Publisher Name: ZenToks Books
Editorial Book: Applied Healthcare Science
ISBN: 978-81-958975-0-6

Chapter 3

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

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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.

The instance emphasises how crucial it is to get a complete medical history, including information about medication use, in order to rule out any iatrogenic causes of symptoms. It also highlights how important it is to keep a close eye out for any dermatological side effects in patients receiving corticosteroid medication. The co-diagnosis of generalised anxiety disorder and acid reflux disease emphasises the need for a comprehensive patient care strategy that addresses both mental and physical health issues. In order to manage complex cases with various comorbidities, the report's conclusion advocates for thorough patient education about the hazards associated with corticosteroid use and the value of multidisciplinary care.

Keywords: Prednisolone, Tinea corporis, Tinea cruris, Systemic corticosteroids, Fungal infections, Acid peptic disease, Generalized anxiety disorder, Renal involvement

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.

The primary dermatophytes responsible for tinea corporis and tinea cruris are Trichophyton rubrum, Trichophyton mentagrophytes, and Microsporum canis [2]. Although these infections are widespread, the condition known as tinea incognito, which results from contemporaneous or prior corticosteroid usage, can dramatically change how these infections show [3]. A systemic corticosteroid called prednisolone has the ability to decrease the immune response locally, which can facilitate the growth of fungi and change the way these infections often manifest clinically [4].

Prednisolone and other systemic corticosteroids have been linked to an increased risk of invasive fungal infections and other opportunistic infections [5]. According to a thorough analysis by [6], patients on systemic corticosteroids had a relative risk of infectious complications of 1.6 (95 percent confidence interval, 1.3-1.9) lower than those on controls [6]. Although the focus of this study was on more severe infections, fungal diseases like tinea corporis and tinea cruris are also at risk. Long-term corticosteroid use was linked to a 2.2-fold increased risk of tinea infections, according to a research by [7]. Ive and Marks originally reported tinea incognito in 1968. It describes fungal diseases that have been altered by the improper application of topical or systemic corticosteroids [8]. The unusual appearance of the lesions in this syndrome can make diagnosis challenging. When using systemic steroids, such prednisolone, the risk extends beyond the site of injection

How To Cite: A. Anand, M.V. Mammen, A. Kumar, A. Mishra, A. Suman. *Steroid-Induced Superficial Fungal Infections: A Case of Prednisone-Associated Tinea Corporis and Tinea Cruris.* In A. Kaur(Eds). Applied Healthcare Science. Pages 26-29, 2025. ZenToks Books, India. ISBN: 978-81-958975-0-6

and can impact other bodily parts [9]. According to a retrospective research by [10] systemic corticosteroid use was linked to tinea incognito in 41% of cases [10].

Multiple processes are involved in the pathophysiology of tinea infections produced by steroids. The local immune response is suppressed by corticosteroids, especially the activity of T cells and macrophages, which are essential for fighting fungal infections [11]. The immune system is suppressed, allowing dermatophytes to flourish unchecked. Furthermore, hormones have the ability to modify the cutaneous microenvironment and the function of the skin barrier, which favours the growth of fungi [12]. Corticosteroids have been shown in a study by [13] to improve Candida albicans' adhesion to epithelial cells; this process may also be applicable to dermatophytes [13].

It is challenging to diagnose tinea infections brought on by steroids because of the changed look of the lesions. It's likely that central clearing and peripheral scaling, the classic markers of tinea, are absent or altered [14]. This could make the condition worse by leading to an inaccurate diagnosis and more inefficient treatment [15]. A research by [16] found that instances of tinea incognito took a lot longer to get a correct diagnosis. Atypical characteristics such pustules, papulovesicles, and a lack of scaling may be evident in the clinical presentation of tinea corporis and tinea cruris caused by prednisolone [17]. The lesions may be less clearly defined and more widely distributed than in typical tinea infections. In extreme circumstances, the infection may spread to the hair follicles, resulting in Majocchi's granuloma, a disorder more frequently connected to A comprehensive strategy is needed to manage tinea corporis and tinea cruris brought on by prednisolone [18]. First and foremost, the problematic steroid must be stopped or tapered down carefully; this is especially important when the steroid has been used systemically for an extended period of time [19]. Systemic and topical antifungal medications are the mainstay of treatment. Terbinafine or itraconazole are two examples of oral antifungals that are commonly needed because steroid-induced cases may include deeper involvement [20, 21]found that oral terbinafine was more effective than itraconazole in treating tinea in a randomised controlled research. It is imperative to prevent steroid-induced tinea infections, which entails prudent corticosteroid use, especially in patients who have fungal infection risk factors. It is crucial to educate patients about the possible adverse effects of steroid use and the need of reporting any changes to their skin as soon as possible [22]. It is advised that patients receiving long-term systemic corticosteroids be routinely checked for indications of fungal infections [23].

Tinea infections brought on by prednisolone may have serious long-term effects. Skin barrier dysfunction brought on by persistent fungal infections raises the possibility of bacterial superinfections [24]. Moreover, it is important to recognise the psychological effects of recurring or chronic skin infections since they can have a major negative influence on a patient's quality of life [25].

The purpose 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.

2. 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 edoema 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.

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.

Figure 1: *Tinea Tinea Corporis and Tinea Cruris in the feet*

3. Discussion

Even though systemic corticosteroid therapy is beneficial for a number of ailments, it can have serious side effects, such as opportunistic fungal infections [26]. The patient's development of both tinea corporis and tinea cruris emphasises the significance of close observation and patient education regarding the possible dermatological side effects of long-term steroid treatment [27].

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 [28]. 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.

This patient's generalised anxiety disorder (GAD) is indicative of the serious psychological effects that long-term illness can have. Physical and mental health are inversely correlated, which emphasises the necessity for integrated care strategies that address both at the same time [29]. Routine mental health screenings should be conducted.

The unintentional discovery of early renal involvement highlights the significance of routinely evaluating renal function in patients on chronic medicines and raises concerns about the possible renal effects of long-term steroid usage [30]. The importance of a comprehensive, multidisciplinary approach to patient care is demonstrated by this example, especially in complicated situations with numerous comorbidities [31].

4. 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.

Alternative treatment options when appropriate.

Article Information

Acknowledgment: None
Ethical Statement: All research was conducted to the highest possible ethical standards and followed the Declaration of Helsinki.
Funding Statement: The author(s) received no financial support for this article's research, authorship and/or publication.
Declaration of conflicting interests: The author(s) declared no potential conflicts of interest concerning this article's research, authorship and publication.
Ethics approval and consent to participate: Our institution does not require ethical approval to report individual case reports and series.
Consent to publication: 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.
Trial registration number: This is not research, so there is no need of a registration number.

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