CLINICAL VIGNETTE

Unmasking the Hidden: A Case of Tinea Incognito with Majocchi's Granuloma

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Case

A 51-year-old female presented to outpatient dermatology with concerns about a persistent annular rash with erythematous papules on her left knee (Figure 1, Figure 2). She reported intermittent recurrences of the rash over the past two years. Previous treatment with clobetasol 0.05% cream provided symptomatic relief but failed to fully resolve the rash. At an outside dermatology office, a skin scraping was performed to test for tinea corporis, which was negative for a fungal infection, and she was subsequently diagnosed with eczema. She had not undergone any prior biopsies and had no significant dermatological or medical history. Her review of systems was otherwise unremarkable, and her physical exam was notable for an annular scaly patch on the anterior left knee with several erythematous perifollicular papules. To further evaluate the lesion, a 4-mm punch biopsy was performed on the left knee and a fungal skin culture was submitted. The patient was advised to discontinue the clobetasol cream pending the results of the biopsy.

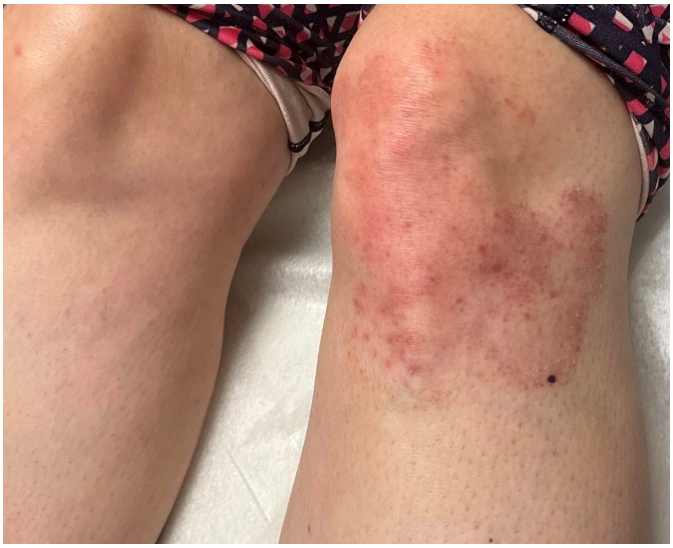

Figure 1.

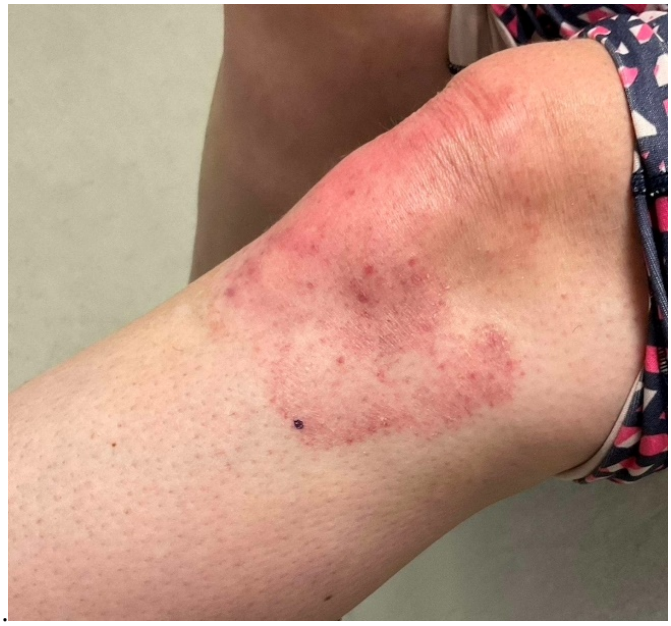

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Figure 2.

The punch biopsy revealed positive results on Grocott-Gömöri's methenamine silver (GMS) stain and the periodic acid-Schiff with diastase (PAS-D) stain, which highlighted fungal elements. Fungal skin culture results were pending at the time. A diagnosis of tinea incognito with Majocchi's granuloma was established. The diagnosis was discussed with the patient, and she was started on ketoconazole 2% cream twice a day. The patient returned a month later reporting that the rash had shown slow improvement with the ketoconazole cream. She was subsequently prescribed 250 mg of terbinafine daily for four weeks and advised to return for follow-up in one month. At her follow-up appointment, the patient noted complete resolution of the rash (Figure 3, Figure 4). Fungal skin cultures were negative, and liver enzyme tests remained within normal limits. The patient was advised to continue applying ketoconazole cream 2% twice daily for an additional month and to return if there were any signs of recurrence.

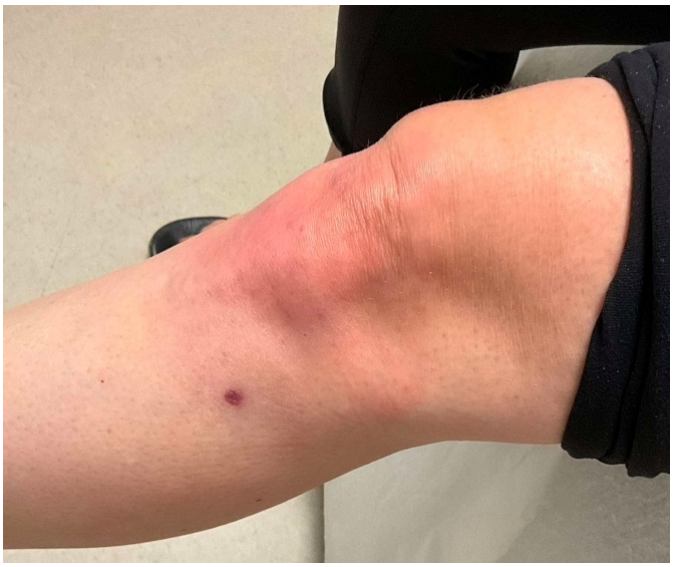

Figure 3.

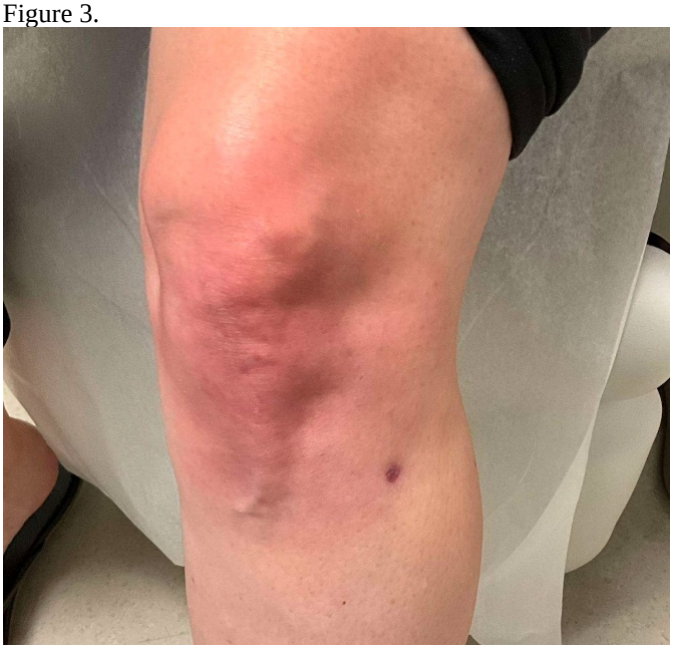

Figure 4.

Discussion

Tinea incognito (TI) is a superficial dermatophyte infection that is masked and exacerbated due to the use of topical or systemic corticosteroids or other immunosuppressive agents. These treatments may be prescribed for pre-existing conditions or due to a misdiagnosis of the fungal lesion.[1-4] TI is most commonly caused by *Trichophyton rubrum*, followed by *Trichophyton mentagrophytes* and *Microsporum canis*.[2] While it typically presents as an erythematous, scaly rash with pruritus, its appearance differs from tinea corporis.[1,3] TI has less prominent, less scaly margins, often lacks an annular shape, and may present with blisters or pustules.[1-3] As a result, diagnosing TI can be challenging due to its atypical clinical presentation and because it mimics other common dermatological conditions such as eczema, psoriasis, seborrheic dermatitis, rosacea, folliculitis, and cutaneous lupus erythematosus.[1-4] If left untreated or improperly treated, TI can become more severe or chronic, potentially leading to complications such as the invasion of deeper tissues and hair follicles.[1,3,5] One such complication is Majocchi's granuloma, a rare fungal infection of the hair follicles and dermis, most commonly caused by the dermatophyte *Trichophyton rubrum* and less frequently caused by non-dermatophytes such as the *Aspergillus* species.[1,5,6] It results in a granulomatous and suppurative perifolliculitis, with lesions presenting as granulomas, plaques, papules, pustules, and nodules.[5,6] Over recent years, the incidence of TI has increased, partly due to the rise in prescription and availability of topical corticosteroids for common medical conditions.[1-4] TI is also quite difficult to diagnose and the condition is often first encountered by non-dermatological providers.[4] Accurate diagnosis and treatment are necessary for effective management of this condition.

Diagnosis begins with a thorough history and physical examination, typically revealing signs of a potential fungal infection in the affected area, such as erythema and scaling.[1-4] As seen in our patient, a diagnosis of TI is often missed due to the atypical clinical presentation of the lesions, highlighting the importance of multiple diagnostic modalities for accurate diagnosis.[1-5] These include non-invasive dermoscopy, which reveals concentric erythema and scales, follicular micropustules and dark black spots surrounded by a yellow halo. Mycological examination using skin scrapings and potassium hydroxide solution (KOH), fluorescence microscopy for specimen staining and visualization can also help clarify the diagnosis.[1-4] These diagnostic methods vary in effectiveness depending on the quality of the specimen and the clinician's expertise.[1] Currently, fungal skin culture remains the preferred method for diagnosing TI, but it presents challenges, such as long wait times (up to four weeks) and occasional false negatives due to low fungal counts.[1-3,6] Therefore, in some cases, a biopsy—the most invasive option—may be necessary to establish a diagnosis, particularly if Majocchi's granuloma is suspected.[1-3,6] Biopsies are examined under microscope using PAS-D and/or GMS stains to detect fungal elements.[1] A diagnosis of TI should be suspected in patients with non-resolving or worsening rash, especially if it persists for weeks, months, or even years after being treated with corticosteroids.

Once a diagnosis is confirmed, treatment begins with discontinuation of the corticosteroid or other immunosuppressive agents, followed by the initiation of an antifungal regimen.[1-3,5] This should be supplemented with preventative management recommendations, such as wearing loose clothing, effective hygiene practices, and implementing other supportive measures for symptomatic relief and minimize recurrence risk. For mild and localized infections, treatment typically involves topical antifungal medications, such as ketoconazole 2%, clotrimazole 1%, miconazole 2%, econazole 1%, and terbinafine 1% creams, applied to the affected area one to two times a day for several weeks or until the rash clears.[1] For more severe or extensive infections, including those involving hair-bearing regions or hair follicles, such as in Majocchi's granuloma, or when topical agents alone are insufficient, oral antifungal medications may

be prescribed.[1,5] These include terbinafine 250 mg daily for 2-4 weeks, itraconazole 100-200 mg daily for 1-2 weeks, and fluconazole 150-200 mg weekly for 2-6 weeks, with Majocchi's granuloma requiring a more prolonged treatment of 4-6 weeks and at times extending up to 6 months.[1,5,6] The duration of treatment depends on the type and severity of the infection and ranges from a few weeks to several months. It is also important to note that some systemic antifungal agents may cause adverse effects, making it essential to perform regular laboratory tests prior to and during treatment, as dosing may need to be adjusted accordingly.[1,4] Side effects to be aware of include thrombocytopenia, hepatitis, cholestasis, liver failure, peripheral edema, hypokalemia and other non-specific gastrointestinal symptoms. Lastly, physicians should stress the importance of completing the full course of treatment to fully clear the infection and should schedule follow-up with patients to ensure treatment success and avoid recurrence.

An often-missed diagnosis, TI should be highly suspected in patients with an erythematous, scaly rash that has been previously treated with corticosteroids and is not improving. The challenge in identifying TI lies in that its clinical presentation often mimics other more common skin conditions and that standard diagnostic methods, such as fungal skin cultures, may yield negative results. Therefore, a comprehensive approach involving a thorough history, physical examination, and multiple diagnostic tests may be needed. Once diagnosed, timely discontinuation of corticosteroids and initiation of antifungal therapy, coupled with follow-up visits, is essential for ensuring resolution and preventing recurrence.

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