

Cleaved Leukemic Blast Cells, Vacuolation, and Pseudopodia-like Cytoplasmic Projections in Acute Myeloid Leukemia with *TLS::ERG*

TLS::ERG'li Akut Miyeloid Lösemide Yarıklı Lösemik Blastlar, Vakuolleşme ve Yalancı Ayak Benzeri Sitoplazmik Uzantılar

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To the Editor,

A 28-year-old man was admitted due to swelling of both lower limbs for more than 1 month, worsening with a headache and intermittent fever for 4 days. A peripheral blood smear showed approximately 20% blasts with clefted nuclei, accompanied by occasional Auer bodies in the cytoplasm (Figures 1a and 1b). Bone marrow aspiration revealed 94.5% blasts, showing markedly

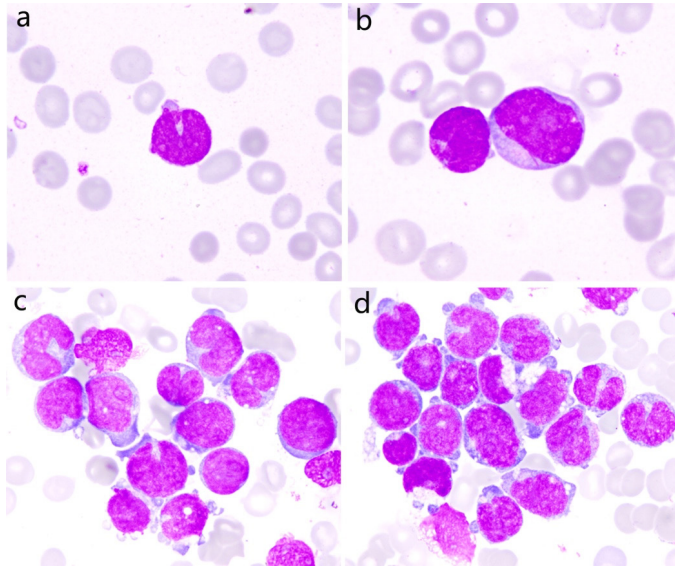


Figure 1. Peripheral blood smear showed approximately 20% blasts with clefted nuclei, accompanied by occasional Auer bodies in cytoplasm (a and b, Wright-Giemsa stain, 1000 \times). Bone marrow aspiration revealed 94.5% blasts, showing markedly malformed nuclei of various sizes and agranular basophilic cytoplasm with pseudopod formation. Cleaved blast cells (consisting of 40% blasts) and multiple large vacuoles were observed (c and d, Wright-Giemsa stain, 1000 \times).

malformed nuclei of various sizes and agranular basophilic cytoplasm with pseudopod formation. Strikingly cleaved blast cells (consisting of 40% blasts) as well as multiple large vacuoles were observed (Figures 1c and 1d). Immunophenotyping in flow cytometric analysis demonstrated that the blasts were positive for CD33, CD34, CD117, and CD38; partially positive for HLA-DR, CD7, CD56, and CD15; and negative for CD4, cCD3, CD8, CD2, CD10, CD14, CD20, CD64, CD19, CD123, CD36, CD61, and MPO. Cytogenetic analysis showed 46,XY,add(2)(q37),t(16;21)(p12;q22)[20]. Next-generation sequencing detected the *TLS::ERG* fusion gene. Other somatic mutations, including *ABL1*, *ABL2*, *CBL*, *CEBPA*, *CRLF2*, *DNMT3A*, *EP300*, *EPOR*, *ETV6*, *IDH1*, *IDH2*, *KIT*, *KMT2A*, *KRAS*, *NF1*, *NOTCH1*, *NPM1*, *NRAS*, *RUNX1*, *PAX5*, *TET2*, *TP53*, and *WT1*, were not detected. All these results collectively confirmed the diagnosis of acute myeloid leukemia (AML) with *TLS::ERG*.

Generally, clefted lymphocytes mainly occur in patients with *Bordetella pertussis* infection [1] and follicular lymphoma [2], or less commonly in chronic lymphocytic leukemias [3]. Additionally, in the absence of typical morphological findings (including blasts with hemophagocytosis, basophilia, and micromegakaryocytes) in AML with *TLS::ERG* [4], the occurrence of cleaved blast cells as well as vacuolation and cytoplasmic pseudopod formation, as in the present case, is extremely uncommon.

Keywords: Cleaved leukemic blast cells, Vacuolation, Acute myeloid leukemia, *TLS::ERG* fusion gene, Immunophenotyping

Anahtar Sözcükler: Yarıklı lösemik blast hücreleri, Vakuolleşme, Akut myeloid lösemi, *TLS::ERG* füzyon geni, İmmünofenotipleme

Ethics

Informed Consent: Informed consent was obtained from this patient.

Authorship Contributions

Surgical and Medical Practices: X.H., L.J., T.L., M.Y.; Concept: X.H., L.J., T.L.; Design: X.H., L.J., T.L.; Data Collection or Processing: L.J., T.L., M.Y.; Analysis or Interpretation: X.H., L.J., T.L., M.Y.; Literature Search: X.H., L.J., T.L., M.Y.; Writing: T.L., M.Y.

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