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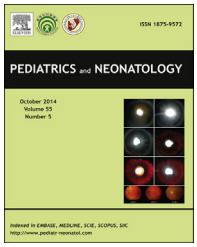

CASE REPORT

Disseminated *Cunninghamella bertholletiae* Infection During Induction Chemotherapy in a Girl with High-Risk Acute Lymphoblastic Leukemia

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Invasive fungal infections in children with acute lymphoblastic leukemia have been a major cause of mortality. Recent reports have described increasing incidence of invasive non-*Aspergillus* mold infections in patients with hematological malignancies. It is always challenging to treat invasive fungal infection and underlying hematological malignancies successfully. Here we report a girl with high-risk acute lymphoblastic leukemia who developed disseminated *Cunninghamella bertholletiae* infection during induction chemotherapy. This case illustrates the difficulties of diagnosis and treatment of invasive *C. bertholletiae* infection. It also highlights the necessity for physicians to keep high suspicion and awareness for this infrequent fungal infection.

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1. Introduction

Invasive fungal infections are serious and often fatal complications in immunocompromised patients, especially those with hematological malignancy. The diagnosis and antifungal treatment among these patients are often delayed because of a lack of specific clinical and radiological features. The incidence of invasive fungal infections in children with cancer is around 4.9—7.2%, and the mortality is about 21.7—59%.[1–3] *Cunninghamella bertholletiae* is a rarely reported species of invasive fungal infection and the lung is the most commonly involved organ. In pediatric patients, it causes rapid progression and therefore a high mortality rate. Here we present a patient with Philadelphia chromosome positive (Ph+) acute lymphoblastic leukemia (ALL) who developed invasive *C. bertholletiae* infection during induction chemotherapy. This case illustrates the difficulties of diagnosis and treatment of invasive *C. bertholletiae* infection. It also highlights the necessity for physicians to keep high suspicion and awareness for this infrequent fungal infection.

2. Case report

A 13-year-old girl presented with hyperleukocytosis (leukocyte count 135.8 $\times$ 10^9 cells/L with 91% blasts) and was diagnosed as Ph+ ALL in October 2010. She received chemotherapy according to the Taiwan Pediatric Oncology Group (TPOG) 2002-ALL-VHR protocol.[4] The leukocyte count was $< 1 \times 10^9$ cells/L on Day 8. Antifungal prophylaxis with fluconazole was used from then onwards. She also received routine *Pneumocystis jiroveci* pneumonia prophylaxis with cotrimoxazole according to the TPOG protocol.

She developed cough, occasional hemoptysis, and dyspnea on Day 23. Chest radiography revealed a nodule over the left upper lobe. She was started on voriconazole. Computed tomography (CT) of chest and abdomen showed mixed nodularity and groundglass appearance (halo sign) at left upper lobe (Figure 1A), and a hypodense lesion at the spleen with adjacent soft tissue edema (Figure 1B). These findings were suggestive of invasive fungal infection, particularly invasive aspergillosis. Chemotherapy was discontinued and a granulocyte-stimulating factor was given.

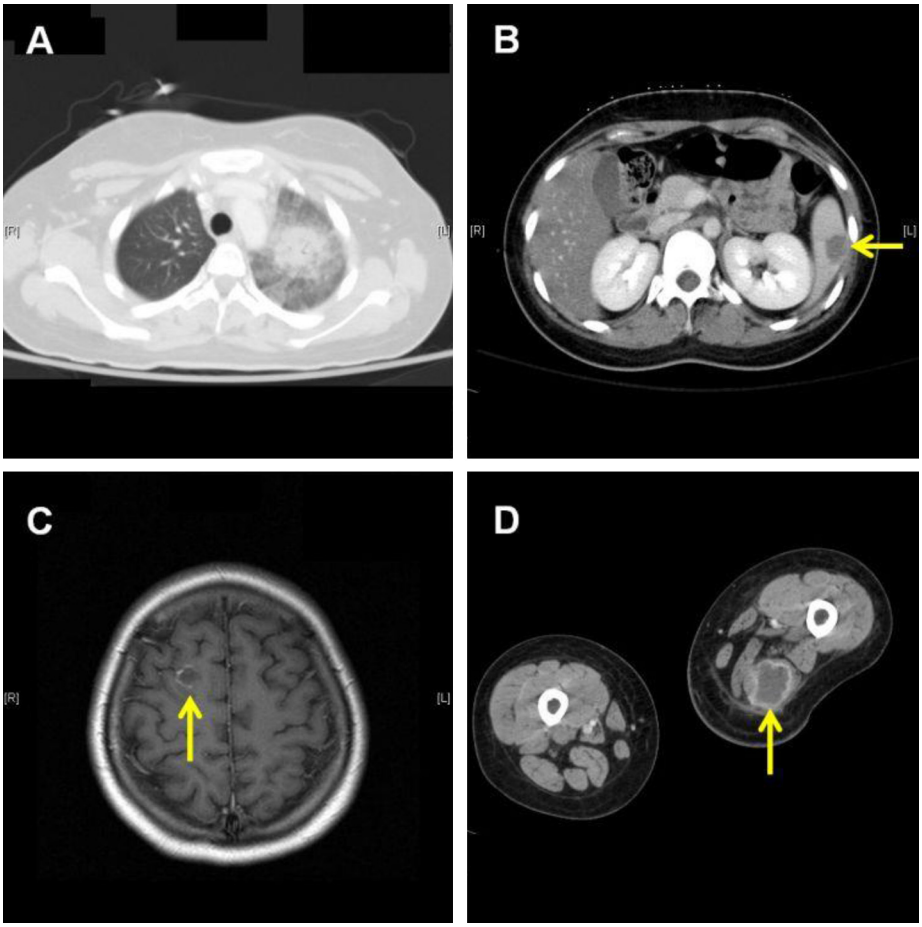

Figure 1 (A) Computed tomography (CT) scan of the chest shows a mixed nodularity and groundglass appearance (halo sign) at the left upper lobe. (B) CT scan of the abdomen shows a low-density nodular lesion with inconspicuous contrast enhancement at the spleen (arrow). (C) Magnetic resonance imaging of the brain, T1 weighted image, shows a nodular lesion with partial rim enhancement at the right frontal lobe (arrow). (D) CT scan of the legs shows a low-density mass with rim enhancement at the posterior muscle group of left thigh (arrow).

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