

Life-threatening airway obstruction caused by penicilliosis in a leukemic patient

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Dear Editor,

Penicilliosis is a progressive disseminated disease caused by *Penicillium marneffei*, an opportunistic fungal pathogen unique to immunocompromised hosts. Delayed diagnosis or inappropriate treatment could result in deep mycosis with high mortality. It is a common opportunistic infection in HIV-positive patients, especially in endemic areas such as southeast Asia, southern China, and Taiwan. However, it is uncommon in patients with hematologic malignancy. Here, we describe a leukemic patient who survived an episode of life-threatening airway obstruction caused by invasive pulmonary penicilliosis.

A 14-year-old boy with acute lymphoblastic leukemia presented with cough and neutropenic fever during chemotherapy. Physical examinations revealed bilateral inspiratory crackles without respiratory distress and the initial chest radiograph showed mild bilateral infiltrates. Despite administration of intravenous antibiotics (vancomycin and imipenem) for 5 days, the neutropenic fever still persisted, so an

empirical antifungal agent (amphotericin B, 0.5~1 mg/kg/day) was started. After 1 week of amphotericin B, the pneumonia did not improve and atelectasis of right lower lung was found in his chest radiograph (Fig. 1a). Unfortunately, a sudden onset of dyspnea with cyanosis occurred the next day after the atelectasis was found. The dyspnea persisted for 2 min with lowest oxygen saturation falling to 28% measured by a pulse oximeter even on an oxygen mask but was then relieved after forceful expectoration of a finger-like mass about 5 cm in length (Fig. 1b). After the expectoration, his dyspnea resolved and the atelectasis in the radiograph also improved. Bronchoscopy was refused by this patient. Repeated sputum cultures revealed *P. marneffei*. Microscopic examinations of the sloughed mass showed bronchial cartilage surrounded by numerous hypha (Fig. 1c,d), suggesting that invasive penicilliosis destroyed the bronchial cartilage with subsequent airway obstruction and atelectasis. His pneumonia was then successfully controlled by oral itraconazole (600 mg/day) for 6 weeks followed by maintenance therapy (200 mg/day) for 1 year. He is now doing well 2 years after the infection.

P. marneffei is a common opportunistic fungal pathogen in AIDS patients [1, 2]. In southeast Asia, it is the third most common opportunistic infection in AIDS patients, following tuberculosis and cryptococcosis [1, 2]. However, it is an unusual pathogen in patients with hematological malignancies [3, 4] and only 2% of infections in neutropenic patients with hematological malignancies are caused by *P. marneffei* [4]. The pathogen is acquired via inhalation and results in initial pulmonary infection, followed by fungemia and dissemination of the infection. Common clinical manifestations include fever, skin lesions resembling molluscum contagiosum, cough, and infiltrates in chest radiographs [1, 2]. Without timely diagnosis and appropriate treatment, penicilliosis has a high mortality rate.

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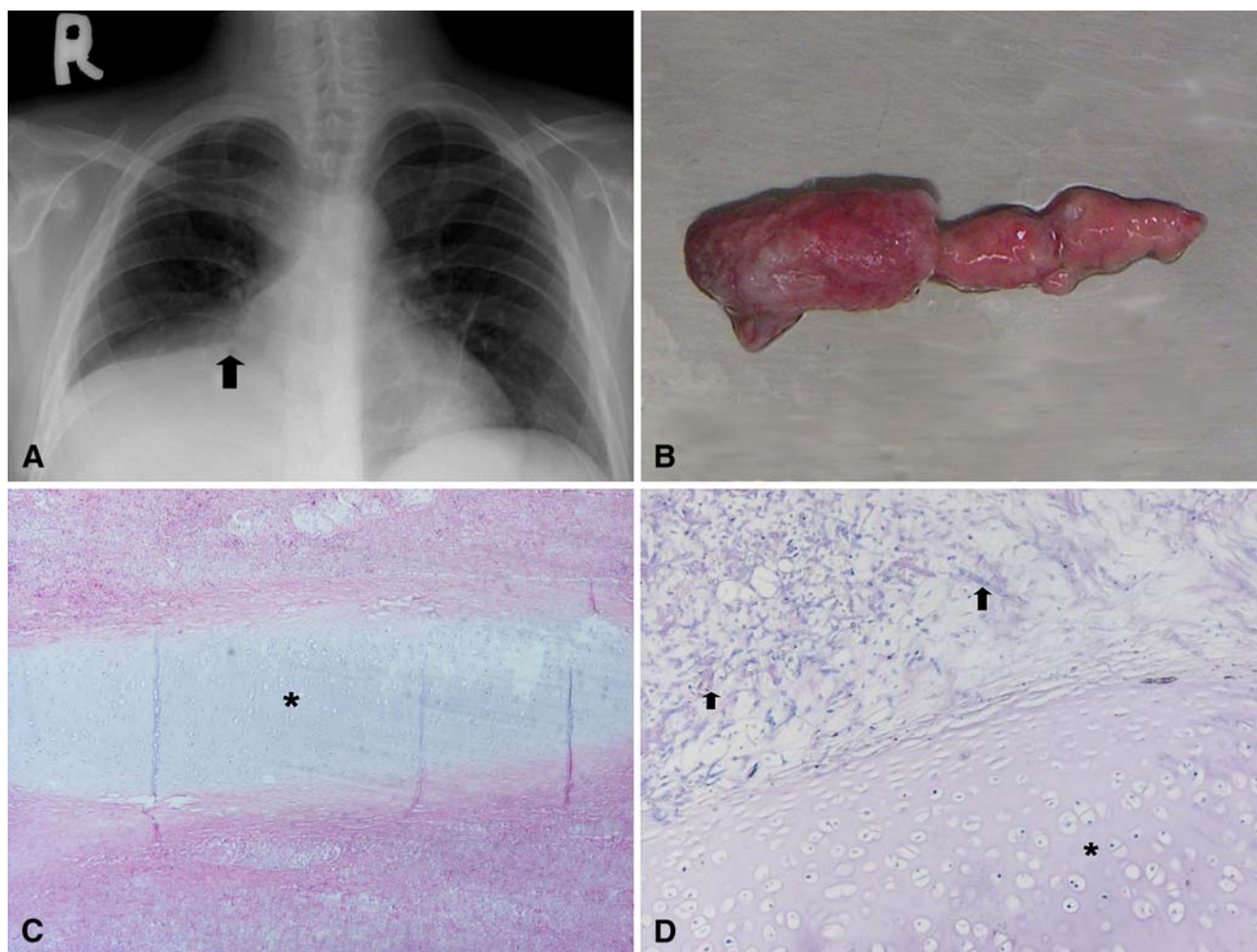


Fig. 1 **a** The chest radiograph showed the atelectasis (*arrow*) in the right lower lung. **b** The *photograph* of the sloughed finger-like mass about 5 cm in length. **c, d** Microscopic examinations showed

bronchial cartilage (*asterisks*) surrounded by numerous hyphae (*arrows*; **c** hematoxylin–eosin stain, magnification $\times 40$; **d** periodic acid Schiff stain, magnification $\times 200$)

Our case is unique in that he survived the acute invasive fungal infection of a major bronchus that resulted in sloughing of a large piece of infected tissue containing cartilage that obstructed his airway resulting in atelectasis and arterial desaturation. This report indicates that pulmonary penicilliosis may cause severe airway obstruction, an unusual but potentially fatal complication, in leukemic patients. To our knowledge, this is the first reported case of airway obstruction caused by penicilliosis in leukemic patients. Even though the origin of the destructed cartilages in this case was not verified by bronchoscopy, it is highly possible that an invasive pulmonary mycosis may destruct bronchial cartilages and thus causes acute airway obstruction [5, 6]. The standard antifungal treatment of disseminated *P. marneffei* infection consists of parenteral amphotericin B followed by oral itraconazole therapy, and patients are maintained on itraconazole therapy to prevent relapse of the disease [7, 8]. However, in our patient, the response to amphotericin B was poor so that itraconazole

was used for both primary and maintenance therapy. In summary, the present case demonstrates that penicilliosis, an unusual but potentially life-threatening infection, should be considered in leukemic patients with neutropenia. Atelectasis in the chest radiograph can be an important reminder of severe airway obstruction in patients with invasive mycosis.

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