

BRIEF ARTICLES

***Microsporium Canis* Infection Presenting As Cutaneous Pseudolymphoma. Case Report And Review Of The Literature**

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ABSTRACT

Microsporium canis cutaneous infection mimicking histopathologically a cutaneous T cell lymphoma is discussed. A 63 year old male presented with pruritic, erythematous thin annular, scaling plaques localized to the forearms, abdomen and left hand. A primary care physician's biopsy raised concern for a cutaneous lymphoma. At the Dermatology clinic, a KOH and fungal culture suggested a dermatophyte infection caused by *Microsporium canis*. The patient was treated with oral fluconazole with resolution of most of the lesions and symptoms. This clinical improvement supported the diagnosis of tinea corporis instead of a cutaneous lymphoma. To the best of our knowledge, this is the first reported case of *Microsporium canis* mimicking cutaneous T-cell lymphoma.

INTRODUCTION

Microsporium canis is taxonomically classified to the Ascomycota phylum and the Arthrodermataceae family. It is a zoophilic dermatophyte infection commonly affecting cats, dogs, and other mammals. The fungi typically affect the hair, the skin, and rarely the nails, causing an ectothrix infection.¹ In humans, *M. canis* causes dermatophytosis, infecting children most frequently. It has been reported to cause tinea capitis, tinea faciei, tinea corporis, tinea pedis, and tinea unguium^[1]. *Microsporium canis* has a worldwide distribution with the highest prevalence in Iran^[1]. Dermatophyte invasion of the skin leads to lymphocytic inflammation in the dermis that, depending on the severity of the reaction, can be confused with malignant lymphocytic infiltration.¹⁻³

We describe a case of a 63 year old patient who presented with pruritic, erythematous, thin, annular, scaling plaques localized to the forearms, abdomen and left hand. The patient was initially treated as an allergic reaction with triamcinolone. A biopsy performed by the patient's primary care physician raised concern for a cutaneous lymphoma. After referral to dermatology, a KOH and fungal culture were performed which suggested a dermatophyte infection caused by *Microsporium canis*. The patient was treated with oral fluconazole for a month and a half with resolution of most of the lesions as well as his symptoms. This clinical improvement supported the diagnosis of tinea corporis instead of a cutaneous lymphoma.

This case illustrates that differentiating between cutaneous pseudolymphoma and

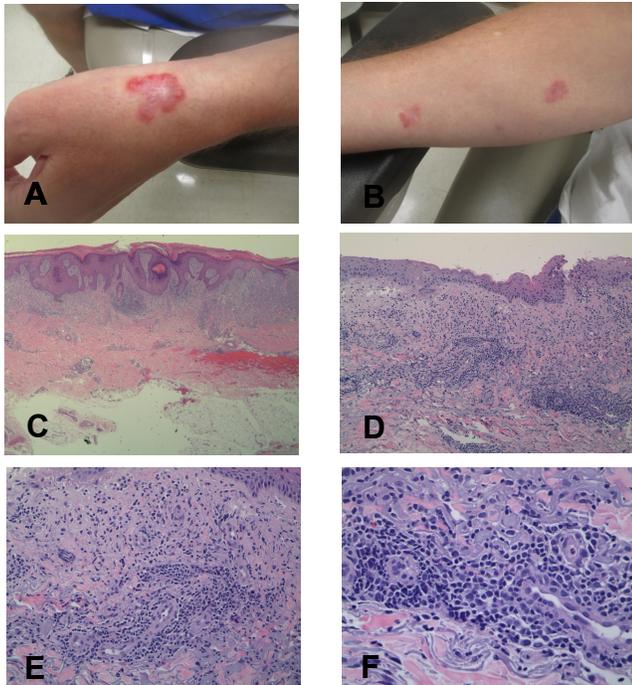


Figure 1 (A) Left hand with erythematous, thin, annular, scaling plaques at presentation to Dermatology Clinic. (B) Right forearm with several erythematous, scaly plaques at presentation to Dermatology Clinic. (C) Low magnification of the right forearm biopsy. (D & E) Perivascular T-lymphocytic infiltration without epidermotropism on H&E 100x and H&E 200x, respectively. (F) Atypical lymphocytes on H&E 400x.

cutaneous lymphoma can be challenging. Proper history, physical exam, and laboratory testing are essential to accurately diagnose cutaneous pseudolymphoma. To the best of our knowledge, this is the first reported case of *Microsporium canis* infection mimicking cutaneous T-cell lymphoma.

CASE REPORT

A 63 year old male with past medical history of hypertension, diverticulosis, and prostate cancer treated with prostatectomy in 2014, presented to his primary care physician (PCP) for evaluation of a rash that initially started on his right forearm about one month prior. The patient started to develop new lesions; five additional lesions appeared on

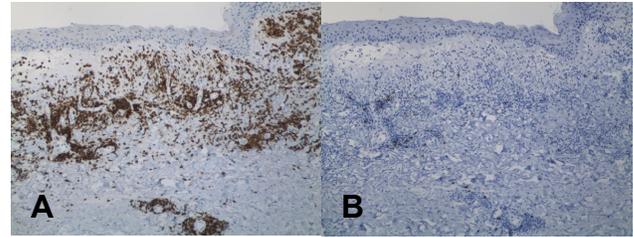


Figure 2: (A) CD 3 immunostaining. The lymphocytic infiltrate clearly shows a positive CD 3 stain. (B) CD 20 immunostaining. The infiltrate is negative for CD 20.

his arms and one on his abdomen (Figure 1A-1B). The lesions were pruritic and occasionally some of the lesions had slight serous drainage. At his initial PCP visit, he was prescribed triamcinolone for presumed allergic reaction. The patient stated that the steroid helped with the itching, however, new lesions appeared on the left hand. The PCP performed a biopsy of the original lesion on the right forearm. It showed atypical perivascular T-lymphocytic infiltrate with CD3 positive, CD20 negative lymphocytes (Figure 2A-B) without apparent epidermotropism, (Figure 1C-F). The patient was told that he had cutaneous lymphoma and was referred to dermatology and oncology.

At the dermatology clinic, the patient stated that he continued to itch and was taking hydroxyzine to relieve his symptoms. The cutaneous lesions raised clinical suspicion for a fungal infection. Significantly, he reported that he was in contact with many stray cats, as he volunteered at an animal shelter on a weekly basis. For this reason, a KOH preparation and a skin biopsy of the left radial wrist were performed. The KOH preparation suggested the presence of dermatophytes (Figure 3C-D). A fungal culture was performed which grew *Microsporium canis* (Figure 3E). The biopsy showed intracorneal hyphae with a positive Periodic Acid-Schiff (PAS)-stain, consistent with tinea corporis, no malignancy. The patient was told that he likely had inflammatory tinea corporis not lymphoma.

November 2018 Volume 2 Issue 6

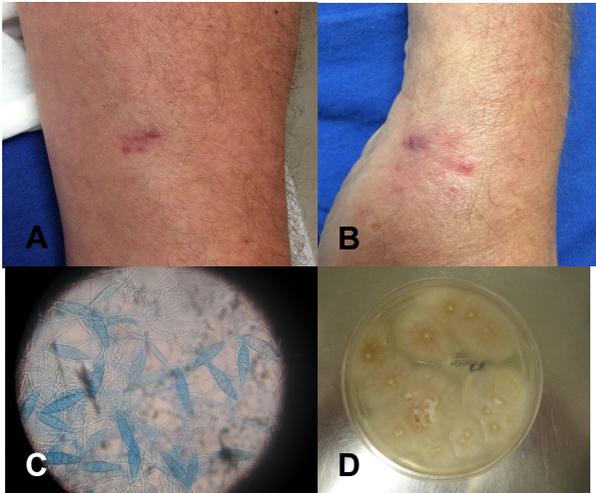


Figure 3: (A) Right forearm with few erythematous papules and postinflammatory hyperpigmentation (PIH). (B) Left hand with PIH and few erythematous papules. (A&B) Resolving lesions after one month of fluconazole treatment. (C) Spindle-shaped, long, thick-walled macroconidia of *Microsporium canis*. (D) KOH preparation showing hyphae under light microscopy. (E) Fungal culture growing *M. canis*.

He was started on Fluconazole 200 mg daily for one month. He returned to clinic one month later, and his lesions had improved significantly. The patient only had a few erythematous papules remaining, with post inflammatory hyperpigmentation. He continued Fluconazole 200 mg daily for another 15 days and was told to avoid animal shelters (Figure 3A-3B). At return to clinic two weeks later, there were no new lesions present, he was essentially clear, and continued to be asymptomatic.

DISCUSSION

The patient presented with pruritic, erythematous, thin, annular, scaling plaques that could be the manifestation of a large number of conditions from benign entities to life-threatening lesions. This patient illustrates a challenging differential diagnosis that ranged from allergic reaction to cutaneous lymphoma. His initial evaluation suggested lymphoma, which on further evaluation, was shown to be a dermatophyte infection.

Pseudolymphoma is an inflammatory response with T-cell and/or B-cell lymphoproliferative infiltrate that may simulate cutaneous lymphoma.² T-cell pseudolymphoma typically presents as an erythematous patch and/or plaque that can have scale. B-cell pseudolymphoma typically manifests as singular or multiple erythematous to purple nodules.⁴ Both tend to have pruritus. This clinical presentation is similar to that of cutaneous lymphoma. There are several known and idiopathic causes that can lead to the development of pseudolymphoma. Organisms that have been reported to cause pseudolymphoma include *Trichophyton rubrum*⁵, *Stenotrophomonas maltophilia*⁶, *Helicobacter pylori*, secondary syphilis, arthropod reactions, and viral infections such as orf, milker's nodule, herpes simplex, herpes zoster, and molluscum contagiosum⁷. Additionally, diseases such as lichenoid pigmented purpuric dermatosis, lichen sclerosus, inflammatory stage of morphea, lupus panniculitis, and contact dermatitis can present as pseudolymphoma. Drug eruption and tattoos have also been linked to developing pseudolymphoma.³

Differentiating a cutaneous lymphoma from pseudolymphoma histopathologically can be challenging. This patient's biopsy showed a CD3-positive and CD 20-negative lymphocytic infiltration, which indicates the presence of only T-cells on histology. Pseudolymphoma classically contains a mixture of T cells, B cells, macrophages, and dendritic cells.³ This case had primarily T cells, which can make the differential diagnosis even more difficult to establish. T-cell lymphomas such as mycosis fungoides, as well as Sézary syndrome would need to be considered. The literature suggests that on histopathology the presence of a mixture of histiocytes, eosinophils, plasma cells and lymphocytes is more suggestive of a

cutaneous pseudolymphoma than of cutaneous lymphoma.⁸ If there is nuclear atypia, it tends to be mild compared to that seen in cutaneous T or B cell lymphoma. Pseudolymphoma does not usually have epidermotropism of T cell infiltrate that is often seen in cutaneous lymphoma.⁹

In this case, *Microsporium canis* infection was the cause of the pseudolymphoma. *Microsporium canis* has been reported as a mimicker of several other diseases. There are reports of *M. canis* causing tinea faciei simulating Sweets syndrome.¹⁰ This dermatophyte has also simulated pemphigus erythematosis¹¹ and neonatal lupus.¹² It is crucial to distinguish between pseudolymphoma and cutaneous lymphoma as it essential for proper treatment of the patient. Proper history, physical exam, KOH fungal preparation, specific staining for potential etiological agents, and cultures are ideal in determining the accurate diagnosis. To the best of our knowledge, this is the first reported case of *Microsporium canis* mimicking cutaneous T-cell lymphoma.

Conflict of Interest Disclosures: None.

Funding: None.

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