive Clothing	**27**	**23**	**<0.05**

Clinical Images

Fig.1: Tinea corporis with ICD due to application of *Zalim lotion*.

Fig.2: Tinea cruris with ICD due to application of *Derobin*.

Fig.3: Tinea Imbricata

Fig.4: Tinea pseudoimbricata with secondary infection.

Fig.5: Extensive Tinea corporis et cruris

Fig.6: Extensive recurrent Tinea cruris, religious thread being the culprit.

Fig.7: Tinea corporis with secondary infection.

Fig.8: Tinea pedis with eczematization.

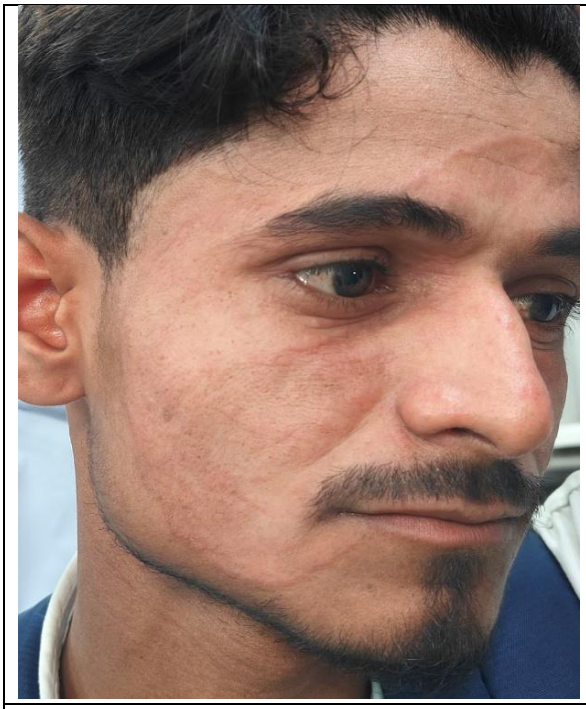

Fig.9: Steroid-modified tinea faciei

Fig.10: Steroid-modified tinea auricularis extending to the beard and scalp.

Fig.11: Tinea of Vellus hairs

Fig.12: Ring within ring appearance of tinea corporis.

Discussion

Our study highlights the alarming rise in atypical, chronic, and recurrent dermatophytosis in Bihar. Steroid-modified tinea was the most frequent atypical form, similar to multicentric data from India, where inappropriate fixed-dose steroid combinations have been strongly implicated (1,3,10). Pseudoimbricata-like lesions and follicular dermatophytosis also emerged, mimicking other dermatoses and delaying diagnosis, as noted in recent case series from South Asia (11).

Chronic disease (>6 months) was seen in ***44%*** of patients, in line with Dogra & Uprety (2) and newer studies showing chronicity in nearly one-third of Indian patients (12). Recurrence rates in our study (***23%***) mirror the findings of Verma & Madhu (7) and recent epidemiological surveys that document relapse rates of 30–50% (13,14).

Risk factors identified — diabetes, obesity, steroid misuse, and familial clustering — reflect both host and iatrogenic contributions. Environmental conditions (humid climate, overcrowding, clothing habits) unique to Bihar further perpetuate transmission, echoing observations by Narang et al. (4) and a recent multicentric survey (15).

Emerging antifungal resistance is an additional concern. Recent Indian studies (16,17) have documented high terbinafine resistance in *Trichophyton mentagrophytes* ITS genotype VIII, which could partly explain therapeutic failures and recurrences in our population. This emphasises the need for antifungal stewardship and consideration of itraconazole-based regimens, as recommended in updated Indian expert consensus statements (18).

Conclusion

Dermatophytosis in Bihar is no longer a simple superficial infection but a chronic, relapsing condition with atypical morphologies and high recurrence rates. Multifactorial risk factors — host, environmental, and treatment-related — drive this epidemic. Early recognition of atypical forms, curbing steroid misuse, ensuring treatment adherence, and incorporating antifungal resistance monitoring are crucial to effective control.

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