The HKU Scholars Hub The University of Hong Kong 香港大學學術庫



| | |
|---|---|
| Title | Invasive Acremonium falciforme infection in a patient with severe combined immunodeficiency [7] |
| Author(s) | Lau, YL; Yuen, KY; Lee, CW; Chan, CF |
| Citation | Clinical Infectious Diseases, 1995, v. 20 n. 1, p. 197-198 |
| Issued Date | 1995 |
| URL | http://hdl.handle.net/10722/43125 |
| Rights | Creative Commons: Attribution 3.0 Hong Kong License |

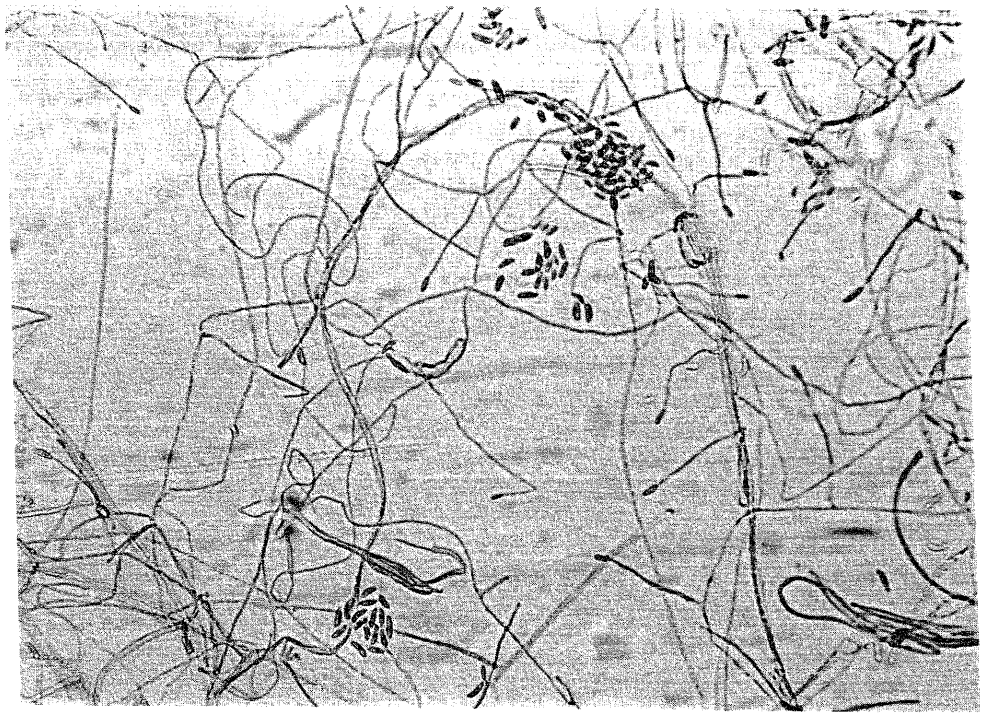

**Figure 1.** *Acremonium falciforme* in a gastric biopsy specimen from an 11-month-old girl with severe combined immunodeficiency. A wet mount of the specimen was stained with lactophenol cotton blue (original magnification, ×400).

## Invasive *Acremonium falciforme* Infection in a Patient with Severe Combined Immunodeficiency

SIR—We report the successful treatment of invasive gastrointestinal infection due to *Acremonium* species in an 11-month-old girl with severe combined immunodeficiency (SCID) who had received a haploidentical T cell–depleted bone marrow transplantation (BMT) from her father [1]. She had *Clostridium difficile* gastroenteritis, klebsiella urinary tract infection, methicillin-resistant *Staphylococcus aureus* sepsis, and acinetobacter pneumonia, as well as cutaneous graft-versus-host disease. Engraftment was documented by karyotyping on day + 29 and day + 114. The patient then had severe diarrhea, which necessitated prolonged parenteral nutrition and elemental diet through a nasogastric tube. Nine months after BMT, she developed fever and hepatosplenomegaly with increasing cholestatic jaundice, elevated levels of transaminases, and hypoalbuminemia. Laboratory values were as follows: peak bilirubin level, 763 μmol/L (direct bilirubin, 547 μmol/L); aspartate aminotransferase level, 692 U/L; alanine aminotransferase level, 236 U/L; γ-glutamyl transferase level, 3,174 U/L; hemoglobin level, 113 g/L; white blood cell count, $5.3 \times 10^9$/L (80% neutrophils, 15% lymphocytes, 4% monocytes, and 1% eosinophils); platelet count, $88 \times 10^9$/L. Despite treatment with various antibiotics, the patient's clinical condition deteriorated; she developed upper gastrointestinal bleeding and disseminated intravascular coagulopathy.

Endoscopy of the patient's upper gastrointestinal tract revealed diffuse gastric erosions with shallow ulcers. Direct potassium hydroxide (KOH) tests and gram staining of gastric biopsy specimens showed short, swollen hyphal elements. Subsequent culture of the biopsy specimens yielded *Acremonium falciforme.* After 3 days of incubation on Sabouraud dextrose agar, tufted white colonies could be seen on the specimen. Further incubation revealed a pale violet pigment on the reverse side. After 10 days, a Scotch tape preparation of the biopsy specimen was stained with lactophenol cotton blue (figure 1). Unbranched, tapering phialides (2–4-μm diameter) arising from hyaline hyphae were present along with single-cell, nonseptate, crescent-shaped conidia (these commonly form clusters on tips of phialides). Nodular budding was seen.

To determine the MICs of various antifungal agents, spectrophotometry was first used to standardize the inoculum equivalent to $10^4$/mL of those spores (microconidia) that were harvested from a 5-day-old culture [2]. Yeast nitrogen base broth or agar was inoculated with the organisms. It was easier to read the endpoint at 48 hours when the agar dilution method was used than when the broth dilution method was used. The MICs were

Reprints or correspondence: Dr. Y. L. Lau, Department of Pediatrics, Queen Mary Hospital, Pokfulam Road, Hong Kong.

**Clinical Infectious Diseases 1995;20:197–8**
© 1995 by The University of Chicago. All rights reserved.
1058–4838/95/2001–0035$02.00

as follows: amphotericin B, 1 μg/mL, itraconazole, 0.05 μg/mL; fluconazole, >32 μg/mL; and 5-flucytosine, >32 μg/mL.

Therapy with intravenous amphotericin B was started and continued for 2 months (maximum daily dose, 1 mg/kg). A total dose of 35.8 mg/kg was given. Two days after therapy with amphotericin B was initiated, subcutaneous administration of granulocyte/macrophage colony-stimulating-factor (GM-CSF) was begun. It was given for 18 days (dose range, 10–40 μg/kg). The patient's maximum total white cell count during treatment was $47.8 \times 10^9$/L (63% neutrophils). Her gastrointestinal bleeding subsided within 1 week. Oral itraconazole (100 mg/d) was subsequently added to the regimen and was given for 12 months. Results of repeated endoscopy and gastric biopsy were normal after 4 weeks of treatment. Her obstructive jaundice gradually resolved within 3 months. When the patient was discharged 5 months later, she was in good clinical condition.

Fungi of the genus *Acremonium* are ubiquitous in the environment. They are rare causes of superficial human infections such as mycetoma and keratitis [3]. There have been case reports of invasive infections of the kidney [4], blood [5], lung [6], knee joint [7], and esophagus [8] in patients with predisposing conditions such as Addison's disease [4], neutropenia [4, 5] and chronic granulomatous disease [6], but these infections have also occurred in previously healthy individuals [7, 8]. Predisposing factors and conditions in our patient included prolonged use of cyclosporine (283 days) and steroids (216 days), chronic graft-vs.-host disease, malnutrition, T cell–depleted haploidentical BMT, and prolonged use of a nasogastric feeding tube [9].

The optimal treatment for acremonium infections is not well defined. Despite the inconsistent activity of amphotericin B against *Acremonium* in vitro [3, 10] and some reports of clinical failure of treatment with this drug [3], it is still considered to be the agent of choice when used at a high dose [3, 4]. Combination therapy with other antifungal agents such as fluconazole and itraconazole [3] as well as GM-CSF is still only empirical.

**Y. L. Lau, K. Y. Yuen, C. W. Lee, and C. F. Chan**

*Departments of Pediatrics and Microbiology, The University of Hong Kong, Queen Mary Hospital, Hong Kong*

**References**

1. Lau YL, Lee ACW, Chan CF, et al. HLA-non-identical T-cell depleted bone marrow transplantation for severe combined immunodeficiency. Journal of the Hong Kong Medical Association **1993**;45:57–61.
2. Holt RJ. Laboratory tests of antifungal agents. J Clin Pathol **1975**;28:767–74.
3. Fincher RM, Fisher JF, Lovell RD, Newman CL, Espinel-Ingroff A, Shadomy HJ. Infection due to the fungus *Acremonium* (*cephalosporium*). Medicine (Baltimore) **1993**;70:398–409.
4. Jeffrey WR, Hernandez JE, Zarraga AL, Oley GE, Kitchen LW. Disseminated infection due to *Acremonium* species in a patient with Addison's disease [letter]. Clin Infect Dis **1993**;16:170–1.
5. Brown NM, Blundell EL, Chown SR, Warnock DW, Hill JA, Slade RR. *Acremonium* infection in a neutropenic patient. J Infect **1992**; 25:73–6.
6. Boltansky H, Kwon-Chung JK, Macher AM, Gallin JI. Acremonium strictum-related pulmonary infection in a patient with chronic granulomatous disease. J Infect Dis **1984**;149:653.
7. Szombathy SP, Chez MG, Laxer RM. Acute septic arthritis due to *Acremonium*. J Rheumatol **1988**;15:714–5.
8. Simon G, Rákóczy G, Galgóczy J, Verebély T, Bókay J. *Acremonium kiliense* in oesophagus stenosis. Mycoses **1992**;34:257–60.
9. Francis P, Walsh TJ. Current approaches to the management of fungal infections in cancer patients. Oncology (Huntingt) **1992**;6:81–92.
10. Rotowa NA, Shadomy HJ, Shadomy S. In vitro activities of polyene and imidazole antifungal agents against unusual opportunistic fungal pathogens. Mycoses **1990**;33:203–11.