

Invasive fungal rhinitis caused by *Paecilomyces lilacinus* infection: Report of a case and a novel treatment

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Abstract

Invasive fungal infections of the sinonasal tract are a rare but known entity in immunocompromised patients. Paecilomyces lilacinus is a nematophagous fungi with septate hyphae that has afflicted humans in multiple forms, causing cutaneous, ocular, and sinonasal infections. Only 4 cases of P lilacinus and 2 cases of Paecilomyces variotii in the sinonasal tract have been reported in the literature. We present a case of invasive fungal rhinitis secondary to P lilacinus infection in an immunocompromised patient. She was managed successfully with a novel treatment: voriconazole and endonasal microdebridement.

Introduction

Fungal infection with *Paecilomyces lilacinus* has been reported in humans in multiple forms. Cutaneous hyalohyphomycosis, vaginitis, endophthalmitis, fungemia, onychomycosis, keratitis, and bursitis have all been reported.¹⁻⁷ In addition, 4 cases of sinonasal tract *P lilacinus* infection and 2 cases of sinonasal *Paecilomyces variotii* have been reported.⁸⁻¹² Of the 4 cases of the former, none was an isolated case of invasive rhinitis without sinusitis. Moreover, none of these patients had been treated with voriconazole and surgical microdebridement.

We present a case of invasive fungal rhinitis secondary to *P lilacinus* infection in an immunosuppressed patient who was successfully treated with voriconazole and endonasal microdebridement.

Case report

A 65-year-old woman with history of idiopathic pulmonary fibrosis and bilateral lung transplantation presented to the otolaryngology clinic with a 4-month history of left-sided purulent and sanguineous rhinorrhea. In addition, the patient reported a lump inside her left nasal vestibule. She denied facial pain, paresthesias, and nasal obstruction. Because of the double lung transplantation, her immune status was compromised, and she was taking tacrolimus at 1 mg twice daily and prednisone at 5 mg/day as an antirejection regimen.

Office nasal endoscopy revealed a thick, yellow, mucoid discharge within the nasal cavity as well as several small granulomatous lesions arising from the middle turbinate, inferior turbinate, nasal septum, and nasal vestibule on the left and from the middle turbinate on the right. Some superficial ulceration was seen on the lesions. Computed tomography of the sinus and maxillary areas revealed the presence of soft-tissue densities arising from the nasal septum; no evidence of invasion or bony erosion was seen.

Biopsies were taken and sent for culture and pathology. Pathology revealed an invasive fungal infection with septate hyphae, and microbiology confirmed the organism as *P lilacinus*. An infectious disease consult was immediately obtained. Based on that recommendation, the patient was started on oral voriconazole at 200 mg twice daily and immediately scheduled for surgical debridement.

In the operating room, the patient was positioned, prepped, and draped in the standard fashion for nasal endoscopy and sinus surgery. The nose was topically decongested with oxymetazoline pledgets and injected with lidocaine 1% with 1:100,000 epinephrine. After adequate vasoconstriction was achieved, a 0° endoscope was used to fully evaluate the nasal cavities bilaterally. On the left side, polypoid lesions were seen on the septal mucosa, inferior turbinate mucosa, nasal vestibule, and

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middle turbinate. Wide debridement with a microdebrider (Medtronic Xomed; Jacksonville, Fla.) equipped with a 4-mm blade was performed around each lesion. A partial middle turbinectomy was performed on the left side because of extensive disease. In the right nasal cavity, polypoid disease was found along the middle turbinate septum and the inferior turbinate. Again, wide debridement down to healthy bleeding tissue was performed with the microdebrider. Adequate hemostasis was achieved with oxymetazoline pledgets.

Postoperatively, the patient was continued on a 5-month course of voriconazole, and she was followed in the otolaryngology clinic monthly. At 1 month postoperatively, she had remucosalized nicely, she exhibited no evidence of fungal infection, and a biopsy found no evidence of disease. One month after the cessation of voriconazole therapy, she remained infection-free as confirmed by a repeat biopsy. She remained disease-free at further follow-up visits.

Discussion

Fungal rhinosinusitis usually presents in a host with impaired immune defenses. It can be invasive or noninvasive. Invasive forms are usually caused by the *Rhizopus*, *Mucor*, or *Aspergillus* species. In immunocompromised patients, a prolonged exposure to various environmental factors has led to an increase in the number of infections caused by *P. lilacinus*, *Fusarium* species, *Acremonium* species, *Trichosporon beigelii*, *Blastoschizomyces capitatus*, *Penicillium* species, and other dematiaceous species.¹³

Paecilomyces species are ubiquitous nematophagous fungi that are found primarily in soil. They are used as a bionematicide to control nematodes that threaten crops. Their prevalence as a cause of infection has been increasing over the years, and it appears that both immunocompromised and immunocompetent persons are at risk.

Over the past 30 years, only 6 cases of *Paecilomyces* infection in the sinonasal tract have been reported in the literature.⁸⁻¹² Four of these involved the species that was isolated in our patient. In a 1980 case report, Rockhill and Klein told of an immunocompetent woman with chronic maxillary sinusitis caused by *P. lilacinus* who was treated with tetracycline and a Caldwell-Luc procedure.⁸ In 1996, Gucalp et al reported a case of invasive fungal sinusitis in an immunocompromised patient with acute myeloid leukemia; the pathogen, which was identified as *P. lilacinus* on culture, was resistant to amphotericin B, but the patient was effectively treated with itraconazole and surgery.⁹ In 2000, Nayak et al described the case of an

immunocompetent child who presented with unilateral sinusitis and proptosis; endoscopic sinus surgery and 6 months of itraconazole were effective in eradicating the disease.¹⁰

To the best of our knowledge, our patient represents the first reported case of isolated *P. lilacinus* rhinitis to be successfully treated with voriconazole and endonasal debridement with a microdebrider. In our patient, any areas that were deemed to be abnormal on intraoperative nasal endoscopy were microdebrided with a shaver. Debridement was continued until healthy bleeding tissue was encountered. Care was taken to avoid unneeded mucosal damage. On our patient's left side, a large area of the middle turbinate was removed with endoscopic scissors. The voriconazole dosage of 200 mg twice a day orally was suggested by the infectious disease consultant, and the patient was started on this regimen immediately. She was treated for 5 months, and she remained disease-free on endoscopic evaluation and clinical observation.

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