

# Cutaneous *Paecilomyces* infection in an immunocompromised patient in the setting of postthrombotic syndrome successfully treated with posaconazole



Edgar Martinez, BS, Travis Vandergriff, MD, and Rebecca Vasquez, MD  
Dallas, Texas

**Key words:** cutaneous; immunocompromised; infection; *Paecilomyces*; postthrombotic syndrome.

## INTRODUCTION

*Paecilomyces* species are common environmental molds that are seldom associated with human infection except for certain pathogenic species, including *P lilacinus*, reportedly imitating cellulitis in both immunocompromised and immunocompetent patients.<sup>1,2</sup>

Modes of cutaneous infection include infection through dog bites and direct inoculation through the colonization of materials such as contaminated skin lotion, incompletely sterilized central venous catheters, contaminated water after flooding, or wounds of mechanical trauma.<sup>1,3,4</sup> Successful therapy often requires the use of a systemic antifungal agent along with surgical debridement in some cases.<sup>5</sup> We present the case of a cutaneous *Paecilomyces* infection in an immunocompromised patient with chronic deep vein thrombosis and postthrombotic syndrome successfully treated with posaconazole.

## CASE REPORT

A 59-year-old man with a history of heart transplant 2 months before presentation presented with a 3-week history of right leg redness, swelling, and pain. His heart transplant had been medically managed with tacrolimus (0.3 mg twice daily) and mycophenolic acid (1080 mg twice daily), and he was treated prophylactically with valganciclovir (450 mg twice daily), nystatin (5-mL swish/swallow), and sulfamethoxazole (400 mg daily) and trimethoprim (80 mg daily). Other medical history was significant for type 2 diabetes, hypertension, deep

vein thrombosis and pulmonary embolism pretransplant with inferior vena cava filter, ulcerative colitis, and venous insufficiency. He reported that the leg problem started after his warfarin was held for 5 days so that an endomyocardial biopsy could be performed. Approximately 1 week after the procedure, he developed swelling, redness, and pain on his right leg. He presented to his transplant physician, who referred him to the emergency department for urgent ultrasonography that revealed a deep vein thrombosis with chronic postthrombotic changes not observed on previous ultrasonography. Blood culture results were unremarkable. His warfarin was discontinued and he began receiving apixaban. He was referred to dermatology from the transplant clinic 1 week later when he did not respond to therapy for what was clinically diagnosed as postthrombotic syndrome.

Physical examination found an edematous right leg with overlying violaceous discoloration and few indurated papules scattered over the anterior aspect of the shin (Fig 1). A few of the papules were complicated by hemorrhagic crust and scale. The affected area was extremely tender to palpation. Polymerase chain reaction study results were negative for herpes simplex virus 1 and 2 and varicella zoster virus. Punch biopsy of an indurated papule on the right lower leg showed suppurative granulomatous dermatitis without any organisms observed on periodic acid–Schiff, acid-fast bacilli, or gram stains. He presented urgently 3 days later after he reported progression of his skin problem with new tender

From the Department of Dermatology, University of Texas Southwestern Medical Center, Dallas.

Funding sources: None.

Conflicts of interest: None disclosed.

Correspondence to: Rebecca Vasquez, MD, Department of Dermatology, University of Texas Southwestern Medical Center, 5323 Harry Hines Blvd, Dallas, TX 75390-9190. E-mail: rebecca.vasquez@utsouthwestern.edu.

JAAD Case Reports 2020;6:1144-6.

2352-5126

© 2020 by the American Academy of Dermatology, Inc. Published by Elsevier, Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.jdc.2020.07.001>

lesions and worsening pain. Repeated punch biopsies (for hematoxylin-eosin staining and tissue culture) were performed and he was admitted to the hospital for pain control and broad-spectrum antibiotics while initial tissue culture results were pending. Approximately 72 hours after biopsies for his initial tissue cultures were performed, fungal culture showed moderate growth of mold. *Paecilomyces* species was confirmed 1 week later for both tissue samples. Moreover, the second skin biopsy revealed a deep fungal infection with suppurative granulomatous dermatitis surrounding fungal hyphae (Fig 2, A and B). Results of tests for histoplasmosis (urine and serum antigen), blastomyces (urine antigen and antibody), and *Coccidioides* (urine antibody) were negative. Magnetic resonance imaging of the right lower extremity showed infection limited to superficial tissues, without any evidence of osteomyelitis.

He initially began receiving liposomal amphotericin B (3 mg/kg daily), posaconazole (300 mg daily), and doxycycline (100 mg twice daily) for coverage of potential superimposed bacterial cellulitis. His amphotericin B was discontinued on hospital day 4 because of evidence of acute kidney injury. Infectious disease was consulted and recommended continuation of posaconazole 300 mg daily. On hospital day 5, the patient's right leg showed marked clinical improvement, with less pain and no new lesions, at which point doxycycline was discontinued. He was discharged on hospital day 12 and transitioned to posaconazole 200 mg daily. At his follow-up visit 1 week later, he reported significant improvement of his leg rash (Fig 3) and remained in remission until completion of therapy 5 months later, with near-absolute resolution of the leg rash.

## DISCUSSION

We present a case of cutaneous *Paecilomyces* infection in an immunocompromised patient, which was complicated by simultaneous postthrombotic syndrome successfully treated with posaconazole.

Although *Paecilomyces* is not a common pathogen, certain species have been associated with severe human infections and devastating oculomycosis.<sup>5</sup> The most common predisposing factor for cutaneous and subcutaneous infection is solid organ and bone marrow transplant. Other notable predisposing factors include corticosteroid therapy, malignancies, primary immunodeficiency, AIDS, diabetes mellitus, and hepatic cirrhosis.<sup>2</sup>

Unfortunately, *Paecilomyces* cutaneous infection can present insidiously and with a wide variety of clinical manifestations, including but not limited to

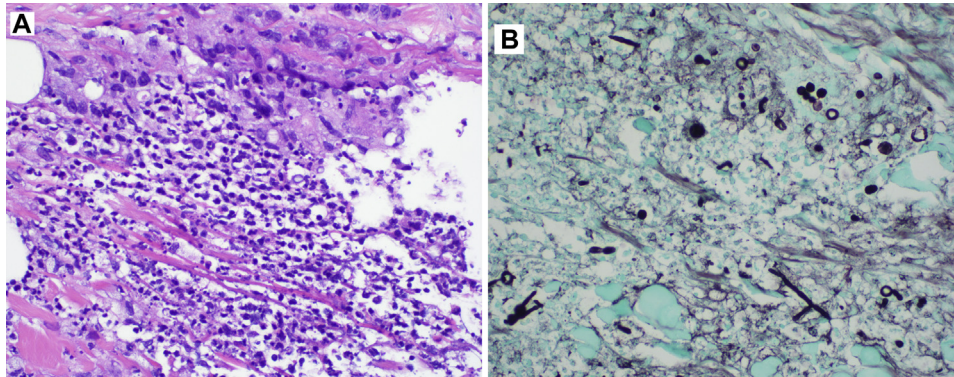


**Fig 1.** *Paecilomyces lilacinus* cutaneous infection. Violaceous discoloration and multiple indurated papules scattered over the right anterior aspect of the shin.

erythematous papules, vesicles, or nodules (most common presentation); cellulitis; lipoma; or abscess.<sup>5,6</sup> Delays in diagnosis and treatment are not infrequent, with at least 1 case of *Paecilomyces* cutaneous infection diagnosed 3 years after the first clinical signs after surgical excision of a localized swelling on the arm that was thought to be a lipoma.<sup>6</sup> Our patient's case was unique in that his cutaneous *Paecilomyces* infection presented in the background of postthrombotic syndrome, potentially causing a brief delay in his initial diagnosis. The most likely source of infection was his dog, which would frequently lick his skin.

Definitive diagnosis is made with fungal culture and histopathologic analysis of tissue biopsy. Although there is no definite treatment for *Paecilomyces* cutaneous infection, voriconazole has been recommended as first-line therapy based on limited clinical experience, with variable success rates. More recently, posaconazole and surgical debridement were used to successfully treat a reoccurring *Paecilomyces* cutaneous infection originally treated with voriconazole.<sup>7</sup>

Identifying patients at risk for opportunistic infections such as those caused by *Paecilomyces*



**Fig 2.** **A**, Hematoxylin-eosin stain showing suppurative granulomatous dermatitis surrounding fungal hyphae that were nonpigmented, narrow, septate, and branching at acute angles. **B**, Grocott methenamine silver stain imparts a black color to fungal hyphae.



**Fig 3.** *Paecilomyces lilacinus* cutaneous infection demonstrating improvement with posaconazole therapy.

and becoming familiar with the myriad of clinical manifestations can help prevent delays in diagnosis and treatment (including reduced potential for

surgical debridement).<sup>5</sup> The patient's infection showed an immediate and sustained response to posaconazole and he has remained disease free for the 6 months since treatment initiation. Posaconazole has promise as an effective first-line treatment for *Paecilomyces* cutaneous infection or in patients unable to tolerate voriconazole.

#### REFERENCES

1. Orth B, Frei R, Itin PH, et al. Outbreak of invasive mycoses caused by *Paecilomyces lilacinus* from a contaminated skin lotion. *Ann Intern Med.* 1996;125:799-806.
2. Chen Y-T, Chen C-C. Cutaneous *Paecilomyces lilacinus* infection mimicking cellulitis in an immunocompetent patient: report of a case and review of the literature. *Dermatol Sin.* 2016;34:33-36.
3. Itin PH, Frei R, Lautenschlager S, et al. Cutaneous manifestations of *Paecilomyces lilacinus* infection induced by a contaminated skin lotion in patients who are severely immunosuppressed. *J Am Acad Dermatol.* 1998;39:401-409.
4. Zendri E, Martignoni G, Benecchi M, Fanti F, De Panfilis G. *Paecilomyces lilacinus* cutaneous infection associated with a dog bite. *J Am Acad Dermatol.* 2006;55:S63-S64.
5. Pastor FJ, Guarro J. Clinical manifestations, treatment and outcome of *Paecilomyces lilacinus* infections. *Clin Microbiol Infect.* 2006;12:948-960.
6. Nikkels AF, Arrese JE, Leonard P. Chronic cutaneous hyalohyphomycosis by *Paecilomyces*. *Open Dermatol J.* 2014;8:4-7.
7. Chen WY, Lin SR, Hung SJ. Successful treatment of recurrent cutaneous purpureocillium lilacinum (*Paecilomyces lilacinus*) infection with posaconazole and surgical debridement. *Acta Derm Venereol.* 2019;99:1313-1314.