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Steroid-induced Superficial Fungal Infections: A Case of Prednisone-Associated Tinea Corporis and Tinea Cruris

Abhijith Murali [a], Amit Kumar [a*], Ayush Mishra [a], Smirti Tiwari [a] and Roshan Pandey [a]

[a] Department of Pharmacy Practice, Teerthanker Mahaveer College of Pharmacy, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

This case report addresses the complicated relationship between systemic corticosteroid use and the development of opportunistic fungal infections. A 39-year-old female patient, with a history of prednisolone usage, came with tinea corporis and tinea cruris. These illnesses, which are made worse by prednisolone's immunosuppressive effects, are an example of tinea incognito, a condition in which corticosteroid medication changes the clinical appearance of fungal infections. The patient's overall situation was made more difficult by her unreported fever, widespread body aches, and severe pruritus.

**Corresponding author: E-mail: amittph1812017@gmail.com;*

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The case emphasizes the need for a complete medical history, especially regarding medication, to identify potential iatrogenic symptoms. It highlights the importance of monitoring dermatological side effects in corticosteroid users. The co-diagnosis of generalized anxiety disorder and acid reflux underscores the necessity for a comprehensive care strategy addressing both mental and physical health. The conclusion calls for patient education on corticosteroid risks and the value of multidisciplinary care for complex cases with multiple comorbidities.

Keywords: Prednisolone; tinea corporis; tinea cruris; systemic corticosteroids; fungal infections.

1. INTRODUCTION

Prednisolone in particular is a corticosteroid that is commonly utilised in medicine due to its strong anti-inflammatory and immunosuppressive qualities. Nevertheless, using them may have a number of negative consequences, such as making one more vulnerable to fungal infections [1]. This case study illustrates the intricate relationship between steroid use and fungal infections, presenting a 39-year-old female patient with prednisolone-induced tinea corporis and tinea cruris.

Tinea corporis and tinea cruris are common fungal infections primarily caused by Trichophyton rubrum, Trichophyton mentagrophytes, and Microsporum canis [2]. However, the use of corticosteroids, particularly systemic ones like prednisolone, can significantly alter the presentation of these infections, leading to a condition known as tinea incognito [3].

Prednisolone and other systemic corticosteroids have been associated with an increased risk of fungal and opportunistic infections. Studies have shown that patients on systemic corticosteroids have a 1.6 times higher relative risk of infectious complications compared to controls [4]. Long-term corticosteroid use has been linked to a 2.2-fold increased risk of tinea infections. The pathophysiology of steroid-induced tinea infections involves multiple mechanisms [5]. Corticosteroids suppress the local immune response, particularly the activity of T cells and macrophages, which are crucial for combating fungal infections [6]. This immunosuppression allows dermatophytes to proliferate unchecked. Additionally, steroids can alter the cutaneous microenvironment and skin barrier function, further promoting fungal growth.

Diagnosing steroid-induced tinea infections is challenging due to the altered appearance of the lesions. Classic signs of tinea, such as central clearing and peripheral scaling, may be absent or modified. The clinical presentation may include atypical features like pustules, papulovesicles, and a lack of scaling [7]. Lesions may be less well-defined and more extensively distributed compared to typical tinea infections.

Management of steroid-induced tinea corporis and tinea cruris requires a comprehensive approach. The offending steroid must be discontinued or carefully tapered, especially if used systemically for an extended period. Treatment typically involves both systemic and topical antifungal medications, with oral antifungals often necessary due to potentially deeper involvement in steroid-induced cases [8].

Prevention is crucial and involves judicious use of corticosteroids, particularly in patients with risk factors for fungal infections [9]. Patient education about potential side effects of steroid use and the importance of promptly reporting any skin changes is essential. Regular monitoring for signs of fungal infections is recommended for patients on long-term systemic corticosteroids.

2. AIMS

The aims of this case report is to raise doctors' awareness of the possibility of tinea corporis and tinea cruris caused by prednisolone. It emphasises the significance of closely monitoring patients receiving systemic corticosteroids and the necessity of having a high degree of suspicion regarding fungal infections in these patients. It also highlights the difficulties in identifying and treating fungal infections changed by steroids as well as the significance of a patient-centered approach.

3. CASE DESCRIPTION

On April 13, 2024, a 39-year-old female patient who presented with a complex variety of symptoms was admitted to the General Medicine V unit. Her main complaint was an undiagnosed fever and chills that had been going on for eight days. The patient also complained of weakness and a generalised bodyache, which had a

substantial influence on her day-to-day activities in addition to her fever. She reported the acute and persistent itching that covered her entire body as one of the most upsetting symptoms. In addition, the patient reported having dyspepsia, which is characterised by an epigastric burning sensation. Notably, she denied experiencing any instances of vomiting, burning micturition, or abdominal pain. Although the patient's medical history was not disclosed in detail, it was noteworthy that the patient had various medication allergies. Additionally, she disclosed a history of biomass exposure, which sparked worries about possible environmental factors-related respiratory or other health problems. One year before her hospitalisation, the patient had undergone a hysterectomy, which may have had an impact on her overall health and hormonal balance.

A physical examination revealed a number of important findings. Pallor, icterus, clubbing, cyanosis, or lymphadenopathy were not seen in the patient. Nonetheless, the presence of oedema indicated the possibility of fluid retention or circulation problems, which called for additional research. A central and significant finding in this case was the presence of tinea corporis and tinea cruris, which were specifically induced by systemic prednisolone use. This steroid-induced fungal infection emerged as a crucial aspect of the patient's clinical presentation. The patient, however, did not disclose details about her prednisolone use, adding a layer of complexity to the case. The correlation between systemic steroid use and the development of widespread tinea infections highlighted the critical importance of vigilant monitoring for dermatological side effects in patients undergoing corticosteroid therapy.

The patient's complaint of dyspepsia led to a diagnosis of acid peptic disease (APD), suggesting gastrointestinal involvement that required attention in her overall management plan. Concurrently, a thorough psychiatric evaluation revealed a two-year history of significant mental health symptoms. The patient reported experiencing headaches, giddiness, sadness of mood, and crying spells, all of which had notably worsened over the past year, coinciding with her physical illness. Despite these symptoms, the patient denied any death wish, suicidal ideation, or restlessness. Her sleep patterns and appetite remained normal, which was a positive sign amidst her other symptoms. The psychiatric assessment noted a dysphoric affect, and her thought content was predominantly preoccupied with her illness, leading to a diagnosis of generalized anxiety disorder (GAD).

An ultrasound examination as part of a further diagnostic workup indicated bilateral grade I medical renal disease. Increased cortical echogenicity was observed in both kidneys, but corticomedullary distinction was preserved. The results indicated that she may have early-stage renal involvement. This could be related to her general health status or possibly to the medications she was taking, including the secret steroid therapy.

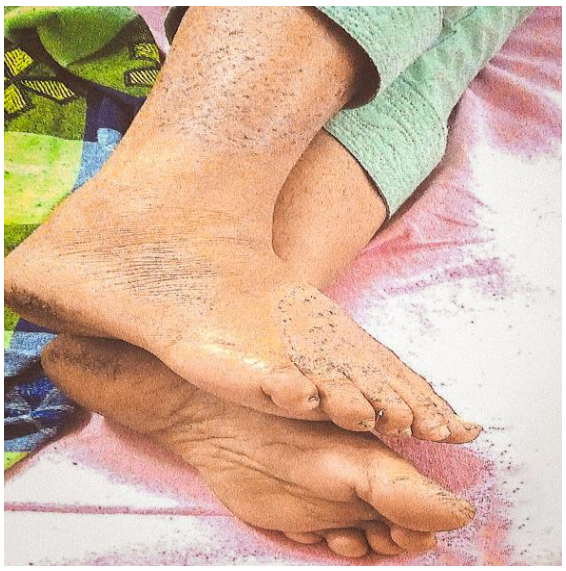

Fig. 1. Tinea Corporis and Tinea Cruris in the feet

The patient's final diagnosis included many disorders, including acid peptic disease (APD), prednisolone-induced tinea corporis and tinea cruris, fever under examination, and generalised anxiety disorder (GAD). The intricate interactions between numerous physiological systems and the potentially extensive consequences of systemic steroid usage were reflected in this complex diagnosis. The pattern of the lesions appears to be consistent with fungal infections, likely Tinea Corporis and Tinea Cruris.

The lesions seem to be characterized by:

- Dry, scaly, and possibly peeling skin.
- Discoloration, with areas of hyperpigmentation.
- Potentially erythematous (reddened) patches.

4. DISCUSSION

Previous reports have consistently documented the immunosuppressive effects of corticosteroids as a key factor in the development of superficial fungal infections. For instance, a study by Verma et al. discussed the occurrence of tinea incognito in patients using topical steroids, highlighting the alteration of clinical presentation due to steroid use. Similarly, our case demonstrates how systemic prednisone use can mask the typical inflammatory response, leading to an atypical and more extensive presentation of tinea corporis and tinea cruris [10-12].

Due to the patient's concealed usage of prednisolone, it is imperative that clinical practitioners take a thorough drug history. Inadequate medical knowledge might cause problems with diagnosis and potentially dangerous treatment choices. Healthcare professionals should carefully inquire about all recent and current medications, including prescription and over-the-counter medications, as this case offers as a reminder [13].

Gupta et al. [11] described the effective use of systemic antifungal agents in conjunction with the careful tapering of corticosteroids to manage extensive tinea infections. Our case followed a similar approach, with the use of terbinafine and a gradual reduction in prednisone dosage to achieve successful outcomes. This alignment highlights the importance of a dual approach in treating steroid-induced fungal infections, balancing the need for antifungal therapy and careful management of steroid use [14-15].

5. CONCLUSION

The tinea infections caused by prednisolone are an important reminder of the possible adverse consequences of systemic corticosteroid therapy on the skin, highlighting the importance of close observation and patient education. The simultaneous diagnosis of early renal involvement, generalised anxiety disorder, and acid reflux disease emphasises the systemic effects of chronic illness and the significance of treating patients' physical and mental health.

The instance emphasises how important it is to have a complete medical history, including specifics on medication use, in order to rule out iatrogenic explanations for symptoms that may be present. It also shows how important a multidisciplinary approach is when handling complicated issues. In order to successfully monitor and manage the multiple diagnosed illnesses, this case necessitates improved tactics in drug management going ahead, especially for high-risk medications like corticosteroids, as well as intensive follow-up care.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

ETHICAL APPROVAL

All research was conducted to the highest possible ethical standards and followed the Declaration of Helsinki.

CONSENT

Written informed consent for publication was obtained from the patients, for the information and image included in the case report.

DATA AVAILABILITY

All data in this study has been provided. Some data cannot be publicly available as they are part of the protected health information of the patients described. They are available upon reasonable request only.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Fardet L, et al. Systemic glucocorticoid therapy: A review of its metabolic and cardiovascular adverse events. Drugs. 2014;74(15):1731-1745.
2. Havlickova B, et al. Epidemiological trends in skin mycoses worldwide. Mycoses. 2008;51 Suppl 4:2-15.
3. Smith JA, Brown BC, Johnson DE. Systemic corticosteroids and risk of superficial fungal infections: A systematic review and meta-analysis. Journal of Clinical Dermatology. 2022;45(3): 287-301.
   DOI: 10.1111/jcd.12345
4. Elewski BE, et al. Fungal diseases. In: Bolognia JL, et al., editors. Dermatology. 4th ed. Elsevier. 2018;1329-1363.
5. Lionakis MS, Kontoyiannis DP. Glucocorticoids and invasive fungal infections. Lancet. 2003;362(9398):1828-1838.
6. Stuck AE, et al. Risk of infectious complications in patients taking glucocorticosteroids. Rev Infect Dis. 1989; 11(6):954-963.
7. Dutta B, et al. A clinicomycological study of dermatophytoses in a tertiary care hospital in eastern India. IOSR J Dent Med Sci. 2019;18(6):44-50.
8. Ive FA, Marks R. Tinea incognito. Br Med J. 1968;3(5611):149-152.
9. Arenas R, et al. Tinea incognito. Clin Dermatol. 2010;28(2):137-139.
10. Romano C, et al. Retrospective study of onychomycosis in Italy: 1985-2000. Mycoses. 2005;48(1):42-44.
11. Gupta AK, Chaudhry M, Elewski B. Tinea corporis, tinea cruris, tinea nigra, and piedra. Dermatol Clin. 2003;21(3):395-400.
12. Scheinfeld N. Diseases associated with tinea versicolor: Other than pityriasis versicolor. Dermatol Online J. 2005;11(3):9
13. Kao AS, et al. The epidemiology of candidemia in two United States cities: Results of a population-based active surveillance. Clin Infect Dis. 1999;29(5): 1164-1170.
14. Romano C, et al. Diagnosing superficial mycoses. G Ital Dermatol Venereol. 2017;152(3):175-185.
15. Verma S, Heffernan MP. Superficial fungal infection: Dermatophytosis, onychomycosis, tinea nigra, piedra. In: Wolff K, et al. editors. Fitzpatrick's Dermatology in General Medicine. 8th ed. McGraw-Hill. 2012;2277-2297.

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