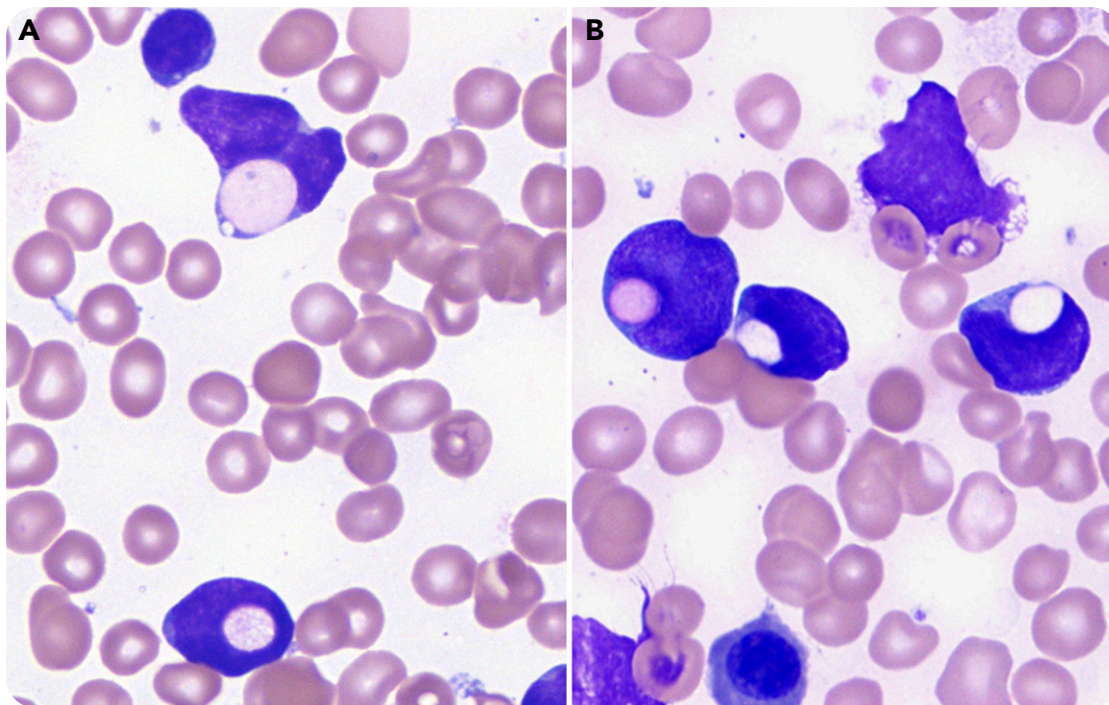


Frequent erythrophagocytosis by leukemic blasts in B-cell acute lymphoblastic leukemia

Oluwaseun O. Olaiya and Weijie Li, Children's Mercy Hospital



A 14-year-old, previously healthy adolescent girl presented with fatigue, shortness of breath, and headache for 1 month. Laboratory tests showed pancytopenia (hemoglobin, 4.7 g/dL; platelet count, $57 \times 10^9/L$; neutrophil count, $1.2 \times 10^9/L$) and 21% blasts. Bone marrow aspirate revealed 90% small- to medium-sized L1 lymphoblasts with frequent (22%) erythrophagocytosis (panels A-B: Wright's stain, original magnification $\times 1000$). Flow cytometry study was suggestive of pro-B-cell acute lymphoblastic leukemia (B-ALL; $CD19^+TdT^+CD10^-$) with aberrant partial expression of CD13 and CD33. Cytogenetic study showed a near-tetraploidy karyotype of $87<4n>, XX,-X,-X, add(1)(p36.1)\times 2,-7,-8, add(12)(p11.2), add(12)(p12), -14, -15, add(15)(q15), der(20) t(5;20) (q12;p11.2), +add(22)(p11.2),$

$add(22)(q12)$. FISH analysis confirmed near-tetraploidy and ETV6/RUNX1 gene rearrangement. The diagnosis of precursor B-ALL was made. This patient was treated on a high-risk protocol because of age (>10 years) and achieved complete remission. She has been disease free for ≥ 5 years.

Erythrophagocytosis by leukemic blasts is a rare phenomenon of unknown pathogenesis and unclear clinical significance. It is mostly seen in acute myeloid leukemia, especially associated with monocytic differentiation, $t(8;16)(p11;p13)$, $t(16;21)(p11;q22)$, $inv8(p11q13)$, or tetraploidy, and poor prognosis. It is extremely rare in ALL, with only a few reported cases, 1 of which was pediatric B-ALL with ETV6/RUNX1 gene rearrangement and good prognosis.