

Acute Myelogenous Leukemia Mimicking Fulminant Periorbital Cellulitis

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Purpose: To report a patient who was referred for orbital cellulitis but was finally diagnosed with acute leukemia.

Case Report: A 17-year-old boy presented with fever, periorbital erythema and swelling mimicking periorbital cellulitis. He underwent empiric antibiotic therapy. Complete blood counts revealed leukocytosis with a predominance of immature blast cells. Bone marrow aspiration confirmed the diagnosis of acute myelogenous leukemia. Chemotherapy was initiated resulting in resolution of signs and symptoms.

Conclusion: Acute leukemia may mimic periorbital cellulitis and must be considered in the differential diagnosis.

Keywords: Acute Myelogenous Leukemia; Periorbital Cellulitis

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INTRODUCTION

Acute leukemia falls within a heterogeneous spectrum of hematologic disorders characterized by arrested transformation of hematopoietic cells together with malignant transformation and proliferation of immature cells.¹ Acute myelogenous leukemia (AML) comprises 90% of cases of adult leukemia.² AML can infiltrate different parts of the body including the orbit (8%) and periocular area.³

Ophthalmic leukemia was first described by Burns in 1811 as chloroma because of the greenish color of the tumor.⁴ Ocular involvement with leukemia has been observed in 35% of patients, most commonly in the retina. Orbital chloroma is mostly seen with childhood AML.⁵

Periorbital inflammation, which may occur secondary to immune system abnormalities, has not yet been reported with leukemia. Herein we present a young patient with AML presenting

with periorbital inflammation mimicking periorbital cellulitis.

CASE REPORT

A 17-year-old boy presented with fever, progressive swelling and erythema of the right upper and lower lids and periorbital soft tissues of 5 days' duration (Fig. 1A). He had received intramuscular gentamicin and oral ciprofloxacin over the last 5 days. He had no history of trauma, systemic disease or insect bites. No abnormal findings such as lymphadenopathy or hepatosplenomegaly were noted on systemic physical examination. He was ill and had high grade fever. Visual acuity was 8/10 in both eyes and relative afferent pupillary defect was negative. Ocular motility was normal but painful in the affected eye. Slit lamp examination and funduscopy were unremarkable and intraocular pressure was within normal limits. The patient

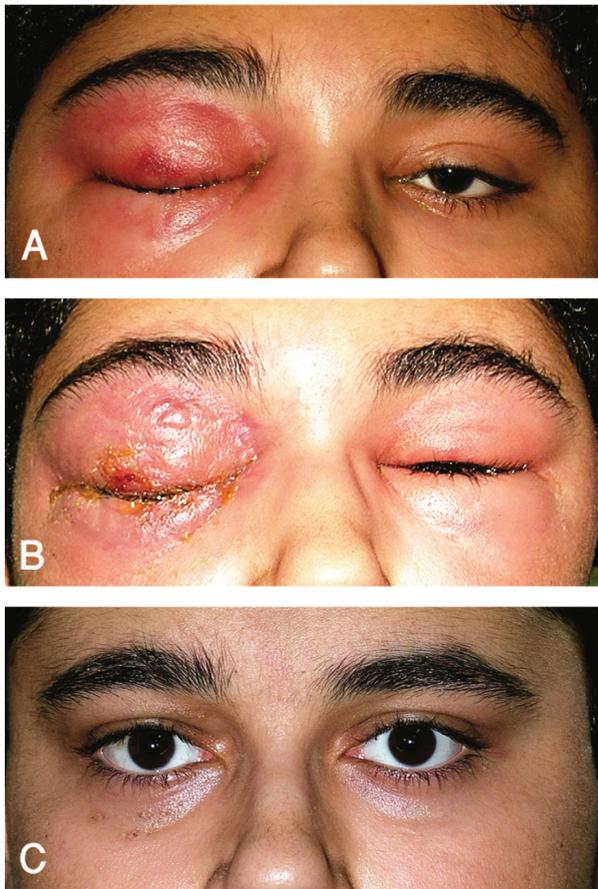


Figure 1. The patient had features of right periorbital cellulitis upon admission (A). One day after admission, the condition aggravated despite antibiotic therapy (B). The patient improved two months after chemotherapy (C).

had no evidence of dental infections or dacryocystitis. A complete blood count (CBC), blood culture, and other laboratory tests were requested.

The patient was admitted with a clinical impression of preseptal cellulitis and impending orbital involvement; intravenous ceftriaxone 1 gm every 12 hours was initiated empirically. The swelling and erythema progressed throughout the right facial and left periorbital area, and some blisters appeared on the right upper eyelid the day after admission (Fig. 1B). Orbital and paranasal sinus computed tomography (CT) images showed right periorbital soft tissue swelling without sinus involvement (Fig. 2). Laboratory tests revealed leukocytosis (120,000/ml) with a predominance of immature blast cells (>90%), anemia (hemoglobin level 10.9 gm/dl)

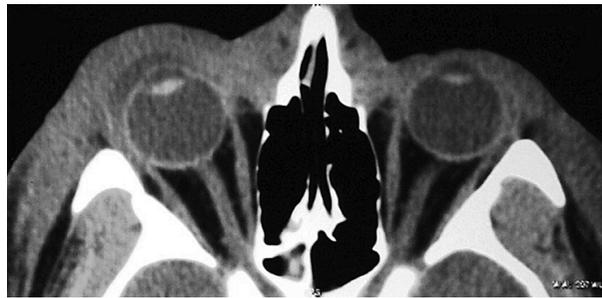


Figure 2. Axial computed tomography scan demonstrates bilateral periorbital soft tissue infiltration.

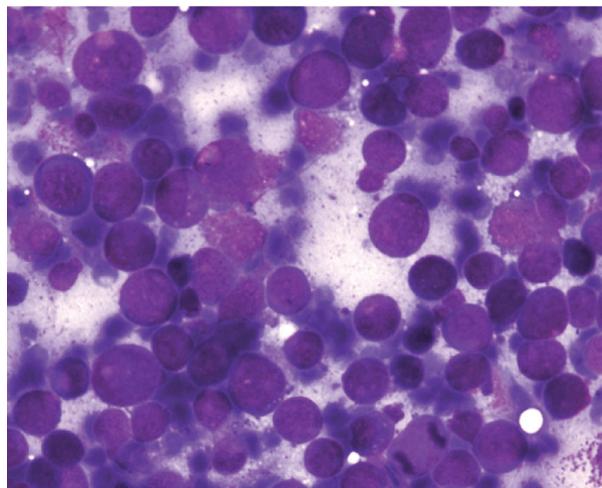


Figure 3. Malignant myelocytic cell infiltration in bone marrow aspiration (Romanowsky staining, magnification $\times 400$).

and thrombocytopenia (54,000/ml).

The patient was referred to a hematologist with a presumptive diagnosis of acute leukemia and underwent bone marrow aspiration (BMA) and flow cytometry which confirmed type M4-M5 AML (Fig. 3). Chemotherapy including cytarabine 100 mg/m² and idarubicin 12 mg/m² together with broad spectrum antibiotics including vancomycin 1 gm every 12 hours, ceftazidime 1 gm every 8 hours and imipenem 500 mg every 6 hours were initiated. Signs and symptoms regressed after two courses of chemotherapy over 2 months and he was relapse free for 2 years (Fig. 1C).

DISCUSSION

The eye is third most common extra-medullary organ affected by leukemia following the meninges and testes. Leukemic infiltration of

periorbital soft tissue can cause proptosis. These tumors are more common with AML and are called granulocytic sarcoma or chloroma.⁶ AML consists of 8 subgroups according to the French-American-British (FAB) classification.⁷ Close to 20% of AMLs are of the M4-M5 subtype. These subtypes are more prone to infiltrate extramedullary sites such as the gingiva, skin, central nervous system and orbit.⁸

Retinal hemorrhages, serous macular detachment, uveal, optic nerve and orbital infiltration, and involvement of extraocular muscles may result from leukemic infiltration.^{9,10} Several studies have shown that male patients more frequently have their first presentation of leukemia in the periorbital area and this entails greater morbidity and mortality.^{5,11}

Hallmarks of periorbital cellulitis include eyelid and periorbital soft tissue swelling and erythema together with fever. Our patient however, manifested other findings and failed to respond to regular antibiotic therapy. The key point in the diagnosis was attention to the overall status of the patient and the constellation of signs and symptoms.

The small vesicles on this patient's eyelids could have been due to insect bites, but he had no recent history of travel or bites. Infiltration did not affect the paranasal sinuses on CT scan, therefore contiguous spread of infection from the sinuses as the most common route was ruled out.

In summary, in addition to orbital infiltration, AML may initially present with periorbital inflammation mimicking preorbital cellulitis. In addition to a detailed physical examination, basic laboratory tests, blood cultures and consultation with infectious disease specialists, hematologic work up and collaboration with a hematologist should be considered in atypical or suspicious cases to rule out such a possibility.

Conflicts of Interest

None.

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