Infections Due to Trichosporon cutaneum, an Uncommon Systemic Pathogen

Tom Madhavan
John Eisses
Edward L. Quinn

Follow this and additional works at: https://scholarlycommons.henryford.com/hfhmedjournal
Part of the Life Sciences Commons, Medical Specialties Commons, and the Public Health Commons

Recommended Citation
Available at: https://scholarlycommons.henryford.com/hfhmedjournal/vol24/iss1/5

This Article is brought to you for free and open access by Henry Ford Health System Scholarly Commons. It has been accepted for inclusion in Henry Ford Hospital Medical Journal by an authorized editor of Henry Ford Health System Scholarly Commons.
Infections Due to *Trichosporon cutaneum*, an Uncommon Systemic Pathogen

Tom Madhavan, MD,* John Eisses, PhD,** and Edward L. Quinn, MD*

* Department of Medicine
** Department of Pathology


Address reprint requests to Dr. Madhavan at Henry Ford Hospital, 2799 West Grand Boulevard, Detroit MI 48202

*Trichosporon cutaneum* is a yeast-like fungus, which may cause a superficial infection, limited to the hair shaft and adjacent skin, and known as "white piedra". This fungus has also been isolated from fecal and sputum specimens in healthy miners, but systemic infections are rarely encountered. *T. cutaneum* is recognized in the laboratory by its ability to grow at 28°C as well as 37°C, by raised white colonies on Sabouraud’s dextrose agar (Figure 1), by the presence of arthrospores and blastospores (Figure 2); also, urease production, assimilation of dextrose, galactose, lactose, and variable assimilation of maltose, sucrose and raffinose—but no assimilation of nitrate. Watson and Kallichuram reported one 39-year-old African woman with rapidly fatal brain abscess in whom postmortem histopathology and fungus culture demonstrated *T. cutaneum*. We describe here two cases of fungemia caused by *T. cutaneum*, one occurring after mitral valve replacement and the other in an immunosuppressed patient after a renal transplant.

Report of cases

Case 1

On December 1, 1965, a 55-year-old white woman underwent replacement of her mitral valve with an artificial valve for intractable congestive heart failure secondary to mitral stenosis. Chemoprophylaxis was carried out with methicillin intravenously and streptomycin intramuscularly during and immediately after cardiac surgery. Her immediate postoperative course was uneventful. On the 12th postoperative day she began to have fever with spikes ranging from 99° to 102°F. There were no localizing signs. *T. cut-
Figure 1
Appearance of *Trichosporon cutaneum* colonies after 14 days of incubation on Sabouraud's dextrose agar at 28°C.
Infections due to Trichosporon

Figure 2
Microscopic (390x) appearance of Trichosporon cutaneum on Sabouraud's dextrose agar at 28°C. Stained with lactophenol cotton blue.
aneum was cultured from three blood specimens taken on the 13th postoperative day. No mucosal or cutaneous infections were evident; the patient was not receiving intravenous therapy. A diagnosis of postcardiotomy fungal endocarditis was made, and the patient was treated with 20-40 mg of amphotericin B daily intravenously for 42 days to a total of 1300 mg. The patient tolerated the amphotericin B well, her temperature returned to normal, and T. cutaneum could not be cultured from subsequent blood specimens. The patient was discharged three months later in fair condition. She was followed for the next five years without recurrence.

Case 2
The second patient was a 43-year-old white woman with a longstanding pyelonephritis, who underwent a renal transplantation on June 19, 1973. The patient tolerated the procedure well. She was maintained on 150 mg of prednisone, 125 mg of azathioprine, and antilymphocyte serum. On the third post-transplant day, the patient developed mild hypotension, oliguria, and acute pulmonary edema, which were successfully managed with digitalization and diuretics. On the fourth post-transplant day, the patient became febrile. She was initially treated with ampicillin for Escherichia coli urinary tract infection, but her low grade fever continued. Urine specimens on the 8th, 9th and 10th post-transplant days revealed yeasts in moderate amounts. Subsequently, T. cutaneum was cultured from three blood specimens. This patient did not have indwelling intravenous catheters during that time. A concentration of 0.78 μg/ml amphotericin B and 25 μg/ml 5-fluorocytosine were sufficient to inhibit the fungus, but concentrations of 3.13 μg/ml amphotericin B and 100 μg/ml 5-fluorocytosine were required for minimum fungicidal activity. Treatment with 5-fluorocytosine, 100 mg/kg orally, in divided doses was begun. Patient became afebrile, and the fungus was not cultured from subsequent blood specimens. The serum levels of 5-fluorocytosine after 100 mg/kg oral dose were 82.5 μg/ml at two hours, and 102.3 μg/ml at eight hours. Therapy could not be continued beyond two weeks because of persistent marrow depression resulting from her immunosuppressive therapy.

Comment
A diagnosis of post-cardiotomy endocarditis due to T. cutaneum was made in the first patient and treatment given. Fungal endocarditis usually requires prolonged antibiotic therapy and surgical excision for eventual cure, but in exceptional circumstances, susceptible fungi can be eradicated with medical therapy alone. This fungus also causes opportunistic infection in posttransplant, immunosuppressed individuals, as illustrated by the second patient. The route of invasion of this organism is not known. Both reported patients had received intravenous therapy, although in the first patient, infusions were given only pre- and postoperatively. Of the available antifungal agents, amphotericin B appears to be effective in treating infections due to this organism. Five-fluorocytosine, a new synthetic oral antifungal agent, is known to be effective against infections caused by Cryptococcus neoformans, Candida sp., and Torulopsis glabrata. Prior to this report, Steer et al successfully treated one patient with peritonitis and septicemia due to T. cutaneum with 5-fluorocytosine, 50 mg/kg for five days. Further experience in the treatment of systemic T. cutaneum infections with 5-fluorocytosine is recommended.

Acknowledgements
The authors wish to thank Smith Shadomy, Ph.D., Professor of Medicine and Microbiology, Medical College of Virginia, Virginia Commonwealth University, for performing the antifungal sensitivity testing and determining 5-fluorocytosine serum levels.

References