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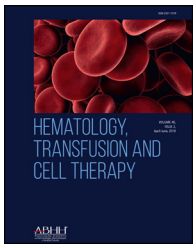

Letter to the Editor

Acute invasive fungal sinusitis in immunocompromised children

To the Editor,

We read with interest the article by Rodriguez RC et al. entitled, "Acute invasive fungal rhinosinusitis in pediatric patients with oncohematological diseases". They report two pediatric cases with confirmed acute invasive fungal rhinosinusitis (AIFS). In the two cases, one with acute myeloid leukemia (AML) and the other with idiopathic bone marrow aplasia, *Fusarium* sp. was detected by histopathological and microbiological analyses. Both received antifungal treatment and surgery. The one with AML recovered, while the one with aplasia died due to septic shock.[1]

Morbidity and mortality due to invasive fungal infections (IFIs) remain high in immunocompromised children such as children with cancer and bone marrow aplasia. Mortality due to IFIs have been reported to be as high as 18%[2–4]; therefore, early and precise diagnosis and treatment are crucial. IFI can occur as pulmonary disease, sinusitis, hepatosplenic infection, infection in the central nervous system and other sites.[2–8] AIFS is characterized by fungal invasion of the nasal or paranasal cavity which may affect adjacent organs, such as the orbits and intracranial structures.[2–5,8–10] The most commonly identified fungi in AIFS are *Aspergillus* and Zygomycetes (*Rhizopus, Mucor, Rhizomucor*).[4,5,8–10] *Fusarium* spp. may cause AIFS also, they usually occur in immunocompromised children, are usually invasive, the upper respiratory tract is the main entrance route.[9–11]

We have reported an 8-year-old boy with acute lymphoblastic leukemia (ALL), who developed AIFS, in whom Mucor was identified as the pathogen.[5] He was hospitalized with febrile neutropenia during the delayed intensification chemotherapy treatment. Despite the use of Intravenous (iv) cefepime. At 48 h, fever continued and the patient began to report mild pain in the left orbita. Magnetic resonance imaging (MRI) revealed lesions consistent with infection in the sphenoidal, mastoid, and ethmoid sinuses extruding the left periorbital area. Considering a fungal infection, iv voriconazole was initiated, and after a day, high fever persisted and a periorbital swelling was observed. Liposomal amphotericin B was added to antifungal therapy because we could not rule out a mucormycosis infection. After five days, fever continued and MRI revealed signs of progressive infection and periorbital abscess formation. Surgical drainage was performed and an absorbable gelatin sponge containing liposomal amphotericin B was inserted locally. Fever subsided in 24 h. No pathogen was detected in cultures. Mucormycosis was diagnosed by pathology on the surgical drainage material. Chemotherapy was initiated again. Liposomal amphotericin B was continued during delayed intensification and the first month of ALL maintenance treatment for a total of 2.5 months. Treatment was continued with oral posaconazole during the ALL maintenance treatment and was given for a total of six months. The patient has remained in remission for ALL and free of fungal infection for a total of four years from diagnosis.[5]

The incidence of invasive fungal diseases (IFD) in children with leukemia is reported to be 9–10%, and the mortality reported as high as 21–48%.[2–4,6] One of the children reported by Rodriguez et al. also had leukemia.[1]

The diagnosis of AIFS is challenging and fever is often the only presenting symptom. Other signs and symptoms may be very slight due to the reduced local inflammatory response capacity, which is a consequence of neutropenia. The complications of sinoorbital fungal infections may lead to bone erosion, orbital invasion, brain abscess, meningitis, hematogenous spread and death.[2,4,6,8–10] Our case also had mild pain in the orbital area, the ophtalmologic and otolaryngologic examination was normal. The high degree of suspicion led us the prompt diagnosis. There was no clinical or radiological improvement despite specific systemic antifungal treatment in five days. However fever subsided significantly within 24 h after surgery; suggesting the importance of surgery in these cases.[5] There was no sequelae on long term follow-up as well.

Fungal infections, including AIFS should be in the differential diagnosis in infections in immunocompromised children, according to clinical and radiological findings. A high degree of suspicion and prompt systemic empirical antifungal ther-

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apy, as well as surgical debridement, are crucial to prevent morbidity and mortality of these patients.

Conflicts of interest

The author declares no conflicts of interest.

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