

**Epidemiological Study of Steroid-Modified Tinea in the Chest and Abdomen Regions: Analysis of 500 Cases in Moradabad, India**Abhyuday Tiwari<sup>1\*</sup>, Sanath Aithal<sup>2</sup><sup>1</sup>Private practitioner, Apex Hospital, University Road, R. K. Puri, Gwalior 474011<sup>2</sup>Professor, KMCHHSR (KMCH Institute of Medical Sciences & Research), 99a.Avinashi Road, Coimbatore-641014

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Conflict of interest: Nil

**Abstract:**

**Background:** Skin diseases, particularly dermatophytoses, are a global health concern affecting millions worldwide. The widespread and inappropriate use of topical steroids has emerged as a significant contributing factor to the modification and exacerbation of dermatophytoses, posing challenges in diagnosis and management.

**Material and Methods:** A Prospective Observational Cross-Sectional Study was conducted at the department of Dermatology, Venereology, and Leprology of Teerthanker Mahaveer Medical College and Research Centre in Moradabad, India. The study included 500 participants aged 1-70 years with a history of topical and/or systemic corticosteroid use and positive KOH results. Pregnant women were excluded. The 18-month study aimed to explore atypical patterns associated with steroid-modified tinea corporis.

**Results:** Among the 500 patients, the majority (37.6%) were in the 21-30 age group, and males constituted 67% of cases. Topical steroid use was prevalent, with a mean of 17 formulations per patient. Notably, no nodules were observed in lesions on the chest and abdomen. Central clearing was absent in 95.3% of cases, and depressed margins were present in 77.6%. Erythema was noted in 58.9% of lesions. Scaling was absent in 69.8%, while papules and pustules were present in 26.6% and 4.2%, respectively.

**Conclusion:** Steroid-modified tinea corporis presents a growing public health concern in India, leading to atypical and chronic presentations challenging conventional treatment. Understanding diverse clinical patterns and risk factors is crucial for effective management and prevention. The study underscores the need for targeted interventions to curb steroid misuse, mitigating the rising burden of dermatophytosis. The escalating prevalence demands comprehensive strategies for nuanced diagnosis and treatment.

**Keywords:** Steroid-Modified Tinea Corporis, Dermatophytosis, Atypical Patterns, Topical Steroids, Public Health, Clinical Study.

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**Introduction**

Skin diseases, particularly dermatophytoses, present a significant global health concern, affecting millions of individuals across diverse demographics. In recent years, the inappropriate and widespread use of topical steroids has emerged as a major contributing factor to the modification and exacerbation of dermatophytoses, leading to challenges in diagnosis and management.

Dermatophytoses, commonly known as ringworm infections, are fungal infections of the skin that can manifest in various forms, causing discomfort and distress to those affected. The misuse of topical steroids, often driven by self-medication practices, has been identified as a crucial factor in the altered presentation and increased resistance of dermatophytoses. Moradabad, a city in northern India, provides a unique setting for this study due

to its diverse population, varied socio-economic backgrounds, and a healthcare landscape that often witnesses a complex interplay of traditional and modern treatment approaches.

The manuscript delves into the challenges faced by healthcare practitioners in distinguishing steroid-modified tinea from other dermatological conditions, emphasizing the importance of a nuanced understanding of patient history and the cultural factors influencing treatment-seeking behavior. The primary aim of this study is to investigate the various unusual and atypical patterns associated with steroid-modified tinea corporis.

## Material and Methods

It is a Prospective Observational Cross-Sectional Study with a sample size of 500 and duration of 18 months. The study was conducted on the patients coming to the department of Dermatology, Venereology and Leprology of Teerthanker Mahaveer Medical College and Research Centre.

### Inclusion Criteria

- Patients willing to participate in the study.
- All cases of tinea corporis from 1-70 years of age.[7]
- History of topical and/or systemic corticosteroid use.[7]
- KOH positive cases.

**Exclusion Criteria:** Pregnant women.

### Methodology

The methodology for the 10% KOH mount involves a systematic process for the examination of skin scrapings to detect fungal elements. Firstly, the suspicious area is meticulously scrubbed with 70% ethyl alcohol to ensure cleanliness and prevent contamination [7]. Subsequently, scales are collected from the periphery using a sterile number 15 scalpel blade, and if lesions are present in other areas, additional skin scrapings are gathered and processed separately. On a glass slide, a few drops of 10% KOH are added to the collected sample, and the preparation is covered with a cover slip.

The sample is then left for duration of 15-20 minutes to enhance sensitivity. Following this incubation period, all samples are meticulously examined under a microscope for the presence of fungal elements in the Potassium hydroxide (KOH) 10% mount. This method ensures a thorough and detailed analysis of skin scrapings to identify potential fungal infections, contributing to the accuracy of diagnosis and subsequent treatment decisions.

### Observation and Results

The present study was conducted on a total of 500 patients who presented to the out-patient department or in-patient department. The most common age group to which patients belonged to was 21-30 years. They constituted 37.6 percent of the cases. The second most common age group was 11-20 years at 22.2 percent. Among the cases, most patients belonged to male gender which constituted 67 percent of the cases. Among the study group, mean number of topical steroid formulation used by a patient was 17.

The minimum number of topical steroid formulations used was 1 and maximum was 100. Out of all the patients, only 18 had used injectable steroids. The compound used by all the patients was dexamethasone. The study involved 500 patients and their body surface area (BSA) involvement was examined. The analysis revealed a varied distribution, with the percentage of BSA involvement ranging from 1.00% to 60.00%.

**Table 1: Central clearing on the lesions of chest & abdomen**

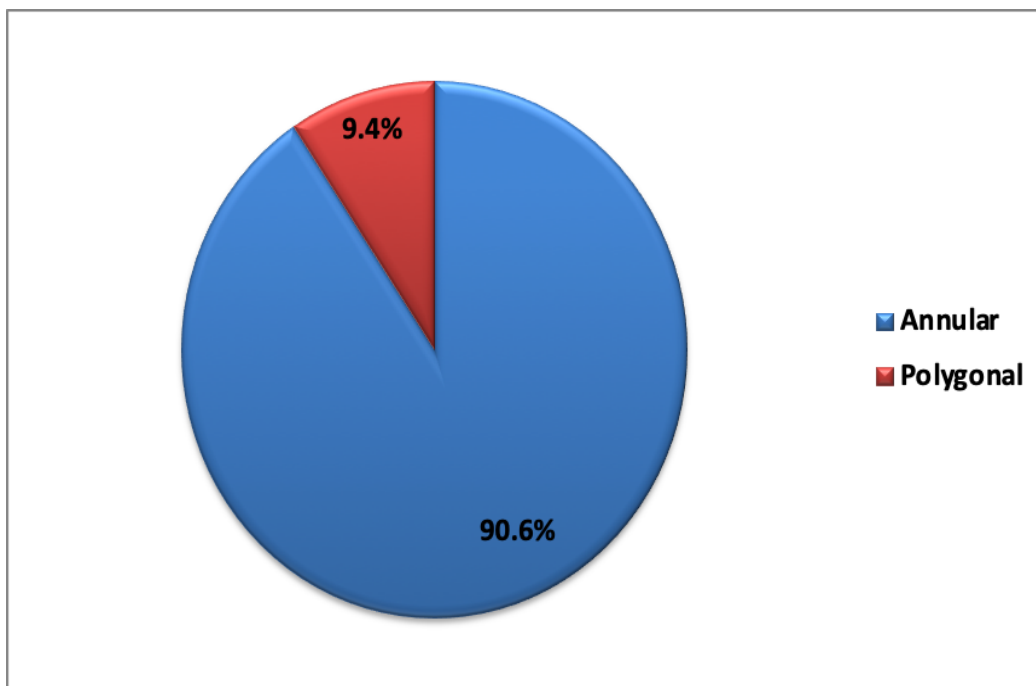
Central Clearing	Frequency	Percent
Absent	183	95.3
Present	9	4.7
<b>Total</b>	<b>192</b>	<b>100.0</b>

Table 1 presents data on the presence or absence of central clearing in lesions observed on the chest and abdomen. Among the total of 192 cases examined, a significant majority, comprising 183 cases (95.3%), exhibited lesions without central clearing. In contrast, central clearing was identified in 9 cases (4.7%).

**Table 2: Margins whether depressed or elevated on the lesions of chest & abdomen.**

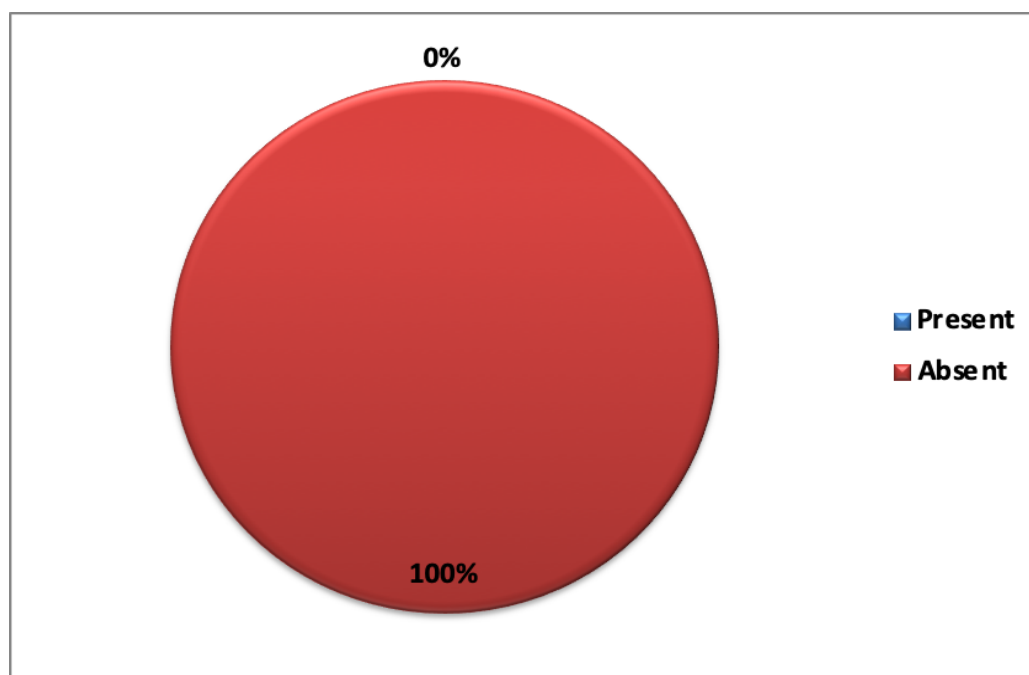
Margins	Frequency	Percent
Depressed	149	77.6
Elevated	43	22.4
<b>Total</b>	<b>192</b>	<b>100.0</b>

Table 2 detailing the margins of lesions on the chest and abdomen reveal that among the 192 cases examined, a majority of lesions, accounting for 77.6%, displayed depressed margins. In contrast, lesions with elevated margins constituted 22.4% of the total cases.



**Graph 1: Shape of the lesions on the chest and abdomen**

The findings from Graph 1 showed that 90.6 % were annular and 9.4 % were polygonal were present



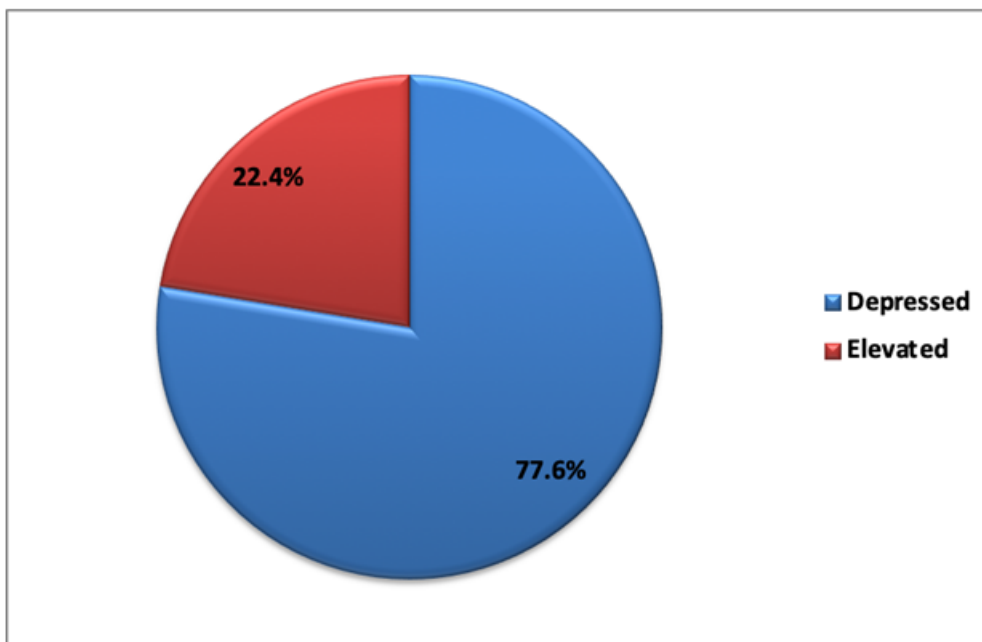
**Graph 2: Nodules in lesions of chest & abdomen.**

The findings from Graph 2 showed that no nodules were present

**Table 3: Erythema on the lesions of chest & abdomen**

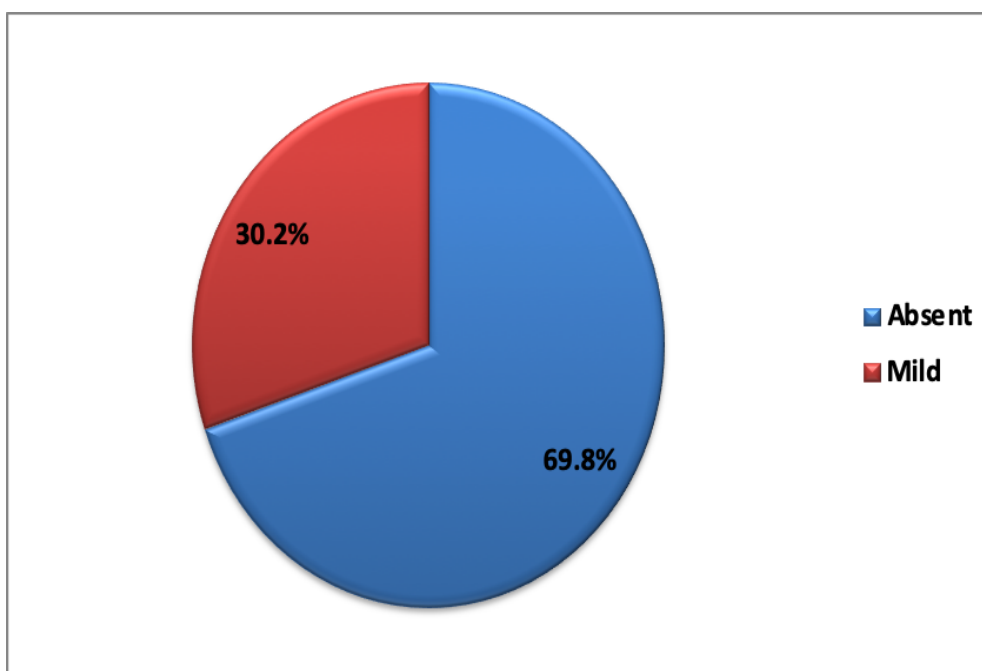
Erythema	Frequency	Percent
Absent	79	41.1
Present	113	58.9
<b>Total</b>	<b>192</b>	<b>100.0</b>

Table 3 shows that Erythema is present on 58.9 % of the lesions of chest & abdomen



**Graph 3:**

Graph 3 shows that 77.6 % have depressed Margins and 22.4 have elevated margins on the lesions of chest & abdomen.



**Graph 4: Scaling on the lesion of chest and abdomen.**

Graph 4 shows that Scaling on the lesion of chest and abdomen is absent in 69.8% patients.

**Table 4: Papules in lesions of chest and abdomen**

Papules	Frequency	Percent
Absent	141	73.4
Present	51	26.6
<b>Total</b>	192	100.0

Table 4 shows that Papules in lesions of chest and abdomen is absent in 73.4% patients.

**Table 5: Pustules in lesions of chest & abdomen**

Pustules	Frequency	Percent
Absent	184	95.8
Present	9	4.2
Total	192	100.0

Table 5 shows that Pustules in lesions of chest and abdomen is absent in 95.8% patients.

### Discussion

Existing studies emphasize the varied clinical presentations of steroid-modified tinea, resembling other skin diseases. The current study aligns with global findings, emphasizing the need for nuanced diagnosis and multifaceted interventions to curb steroid misuse. C. Romano et al (2006) studied tinea incognito or steroid modified tinea in which steroid application has modified the clinical appearance of the fungal infection, transforming the typical tinea and mimicking other skin diseases. 200 cases of tinea incognito were observed and the clinical appearance of the infection was lupus erythematosus discoid-like, eczema-like, rosacea-like, especially on the face, impetigo-like and eczema-like on trunk and limbs.

Less often the dermatophytosis resembled psoriasis, purpura, seborrheic dermatitis and lichen planus.[8] Ansar A. et al (2011) studied a total of 6235 patients of dermatophytosis and it revealed that the different patterns of Tinea incognito which is a part of steroid modified Tinea showed that eczema-like was the most common pattern followed by rosacea like and seborrheic dermatitis-like. The most common clinical pattern was Tinea corporis. [10] Kim WJ et al studied Tinea incognito in Korea (2013). It was a study done on 283 patients with tinea Incognito from 25 dermatology training hospitals in Korea. More than half (59.3%) patients were previously treated by non-dermatologists or self-treated.

The most common clinical manifestations were eczema-like lesions, psoriasis-like, and lupus erythematosus-like lesions. The trunk and face were frequently involved, and 91 patients (32.2%) also had co-existing fungal infections. [9] Dutta B et al (2017) did a study on steroid modified dermatophytosis and they found that eczema-like pattern was the most common clinical manifestation. Direct microscopy was positive in 85% of cases.

Pharmacists were responsible for 78% of tinea incognito cases and betamethasone dipropionate was the most common drug used.[11] Dogra S. et al, Narang T. in (2017) found that among the atypical presentations, eczema-like tinea was the most common type of atypical presentation[12]. The need for targeted interventions is paramount, emphasizing a multifaceted approach to counteract the misuse of steroid-containing formulations. Public

health initiatives must focus on raising awareness among healthcare providers, pharmacists, and the general public regarding the detrimental consequences of indiscriminate steroid use in dermatological conditions. Additionally, regulatory measures and guidelines should be reinforced to monitor and restrict the availability of fixed drug combinations that include steroids, thereby curbing their unwarranted use.

Moreover, the study underscores the importance of continuous surveillance and epidemiological studies to track the evolving patterns of dermatophytosis, ensuring a dynamic response to the ever-changing landscape of fungal infections. Collaborative efforts between healthcare professionals, researchers, policymakers, and pharmaceutical industries are imperative to develop and implement evidence-based interventions aimed at reducing the prevalence and impact of steroid-modified tinea corporis. By addressing the root causes and implementing preventative measures, there is a substantial opportunity to alleviate the burden of dermatophytosis in India, ultimately safeguarding public health and well-being.

### Conclusion

The escalating prevalence of steroid-modified tinea corporis in India necessitates comprehensive strategies to address its atypical manifestations. Insights from this study underscore the complexities in presentation and treatment, highlighting the imperative for a nuanced understanding of the interplay between dermatophytosis and steroid misuse. The study's insights into the diverse clinical patterns and risk factors associated with this condition illuminate the complexities in its presentation and treatment. The persistence and exacerbation of cases, often unresponsive to conventional therapeutic approaches, highlight the imperative for a nuanced understanding of the intricate interplay between dermatophytosis and steroid misuse.

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