

## Plaque Patterned Cutaneous Candidiasis on the Lower Legs: A Case Report

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Diabetes mellitus (DM) is a metabolic disorder that causes chronic hyperglycemia, leading to immune dysfunction and increased vulnerability to infections. As a result, patients with DM are more susceptible to fungal infections, including *Candida* species, due of their weakened immune systems. Cutaneous candidiasis is a fungal infection that appears as a red plaque with peripheral satellite papules and pustules around the periphery. Patients with chronic mucocutaneous candidiasis may have erythematous plaques and thickened skin thickening with an overlying scale, which can mimic plaque psoriasis. Therefore, fungal infections should be considered when assessing chronic refractory psoriasiform lesions that are difficult to treat, especially in patients with DM. This report describes a case of cutaneous candidiasis in both lower legs, which was initially misdiagnosed as psoriasis.

**Key Words:** Cutaneous candidiasis, Diabetes mellitus, Psoriasiform candidiasis

### INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder characterized by chronic hyperglycemia that may produce long-term complications like retinopathy, neuropathy, and nephropathy<sup>1</sup>. Several immune alterations have been described in patients with diabetes, including progressive worsening of cellular immunity<sup>2</sup>. Thus, patients with DM are more prone to fungal infections than healthy individuals. Cutaneous candidiasis is a common infection associated with DM<sup>3</sup> that manifests as bright red plaques that can be erosive, dry, scaly, oozing, or macerated; pustules and collarette scales may also be present<sup>4</sup>. Clinically, cutaneous candidiasis lesions may show morphologies similar to those of other diseases, such as psoriasis, characterized by well-demarcated, thick, scaly, erythematous plaques, which could confuse clinicians. Here, we report a

case of cutaneous candidiasis in the lower legs of a patient with uncontrolled DM.

### CASE REPORT

A 67-year-old woman visited the hospital with complaints of painful, scaly plaques and crusts on both her lower legs, along with a one-year history of severe nail dystrophy (Fig. 1). Her past medical history was significant for DM, hypertension, and hyperlipidemia. The lesions first appeared as 5-6 erythematous papules on her left foot after receiving her first COVID-19 vaccination. After the second dose, she developed additional erythematous scaly papules and plaques on the left foot, and new annular erythematous lesions appeared on the right foot. She was diagnosed with an allergic reaction

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Fig. 1. Demarcated erythematous scaly plaques and crusts are evident on the patient's legs and feet.



Fig. 3. The bilateral lower extremity lesions appear improved after 5 months of antifungal treatment.

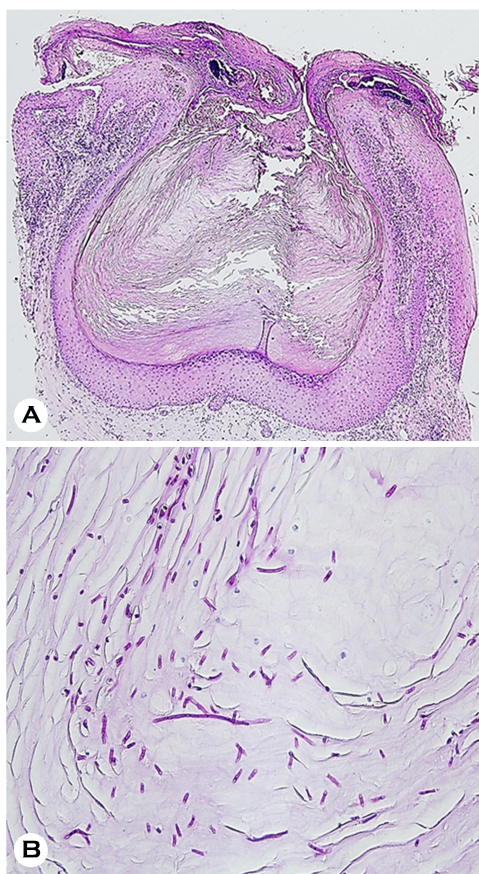


Fig. 2. Histopathological examination reveals follicular plugging with numerous fungal spores and hyphae (A: H&E stain 40 $\times$ , B: D-PAS stain 400 $\times$ ).

to the vaccine at a local clinic and was prescribed oral and topical steroids. However, after four months of treatment,

the lesions became painful and began to ooze. Another local clinic diagnosed her with psoriasis and prescribed topical steroids; however, the lesions did not improve and she was referred to the dermatology department.

On assessment, she had wide-spread painful, demarcated erythematous scaly plaques and crusts on both feet and lower legs and severely dystrophic toenails. No abnormal findings were observed during the system review. Blood tests showed elevated blood glucose (250 mg/dL; normal values: 70~99 mg/dL) and HbA1c levels (10.7%; normal range: 4.3~5.6%). The results of the complete blood count, liver function test, and renal function test results were all within normal limits. With the initial impression of plaque psoriasis and fungal infection, a KOH smear, fungal culture, and skin biopsy were performed. The KOH smear revealed numerous hyphae, confirming superficial fungal infection. Skin biopsy with H&E and D-PAS staining showed follicular plugging and crusts with numerous fungal spores and hyphae, which implied *Candida* infection rather than dermatophyte infection (Fig. 2). The fungus cultured from skin lesions isolated from *Candida albicans*. The final diagnosis was chronic cutaneous candidiasis, for which antifungal treatment with oral itraconazole (200 mg daily) and topical amorolfine cream twice daily for 5 weeks. Unfortunately, the lesions did not improve substantially, and the treatment was changed to oral fluconazole 150 mg weekly with topical sertaconazole cream for 5 weeks. After switching to fluconazole, her skin and nails started to significantly improve (Fig. 3).

## DISCUSSION

People with DM are susceptible to various skin diseases,

from infectious to autoimmune<sup>5</sup>. This is because they experience prolonged hyperglycemia and insulin deficiency, which makes them more vulnerable to infections, neuropathy, suppression of cytokine production, defective phagocytosis, immune cell dysfunction, and a suboptimal immune response against bacteria<sup>6</sup>. Patients with DM also have a higher likelihood of developing cutaneous fungal infections due to their high blood sugar levels, with a relatively high incidence of tinea pedis and onychomycosis<sup>5</sup>.

*Candida* yeasts are common in the environment and can be found on human skin and in the oropharyngeal, respiratory, gastrointestinal, and genital areas<sup>9</sup>. These yeasts can cause various infections, from mild mucosal or skin issues to severe, life-threatening, and invasive infections<sup>7</sup>. *Candida* skin infections are quite common, affecting people of all ages and accounting for about 1% of all outpatient visits to dermatological clinics and 7% of all inpatient visits<sup>8</sup>. Some of the most common fungal pathogens that cause skin and nail infections include *Candida albicans* and *Candida tropicalis*<sup>11</sup>. Typically, the infection begins with a pruritic rash that contains vesiculopustules, which then enlarge and often progress to maceration and erythema. The affected area has a scalloped border with a white rim of necrotic epidermis surrounding the erythematous macerated base, and satellite lesions are frequently observed<sup>11</sup>. *Candida* folliculitis is mainly found in hair follicles and rarely becomes extensive<sup>11</sup>. While all body regions may be involved, the most common areas affected are intertriginous areas, such as the groin folds, abdominal skin folds, inframammary folds, and interdigital spaces<sup>4</sup>.

Cutaneous candidiasis is a fungal infection that affects the skin. While it can be treated with antifungal medication, its clinical presentation can be similar to that of other skin conditions, leading to delayed diagnosis and treatment. Misdiagnosis of cutaneous candidiasis occurred in a case of cutaneous candidiasis that mimicked acute generalized exanthematous pustulosis (AGEP). A 67-year-old male with multiple comorbidities presented with pruritic pustular eruptions and fever (38.2°C). Because he was previously treated with a 7-day course of antibiotics for bacteremia, the initial diagnosis was AGEP. However, a KOH examination and fungal culture revealed a cutaneous *Candida* infection, and the patient responded well to topical and oral antifungals. Zhang et al.<sup>10</sup> reported in the case of an otherwise healthy 21-year-old male who presented with facial cutaneous candidiasis, which manifested as acne-like lesions, including papules, comedones, pustules, and cysts on both cheeks. He was initially diagnosed with acne; however, the lesions worsened despite treatment with oral minocycline. Because the fungal culture revealed *C. albicans*, topical and oral antifungals were

prescribed, and the skin lesions improved. Patients with chronic mucocutaneous candidiasis may present with erythematous scaly plaques that resemble plaque psoriasis<sup>9</sup>.

Current treatments for cutaneous candidiasis typically involve topical and oral therapies with anti-inflammatory, antibacterial, and antifungal effects<sup>8</sup>. A systematic review of treatment strategies found that topical clotrimazole, nystatin, and miconazole were equally effective<sup>8</sup>. Fluconazole is currently the only evidence-based option for systemic treatment<sup>8</sup>.

Skin lesions caused by candidiasis can often resemble other skin diseases, making diagnosing difficult. If misdiagnosed and treated with steroids, it can further complicate the condition and delay proper treatment. Therefore, conducting a complete examination and taking a detailed medical history is crucial to ensure a correct and prompt diagnosis, especially in patients with multiple underlying health issues.

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## CONFLICT OF INTEREST

In relation to this article, we declare that there is no conflict of interest.

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## PATIENT CONSENT STATEMENT

The patient provided written informed consent for the publication and the use of her images.

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