

Erythroleukemia

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Erythroleukemia is a panmyelotic disorder characterised by an acute and abnormal proliferation of both myeloblasts and erythroblasts in bone marrow and other visceral organs. This disorder was first described by Copalli in 1912 as erythromatosis(1) and subsequently was included as M6 type of acute non-lymphoblastic leukemia (ANLL) in FAB classification(2). Rarity of this disease entity in such a young age group prompted us to report this case.

Case Report

A 3-year-old female child, presented in November, 1988 with history of high grade fever, increasing pallor and abdominal distension of 15 days duration. She had history of repeated pyoderma since birth. Examination revealed multiple cervical lymphnodes, signs of congestive heart failure, an ecchymotic patch over right eyelid, splenomegaly (6 cm) and a nontender, firm, smooth, 5 cm hepatomegaly.

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Blood examination revealed a hemoglobin of 7.8 g/dl, corrected TLC of $28 \times 10^9/L$, platelet count of $36 \times 10^9/L$, ESR fall of 44 mm in the first hour (Wintrobe's), and a reticulocyte count of 2%. Peripheral smear (Fig. 1) showed mild anisopoikilocytosis, few macrocytes, macroovalocytes, polychromatophils, presence of cabot rings and basophilic stippling. Platelets were reduced with presence of few giant platelets. Differ-

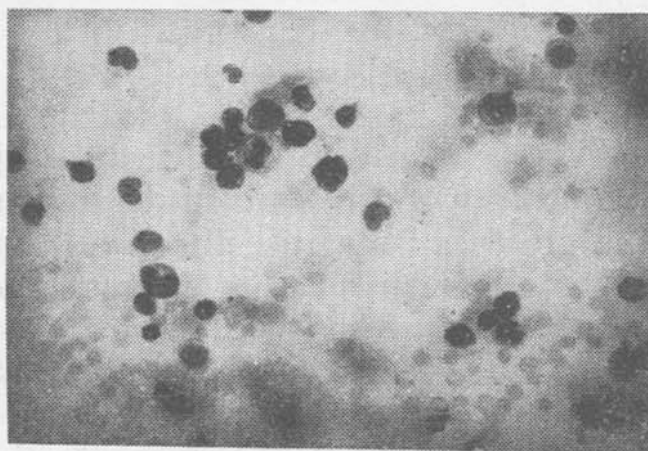


Fig. 1. Peripheral smear showing immature cells of both myeloid and erythroid series.

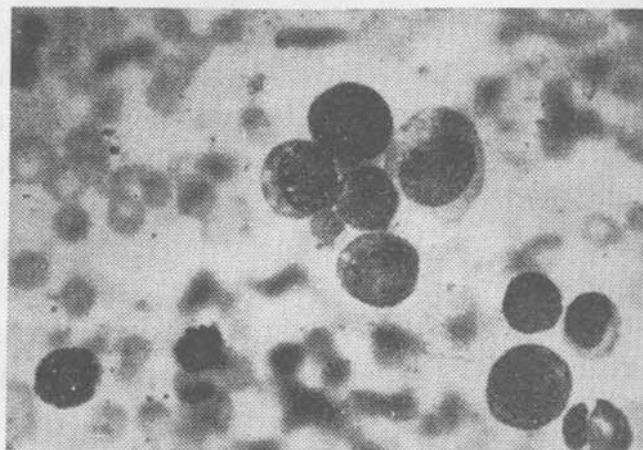


Fig. 2. Bone marrow smear showing predominance of erythroid series.

ential count revealed myeloblasts 24%, promyelocytes 11%, myelocytes 2%, neutrophils 20%, lymphocytes 43%. Few myeloblasts showed Auer rods. There were 172 nucleated RBCs/100 WBCs, with early and intermediate erythroblasts predominating - few showed megaloblastoid change and bizarre features like binucleation, nuclear lobulation, cytoplasmic vacuolation and atypical mitoses.

Bone marrow examination (Fig. 2) revealed a hypercellular marrow with myeloid-erythroid ratio of 1:4.5 with marked megaloblastosis and dyserythropoiesis. Erythroblasts constituted 78% of all nucleated cells, of which 23% were proerythroblasts. Many of these showed cytoplasmic blebs and vacuolations. The differential count of nonerythroid cells showed myeloblasts 41%, promyelocytes 28%, myelocytes 8%, metamyelocytes 5%, neutrophils 14% and monocytes 4%. Cytochemical staining could not be done as the patient expired on the 3rd day of admission due to a massive gastrointestinal bleed, without any specific therapy being instituted. Based on the cytomorphology, diagnosis of erythroleukemia (in erythemic phase) was made according to the revised FAB criteria.

Serum immunoglobulins showed a raised level for all these types (IgG 2125 mg/dl, IgM 149.40 mg/dl, and IgA 161.78 mg/dl).

Discussion

Erythroleukemia is an uncommon form of acute leukemia and constitutes 2-8% of ANLL cases in adults(3) and 1-2% of ANLL cases in children(4,5). In one large study of 20 cases of erythroleukemia, only 4 were in the pediatric age group(6). A definite male preponderance is seen (male to female ratio 1.4:1). In India, overall inci-

dence of ANLL is relatively low and one recently published study of 29 cases of ANLL in children, had no case of erythroleukemia(7). In our institution, only 3 cases of erythroleukemia have been encountered in the last 10 years constituting 7.9% of the total ANLL cases (Table I).

The clinical presentation of erythroleukemia does not differ from other types of ANLL. Although no clinical feature is specific to it, severe pallor(4), bleeding manifestations and rheumatic complaints(8) may be seen more frequently in erythroleukemia compared to other subtypes of ANLL. In a study of 46 patients, incidence of significant

TABLE I--Incidence of Morphological Variants of ANLL in Our Institution (1980-89).

FAB subtype *	Number (n=38)	%
M1	11	28.9
M2	8	21.1
M3	0	0.0
M4	15	39.5
M5	1	2.6
M6*	3	7.9

* Only present case was in the pediatric age group.

hepatomegaly and splenomegaly was only 19 and 8%, respectively(8). Although lymphadenopathy was a prominent feature in our case, lymphnodes in erythroleukemia are either not enlarged or remain small(9). Lymphadenopathy in the present case may be reactive due to repeated pyoderma since birth.

Erythroleukemia has been recognised as a transitory phase in the development of other types of ANLL particularly myelo-

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Hypokalemic Paralysis

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Hypokalemia is a relatively common problem and may be due to gastrointestinal losses (infectious diarrhea, vomiting, laxative abuse)(1,2) or renal losses (diuretic abuse, renal tubular acidosis). It is usually defined as serum potassium less than 3.5 mEq/L(3).

Hypokalemic paralysis is a dramatic clinical entity. The sudden onset of flaccid

paralysis could be life threatening, but if diagnosed in time and properly treated, the response and recovery can be equally dramatic and gratifying. We present 5 cases of rapidly progressive paralysis, caused by severe derangement in the potassium homeostasis. The role of potassium in muscle weakness and paralysis and management of hypokalemia is discussed.

Case Reports

The details of the 5 cases admitted with the diagnosis of hypokalemic paralysis is given in *Table I*. They were 2 males and 3 females, between the ages of 7 months to 5 years.

Discussion

Potassium, with other electrolytes, is lost in diarrheal stool at all ages, but more so in children(4). Disturbance of potassium equilibrium may produce a wide range of clinical disorders, including myopathy; marked muscle wasting, diminution of muscle tone, power and reflexes(5-9). Severe potassium depletion can result in two major neuromuscular consequences: paralysis and rhabdomyolysis. Paralysis has a predilection for extremities, with legs more involved than arms. Trunk musculature can also be involved and may result in life threatening respiratory paralysis. Severe paralytic complications usually occur

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