Uncommon Presentation of Benign Dermatofibroma of Thigh: A Case Report

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Dermatofibromas (DF) are small, noncancerous skin lesions typically found in the dermis layer of the skin and are often composed of a variable combination of inflammatory cells, which classically present as a firm, nonpainful, skin-colored nodule on the extremities or trunk. We present a case of a 53-year-old woman with a medical history of psoriasis who had bilateral leg swelling, erythema, and dry skin for which she underwent a punch biopsy of the left thigh. The punch biopsy sample was found to be a dermatofibroma, which was negative for malignancy or atypia. The skin rash and associated symptoms were due to Candida intertrigo, which was treated with broad-spectrum antibiotics and fluconazole. Following this, she was discharged and prescribed a course of fluconazole and linezolid for continued treatment of Candida intertrigo. This case report describes a rare presentation of benign dermatofibroma.

Keywords: *rash; psoriasis; histiocytes; spindle cells*

INTRODUCTION

Dermatofibromas (DFs) are common, benign skin tumors that are often found on the extremities or trunk. They are most often found in the dermis layer of skin and are composed of a variety of histiocytes.[1] The histological and clinical presentations of DF can differ widely as it has been noted to clinically present as a nodule, papule, or plaque.[2] Further, DF can have a wide variety of histological presentations due to the different compositions of inflammatory cell types and stromal cells.[2] We discuss a unique presentation of dermatofibroma in the case of a 53-year-old woman who presented with a widespread rash due to Candida intertrigo, which was later revealed to contain a dermatofibroma through cytological analysis of a punch biopsy.

CASE REPORT

Consent for this case report was provided by the patient, a 53-year-old woman with a medical history of psoriasis and fibromyalgia presented to the emergency department with a chief complaint of lower back pain that began 3 days prior. The pain was described as sharp, nonradiating, and rated at a severity of 10/10. She further denied any numbness, paresthesia, bowel, or bladder incontinence. The patient noted having an extensive rash present, which included her lower back, face, axilla, cubital regions, abdomen, pannus, and bilateral inner thighs. The rash on the thighs was reported to be itchy, tender, and warm to touch. She was up-to-date on vaccinations, was not immunocompromised, and would occasionally take acetaminophen or ibuprofen for pain relief. She denied fevers, chills, or recent illness but had noticed the rash on her thighs 6 months ago and was initially prescribed an antifungal cream. However, the symptoms did not improve and, in fact, worsened over the last month.

Upon arrival to the Emergency Department, she presented with the following vital signs: pulse: 99 bpm, blood pressure: 125/99, respiratory rate: 23, temperature: 98.8 degrees, and Fahrenheit, SpO_2: 94% saturation on room air. Her hemoglobin A1c was 5.3%, and blood glucose was 105 mg/dL. On physical exam, the patient was found to have a BMI of 52, ill-appearing, and tachycardic. The inferior lumbar and sacral regions of her back had numerous, erythematous satellite patches surrounding a larger central erythematous patch, which were overlying the skin without any additional nodules, vesicles, papules, or pustules present. There was focal tenderness over the sacral and lumbar regions to palpation. Bilateral swelling and tenderness to palpation of

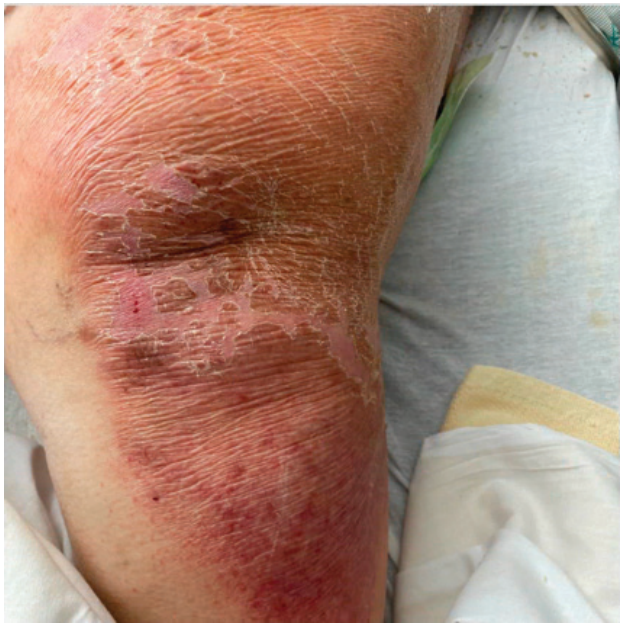

Figure 1. Image of patient's left leg demonstrating erythematous rash, taken on day 4 of hospital stay.

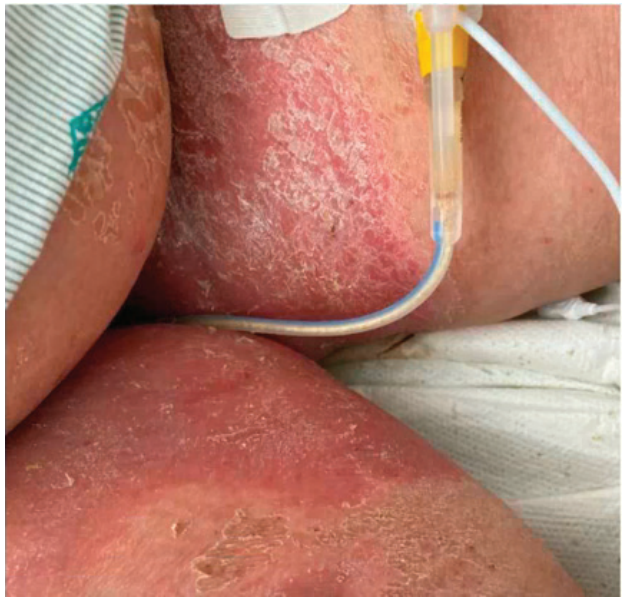

Figure 2. Image of patient's inner thighs demonstrating erythematous rash and urinary foley catheter, taken on day 4 of hospital stay.

thighs were also present on exam. The rash of the thighs appeared as an erythematous patch overlying dry skin of the medial inner thighs bilaterally, extending from the inferior inguinal and hypogastric regions to the superior border of the patella (Figures 1 and 2). No nodules, papules, pustules, vesicles, or bullae were observed on the erythematous patch or elsewhere on her skin. The patient's complete blood count (CBC) was significant for leukocyte count (WBC), neutrophils, absolute neutrophil count, C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), and lactate as seen in Table 1.

The initial diagnosis by the Emergency Department was nonspecific cellulitis. She was then admitted to the Internal Medicine service for sepsis with the same initial diagnosis of nonspecific cellulitis. She received a one-time injection of morphine sulfate 2 mg and was given tramadol 50 mg and ibuprofen 600 mg orally for her back pain, which was likely secondary to obesity-related lumbar disk compression and inactivity. Magnetic resonance imaging of the lumbar region was ordered and found to be unremarkable, further ruling out discitis and abscess formation. The patient was started on broad-spectrum antibiotics (ceftriaxone 1,000 mg and vancomycin 1,500 mg by IV) for suspected bacterial cellulitis of the thighs. Moreover, due to the clinical presentation of the rash on her back, Candida intertrigo was a suspected diagnosis made by the Internal Medicine Team on the second day of her hospital stay as was started on topical miconazole 2% powder. However, despite these interventions, the fungal rash on the trunk and back (Figure 3) persistently worsened. Consequently, fluconazole 400 mg tablet was incorporated into her treatment plan for Candida intertrigo. She underwent a punch biopsy of the left thigh from the intact skin surface overlying the thigh cellulitis as per dermatopathology recommendations, along with a shaved skin biopsy of skin rash from the lower back for further evaluation. The punch biopsy (Figures 4, 5) demonstrated a dermatofibroma, which was negative for atypia or infiltrating malignancy (Figure 6). The shaved skin biopsy of lower back skin was found to be benign lichenoid keratosis.

The patient's progress showed significant improvement, with a noticeable reduction in leg swelling, erythema, and pain. Moreover, her WBC count, lactate, ESR, and CRP demonstrated a consistent downward trend. In light of her decreased back pain and favorable response to treatment, she was discharged on the 7th day of her hospital stay and provided with a prescription for oral fluconazole 200 mg and a 7-day course of linezolid 600 mg for treatment of Candida intertrigo to support her continued recovery. The treatment for the benign

Table 1. Pertinent laboratory findings.

Laboratory studies	Patient's values	Reference values
Leukocyte count (WBC)	15,000 cells/μL	4,000–11,000 cells/μL
Neutrophils	84.4%	40–60%
Absolute neutrophil count	12,700 cells/μL	2,000–6,000 cells/μL
Lymphocytes	9.4%	18–45%
C-reactive protein	7.8 mg/dL	<0.3 mg/dL
Erythrocyte sedimentation Rate	36 mm/h	<20 mm/h
Lactate	3.8 mmol/L	<2.0 mmol/L

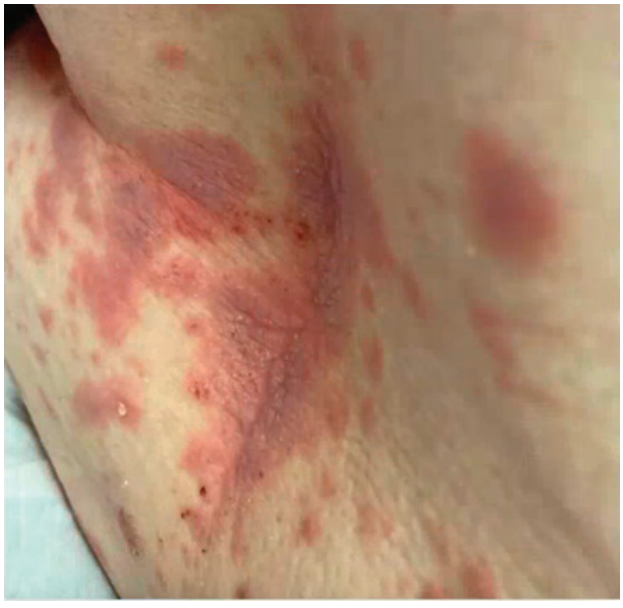

Figure 3. Image of patient's lower back demonstrating erythematous rash, later found to be Candida intertrigo, taken on day 4 of hospital stay.

dermatofibroma was observation and follow-up with a primary care physician for surveillance of any skin changes.

DISCUSSION

In this case, we encountered a unique presentation of DF on the patient's left thigh, underlying an erythematous rash (Figures 1and 2). The rash was diagnosed as Candida intertrigo due to the visual presentation of the rash – a scaly, erythematous plaque – and its location, extending to the patient's skin folds especially around the breast folds, under the pannus, and inner thigh folds. The dermatofibroma was an incidental finding of the punch biopsy of the rash on the left thigh. The patient

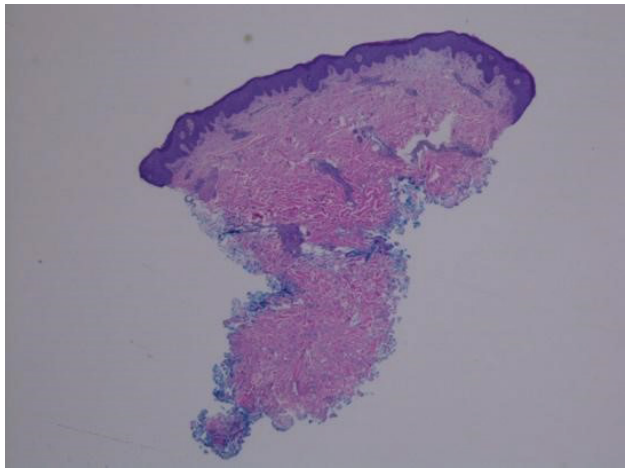

Figure 4. H&E stain of punch biopsy of the left thigh.

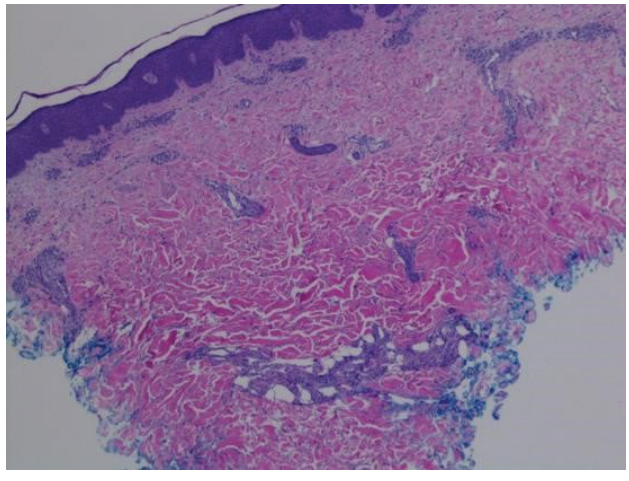

Figure 5. H&E stain of punch biopsy of the left thigh.

denied noticing a palpable nodule or papule on her leg, she further denied any history of trauma, insect bites, or known irritation to the area. This presentation differs

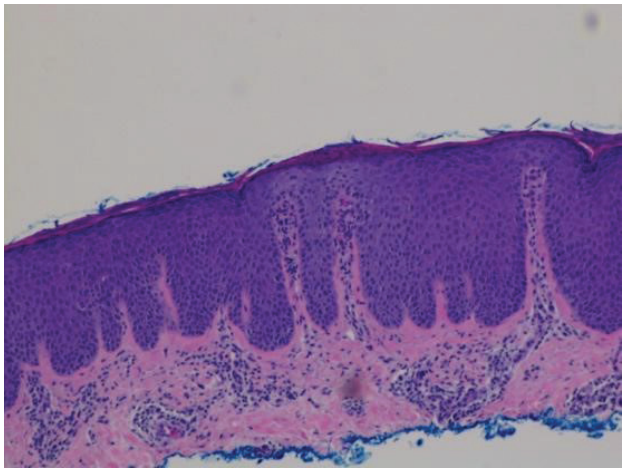

Figure 6. H&E stain of punch biopsy of the left thigh. Demonstrates numerous spindle cells and histiocytes within the dermis layer.

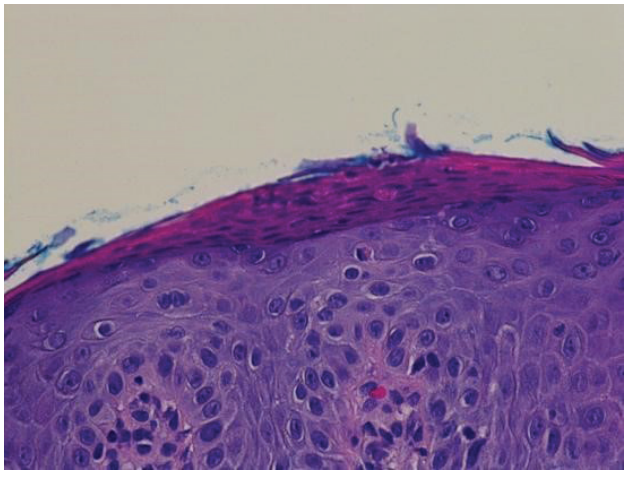

Figure 7. H&E stain of punch biopsy of left thigh. Demonstrates numerous spindle cells and histiocytes within the dermis layer.

from other reported case reports of DF where nodules have been visible on clinical presentation[1,3,4] or associated with known insect bites or trauma.[2,4]. Although some instances of DF presenting as skin-colored plaques have been reported,[2] this patient's DF did not present in the classic skin-colored tone. Nevertheless, the patient did fit the general demographic commonly associated with DF, being a middle-aged[2] woman who presented with DF on a lower extremity – the second most common site following the trunk.[2]

The histopathological analysis of the punch biopsy demonstrated findings that were consistent with a diagnosis of dermatofibroma. For this case, the DF was visualized on H&E stain without additional stains, such as CD34 or S-100, due to low clinical suspicion of melanoma, basal cell carcinoma, or neurogenic tumors as part of the differential diagnosis. The DF was visualized under 20x and 40x magnification and found to be solely within the dermis layer, as is most often the case.[1] Visualization of the lesion revealed the presence of fibrous spindle cells and histiocytes (Figure 7). Due to lack of infiltration into subcutaneous fat,[5] dermatofibrosarcoma protuberans was ruled out as a possible etiology for this sample. Considering that there are only a few cases of reported dermatofibroma metastasis, the vast majority of DF cases are benign[2] including this patient's lesion, no further treatment or tissue sampling was required. DF recurrences have been noted but more commonly with variants, such as cellular dermatofibroma, a benign variant that extends to the subcutaneous layer of the skin, has been noted to recur in 33% of cases and usually around 14 to 15 months after initial lesion excision.[6] There is debate on treatment regarding management of DF as the vast majority of DF are benign and are usually recommended to be left untreated[2] while the reports of several cases of metastatic cellular dermatofibroma[6] argue for excision of the lesion. For this patient, it is recommended that she maintains close surveillance of skin changes in texture, shape, color, and subsequent visit to her physician for further work-up.

Dermatofibroma refers to a benign tumor that is often found in the dermis and rarely in the subcutaneous layer of the skin.[1,7] DFs, or histiocytomas as they are sometimes called,[2] are most often found in the trunk and extremities and are more common in women and middle-aged individuals.[1] The etiology of DF is still being debated, but several possible mechanisms are suggested including that of trauma, ruptured hair follicle, or insect bite-induced.[1] Histologically, the common dermatofibroma is characterized by the presence of a mixture of histiocytoid cells such as lymphocytes or multinucleated giant cells, spindle-shaped fibrous cells, and collagen within the dermis.[1,2,7] DF classically will clinically present as a painless, nodule, papule, or sometimes plaque; however, both histological and clinical presentation can vary widely as there are numerous different types of DF.[1,2] As such, DF can be mistaken both clinically and histologically for other conditions including melanomas, Kaposi sarcomas, and hemangiomas.[2] Although DFs are most often benign, definitive diagnosis is through excisional biopsy and pathological examination,[7] which can

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influence a patient's willingness to have the DF removed versus continuing surveillance.

In recent years, advancements in imaging and molecular techniques have provided valuable insights into the pathogenesis and genetic alterations associated with dermatofibroma. Nevertheless, the challenge remains in distinguishing dermatofibroma from other skin lesions and implementing the most appropriate treatment strategy. Furthermore, the potential for rare variants, atypical locations, and coexisting conditions further highlights the intriguing complexity of this seemingly straightforward cutaneous tumor.

In conclusion, this case presents an atypical manifestation of dermatofibroma, with the lesion hidden beneath an erythematous rash on the patient's thigh. Despite lacking typical nodules and a history of trauma or insect bites, meticulous histopathological analysis confirmed the benign nature of the tumor. This case underscores the importance of considering diverse clinical presentations of dermatofibroma, enabling accurate diagnosis and appropriate management for optimal patient care, which was to not treat the DF in this case and to follow up with her primary care physician for surveillance of any skin changes. Further research into the underlying mechanisms may improve our understanding and ability to diagnose this intriguing cutaneous tumor.

Conflict of interest and funding

The authors whose names are listed in this case report certify that they have no affiliations with any organizations with any financial incentives.

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