

## CASE REPORT

# TRANSIENT APPEARANCE OF BLASTS IN PERIPHERAL SMEAR IN PAEDIATRIC PATIENT WITH ACUTE ALEUKEMIC LEUKEMIA

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**ABSTRACT**

Acute leukemia can present as leukemic blast in peripheral blood & bone marrow or in some cases in only in bone marrow. Here we present unique case of paediatric acute leukaemia which shows blast cells in peripheral blood transiently and without any definitive treatment blast cell disappear from peripheral blood. So diagnosis made previously was questioned, but later on when bone marrow examination was performed it turn out to be acute leukaemia. We haven't found any reference of similar phenomenon in similar clinical settings

**Key Words:** Transient, Peripheral blood, Aleukemic leukemia

**INTRODUCTION**

Acute leukemia is malignant proliferation of hematopoietic precursor cells. Most common form of paediatric leukemia is acute lymphoblastic leukemia.<sup>1</sup> By definition when there is more than 20% blast cells in peripheral blood or bone marrow (mostly at both sites), acute leukemia is diagnosed.<sup>2</sup> Sometimes peripheral blood show less number of blasts cells or no blast cells but bone marrow fulfils criteria for acute leukemia in those cases it is called sub-leukemic or aleukemic leukemia respectively. Transient appearance of blast cells in peripheral blood has been described in neonate with Down's syndrome.<sup>3</sup> We come across the case which show blast cells in peripheral blood on day 1 of admission, followed by their conspicuous absence in follow up CBC without start of any definitive therapy, Which make initial diagnosis under question. But later on when bone marrow examination performed it turn out to be acute leukaemia.

**History**

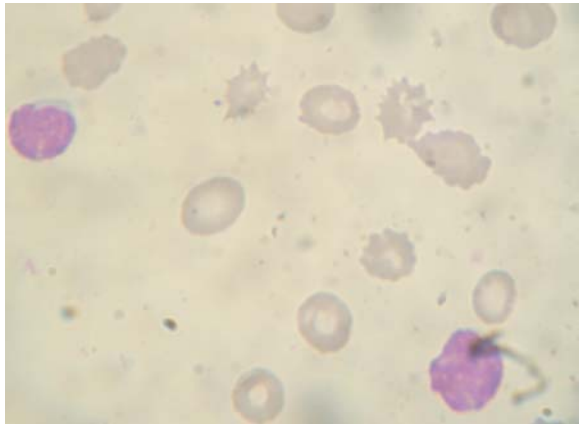
A 5 yr old male child presented to pediatric OPD with complains of pain while walking since 1½ month and inability to stand and bend from waist. He also complained of low grade intermittent fever since 15 days. He does not have hepato-splenomegaly or lymphadenopathy. Patient does not have any facial features or anomalies suggesting Down's syndrome.

On admission CBC was performed which show total WBC count of 18,800/cumm and 22% Blast cells (figure 1). Child was treated symptomatically along with antibiotic therapy, no steroids were given but two unit of blood transfused to patient to relieve symptoms of anemia. Next day follow up CBC report shows total count of 4000/cumm and there is no/rare atypical cells. Repeated CBC shows similar results and serum LDH level was 255 U/L(normal range: 135-225 U/L). Bone marrow aspiration was done which shows hypercellular marrow with predominant cell population were blast cells (figure 2). Patient was referred to cancer institute for further treatment.

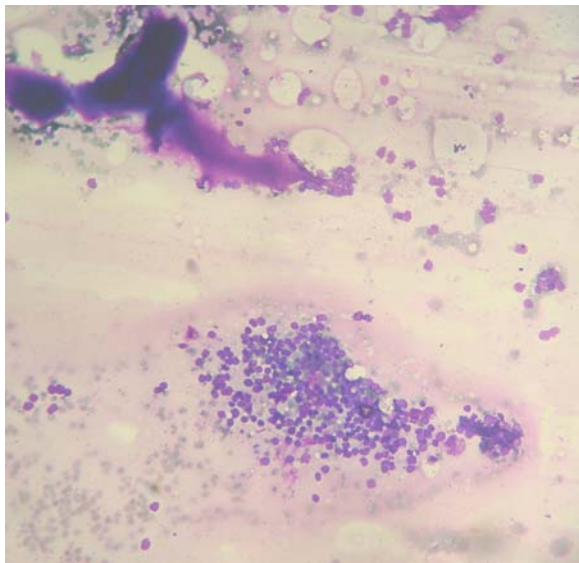
**DISCUSSION**

The acute leukemias are group of disorder arising from neoplastic transformation of hematopoietic stem cells. They can be either acute myeloid or lymphoid leukemia depending upon differentiation of stem cells. In paediatric group of patient, acute lymphoblastic leukemia is the most common malignancy accounting for about 30% of all pediatric malignancy.<sup>1</sup> Usually blood and bone marrow both show blast cells in acute leukemia, but when peripheral blood show less number of blast or no blast and bone marrow fulfil criteria for acute leukemia, it is called subleukemic or aleukemic leukemia respectively. Here we present case with feature of overt leukemia and aleukemic leukemia at different time frame. Incidence of childhood acute

leukemia is about 2.0 per 100000 men/women per year. 85% of them are acute lymphoblastic leukemia. Highest incidence is between 1-5 yr however T cell ALL occurs at older age (9-14yr).<sup>1</sup>



**Figure 1: First blood smear showing single blast cells (right lower corner) and single lymphocyte (upper left)**



**Figure 2: Bone marrow slides show majority of nucleated cells are blast cells**

Clinical symptoms are due to bone marrow failure or infiltration of leukemic cells. Fatigue, lethargy, persistent fever, bruising, bleeding and bone-joint pain are the most common presenting features. Other features include organomegaly, lymphadenopathy, symptoms of CNS involvement (headache, vomiting and cranial nerve palsy), mediastinal mass (T cell ALL). When there is only bone pain not associated with

organomegaly/lymphadenopathy and leucocytosis, diagnosis may be mistaken as arthritis and true diagnosis may be delayed.<sup>1</sup>

Diagnosis can be established by peripheral blood and bone marrow examination. However diagnosis of acute leukemia is not sufficient as treatment and prognosis differs significantly among these groups of neoplasms. Further classification requires cytochemistry, flow cytometry, cytogenetic and molecular biologic analysis depending upon case.

In our case we initially observe blast cells in peripheral blood in a quantity to meet diagnostic criteria for acute leukemia but follow-up peripheral smear examination after blood transfusion on subsequent day show no/rare blast with only other noticeable change is decrease in total WBC count. The same finding persists even after repeated peripheral blood examination. So naturally first report is questioned as either diagnostic error or sampling error. But as severe persistent bone pain cannot be explained by any other condition and based on finding of blast once on peripheral blood, bone marrow examination is done which turn out to be leukemic marrow. In our opinion, it may be similar condition as leukemoid reaction where marrow under stress releases some of their constituent cells prematurely in peripheral blood. Bone marrow of person having aleukemic leukemia put to stress transiently blast may appear in peripheral blood. However we cannot find any reference of such phenomenon as transient appearance of blast in peripheral blood followed by their disappearance without any definitive treatment.

## CONCLUSION

Transient appearance of leukemic blast in peripheral blood in child with aleukemic leukemia may happen. Especially patient with clinical features can not be explained by other disease have to be evaluated by bone marrow examination to rule out leukemia so that diagnosis can not be delayed.

## REFERENCE

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