Images of Hematology

Blood Research Educational Material

BLOOD RESEARCH

Volume 54 • Number 1 • March 2019

<https://doi.org/10.5045/br.2019.54.1.2>

Hemophagocytosis by blasts in acute lymphoblastic leukemia

Emilie Klein¹, Coralie Derrieux², Stephanie Dulucq¹

Laboratoire d'Hématologie, ¹Centre Hospitalier Universitaire (CHU) de Bordeaux, Bordeaux, ²Grand Hôpital de l'Est Francilien, Meaux, France

Received on April 7, 2018; Revised on May 17, 2018; Accepted on May 27, 2018

Correspondence to Emilie Klein, Laboratoire d'Hématologie, Centre Hospitalier Universitaire (CHU) de Bordeaux, F-33000 Bordeaux, France, E-mail: emilie.klein@chu-bordeaux.fr

A 4-year-old boy presented with spontaneous hematomas, lower limb pain, fever, and hepatosplenomegaly. A complete blood count revealed pancytopenia (white blood cells, $7.6 \times 10^9/L$; neutrophils, $0.46 \times 10^9/L$; hemoglobin, 6.7 g/dL; platelets, $85 \times 10^9/L$). The peripheral blood smear examination showed 54% medium-sized blasts, with a high nucleus-to-cytoplasm ratio, round or oval nuclei, fine chromatin, and basophilic cytoplasm containing many vacuoles. The bone marrow (BM) was infiltrated by 98% of blasts of the same morphology. Interestingly, we frequently observed thrombophagocytosis and erythrophagocytosis by blasts in the BM (composite image of BM smear, May–Grunwald–Giemsa staining, $\times 1,000$; **A, B**: erythrophagocytosis. **C, D**: thrombophagocytosis). Immunophenotyping analysis showed positivity for cluster of differentiation (CD) 34, CD19, cCD79a, and CD10; aberrant positivity for CD33; and negativity for CD20, c- μ , and sIgM. These confirmed the diagnosis of B-cell precursor acute lymphoblastic leukemia (ALL), B-II type common, according to the European Group for the immunological classification of leukemias. A normal 46,XY[20] karyotype was observed, but fluorescence *in situ* hybridization analysis revealed a cryptic translocation t(12;21)(p13;q22) with *ETV6-RUNX1* fusion. Hemophagocytosis by blasts has been reported mainly in acute myeloid leukemia, especially associated with t(8;16)(p11;p13); *KAT6A-CREBBP*. In ALL, this phenomenon is very rare and is not associated with specific cytogenetic or molecular anomalies.