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CASE REPORT

Trichosporon asahii sepsis in a patient with pediatric malignancy

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Trichosporon asahii is a rare opportunistic infection, especially in children, causing a life-threatening fungal infection underlying hematologic malignancies. Predisposing factors for infection with this pathogen are immunodeficiency including underlying malignancy, organ transplantation, extensive burns, human immunodeficiency virus infection, corticosteroid therapy, prosthetic valve surgery, and peritoneal dialysis. In the literature, a breakthrough under caspofungin, micafungin therapy is reported. In this article we report on a 16-year-old patient with Ewing sarcoma who had *T. asahii* sepsis. The patient died although he had been receiving caspofungin for less than 3 months and amphotericin B therapy for 3 days. A postmortem study of conchal tissues revealed *T. asahii* and mucormycosis histopathologically, and blood culture grew *T. asahii*.

Introduction

Trichosporon asahii is a rare opportunistic yeast-like fungus causing rare infections in children. Despite antifungal therapy with amphotericin B, the mortality rate is high (80%) and early initiation of treatment may increase survival of these patients.[1] Herein, we report on a previously treated patient with Ewing sarcoma who died because of *T. asahii* sepsis. Three days of liposomal amphotericin B therapy following 3 months of caspofungin therapy did not help to achieve a favorable outcome.

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Case report

A 16-year-old boy previously had been treated for Ewing sarcoma in the region of the right superior pubic ramus. He had received intensive chemotherapy and underwent hemipelvectomy after radiotherapy. A lesion with recurrent pus discharge on the area of radiotherapy (right inguinal area) had worsened, with urine leakage from the lesion despite antibiotic therapy. The patient underwent a second operation for implant insertion to the right pelvic area in August 2008, and had been hospitalized seven times between September 2008 and January 2011 for pus discharge at the right inguinal area after receiving appropriate antibiotic therapy. He and his family had been advised that surgery was necessary for removal of the implant, but they did not provide consent for this process. He eventually was hospitalized to undergo implant removal in June 2011.

Surgery included implant excision and bypass between the saphenous vein, iliac artery, and femoral artery. Because of massive arterial bleeding postoperatively, the patient underwent a second operation for right hip dislocation, total right lower extremity amputation, and urinary bladder reconstruction. Because he could not be extubated and was in septic shock with hypotension, anuria, and worsening kidney function tests, antibiotic therapy was planned with meropenem, ciprofloxacin, colistin, and linezolid because of the extended spectrum beta-lactamase activity of *Acinetobacter baumannii* (colistin sensitive) and *Escherichia coli* (meropenem, imipenem, ciprofloxacin, and amikacin sensitive).

The patient's hypotension did not respond to dopamine and dobutamine therapy, a chest X-ray revealed pleural effusion, thoracentesis revealed fluid with characteristics of transudate, and a black-colored necrotic edematous lesion was present in the nasal area (Fig. 1).

Although the patient did not have a positive blood culture, ongoing local infection was present. Therefore, antimicrobial therapy including meropenem, colistin, teicoplanin, and caspofungin was reorganized to include meropenem, colistin, teicoplanin, and liposomal amphotericin B. Paranasal CT yielded increased density in the right maxillary sinus compatible with infection or hemorrhage, with increased subcutaneous nodular density suggesting infection in the left middle meatus. In the following hours the patient had cutaneous necrosis in the dorsal area necrosis in the nasal bone. The patient's disease progress was so rapid that mortality could not be prevented, 3 days after the skin findings occurred. Blood culture yielded *T. asahii* after minimum inhibitory concentration values were exceeded for that isolate at 4 μg/mL for fluconazole and 0.03 μg/mL for voriconazole. Postmortem study of tissues from the nose and conchae revealed widespread necrosis, karyorrhexis, and mixed inflammatory infiltrate along with septated fungal hyphae and spores (Fig. 2). Additionally, a group of nonseptated mucormycotic hyphae was also detected. However *T. asahii* was the only infectious agent isolated from the cultures of necropsy samples.

Figure 1. Necrotic lesion in the nasal area.

Discussion

The non-*Candida* yeast-*Trichosporon* species is an increasingly common pathogen in immunocompromised hosts. These species have been isolated from various types of clinical specimens, including blood, skin biopsy, and urine specimens,[2–4] and reported as colonization of the gastrointestinal tract, skin, mucosal surfaces and in addition to stool, central venous catheter, sputum, and hair.[2] *T. asahii* is the most frequent species involved in disseminated infections.[5,6] Cutaneous involvement with papulonodular or pustular lesions, especially necrotic appearance, has been

Figure 2. Fungal elements including several true hyphae and blastoconidia in samples of conchal lesion.