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Reactive plasmacytosis in a patient of acute myeloid leukemia at initial presentation – A rare occurrence

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Abstract

An increased proliferation of plasma cells has been seen very rarely in patients of Acute Myeloid Leukemia (AML) at the time of initial presentation. In this report, we describe a 64-year old case of AML with reactive plasmacytosis at the time of diagnosis. It has been suggested that paraneoplastic IL-6 production by leukemic blasts may be responsible for growth stimulation of plasma cells in marrow.

Keywords

Acute myeloid leukemia; reactive plasmacytosis; paraneoplastic IL-6.

Background

The presence of reactive plasmacytosis in patients with acute myeloid leukemia has been shown after chemotherapy. However, it is a rare occurrence in a newly diagnosed AML case. Our patient presented with a moderate proliferation of plasma cells in the bone marrow, along with morphological features consistent with the diagnosis of acute myeloid leukemia with maturation. A careful investigative approach is required to resolve this diagnostic dilemma [1,2].

Case presentation

This 64-year old male patient presented to our hospital with complaints of fever, productive cough, generalized weakness and undocumented weight loss for the last one month, and epistaxis and hematuria for the last 5 days. He was a known case of HCV taking no treatment. Physical examination revealed only pallor and mild jaundice.

Blood workup was advised which showed bicytopenia- hemoglobin of 10.5 g/dl, platelet count of 8000/µl and total leukocyte count of 7,100/µl. Rouleaux formation was noted on peripheral smear and ESR was 92mm in the first hour. X-ray chest was normal and USG abdomen revealed mild splenomegaly.

On blood film, there were 65% Blast cells with occasional Auer rods, 15% mature neutrophils, and a leukoerythroblastic picture (Figure 1).

The bone marrow aspirate stained with Wright's stain showed 40% blast cells, few showing Auer rods; with 10% mature plasma cells (some binucleate, and also seen as focal clumps) (Figure 2, 3 & 4) Erythropoiesis and myelopoiesis were moderately cellular and megakaryocytes were reduced. Cytochemistry showed a positive Sudan Black Bin >3% of blast cells. A diagnosis of AML with concurrent plasma cell dyscrasia was considered.

Further investigations ruled out multiple myeloma on the basis of a polyclonal expansion of gamma globulins on serum protein electrophoresis and lack of monoclonal protein on urine protein electrophoresis.

So our final diagnosis was Acute Myeloid Leukemia with Maturation (FAB Type AML-M2) showing reactive plasmacytosis.

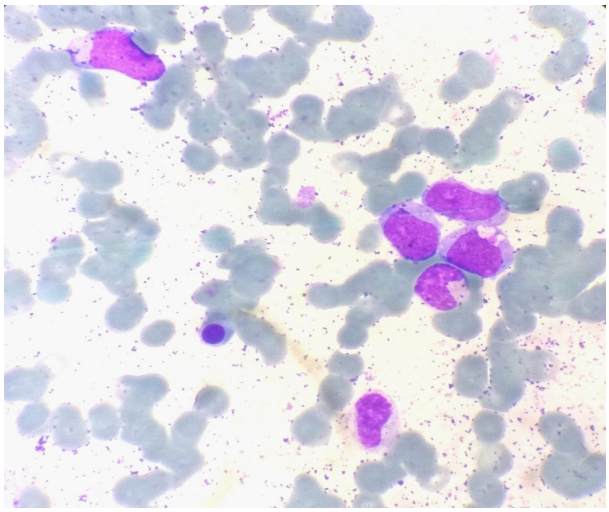

Figure 1: Peripheral film showing blast cells, one metamyelocyte, one nucleated RBC and prominent Rouleaux formation (Wright X 1000).

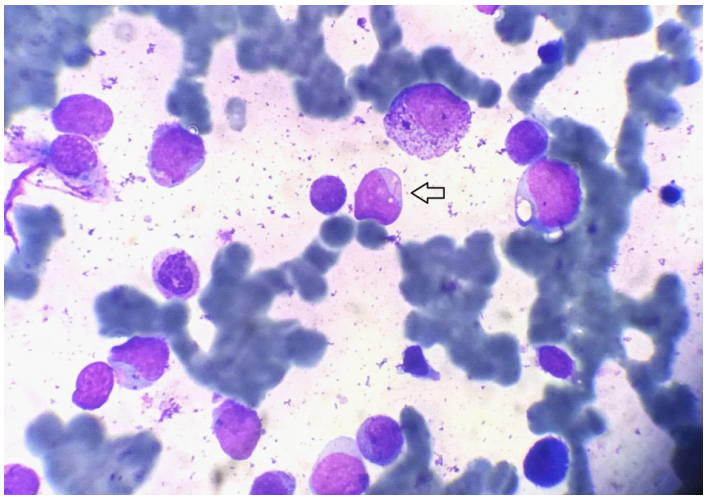

Figure 2: Bone marrow aspirate: Myeloblast showing an Auer rod (Wright X 100).

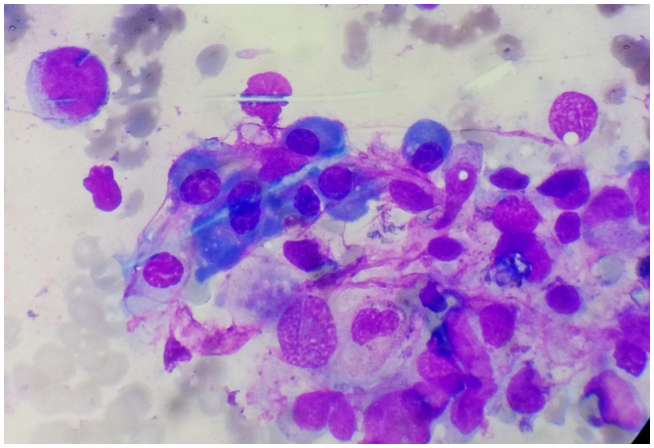

Figure 3: Bone marrow aspirate: A focal clump of plasma cells, in close proximity to histiocytes (Wright X 100).

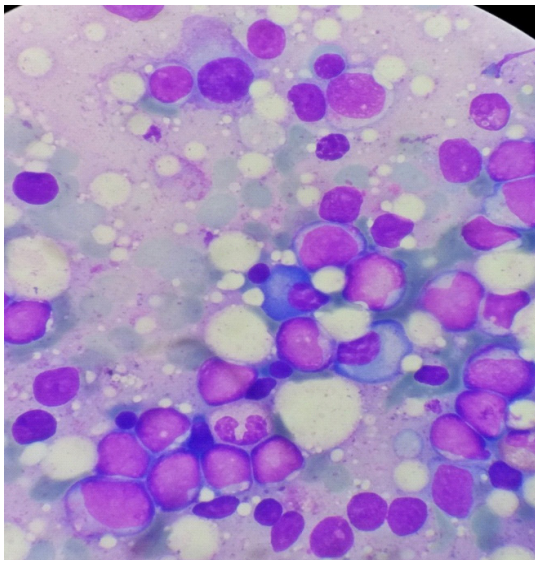

Figure 4: Bone marrow trephine imprint showing myeloblasts and plasma cells (Wright X 100).

Discussion

Reactive plasmacytosis, in which marrow plasma cells do not exceed more than 10-20% of all nucleated blood cells, has been seen in a variety of conditions, including chronic inflammatory conditions, autoimmune disorders, liver cirrhosis, as paraneoplastic syndrome in different lymphomas and carcinomas [1,2,3], and in AML patients on induction chemotherapy [4].

Morphological features pointing in favor of plasmacytosis of reactive nature are presence of more mature forms, perivascular distribution of plasma cells, and orientation of plasma cells around histiocytes [5]. In reactive plasmacytosis, plasma cells may contain vacuoles, or occasionally crystals [6].

Plasmacytosis occurs in about 6-7% cases of Acute Myeloid Leukemia, which should be cautiously worked up for because of the rare coexistence of AML with multiple myeloma [7]. Reactive plasmacytosis in patients of AML is rare at presentation, and interpretation requires correlation with clinical history, morphological findings and lab tests to exclude monoclonal gammopathy and end organ damage [8]. In our case, increased number of plasma cells raised a possibility of synchronous development of multiple myeloma in AML. After special staining with Sudan Black B and appearance of polyclonal band on protein electrophoresis, we gave a final diagnosis of AML (FAB Type AML-M2) with reactive plasmacytosis.

Few similar cases have been reported in literature. In India, Rangan et al [9] reported a case of 65-year old male having Acute Myelomonocytic Leukemia with exuberant reactive plasmacytosis of 14% at the time of AML diagnosis. A similar case was reported by Dodhy et al [10] in Pakistan which also showed 14% plasma cells in a newly diagnosed case of AML-M5b.

The pathogenesis of reactive plasmacytosis in AML has not been clear, although it is proposed that it may be due to a physiological response to antigenic stimulation. IL-6 production by leukemic blasts may cause the excessive proliferation of plasma cells [5]. However, for a definitive proof, further scientific research in this regard needs to be undertaken.

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