

# Acute Leukemia of Mixed B/Myeloid Lineage with Dual *BCR::ABL1* and *CBFβ::MYH11* Fusion Genes

Çift *BCR::ABL1* ve *CBFβ::MYH11* Füzyon Genine Sahip Karma B/Miyeloid Kökenli Akut Lösemi

✉ Xulin Lu<sup>1</sup>, ✉ Jigang Xiao<sup>1</sup>, ✉ Xiaojin Cai<sup>1</sup>, ✉ Chengwen Li<sup>1</sup>, ✉ Zhijian Xiao<sup>1,2</sup>

<sup>1</sup>State Key Laboratory of Experimental Hematology, National Clinical Research Center for Blood Diseases, Haihe Laboratory of Cell Ecosystem, Chinese Academy of Medical Sciences and Peking Union Medical College, Tianjin, P.R. China

<sup>2</sup>Tianjin Institutes of Health Science, Tianjin, P.R. China

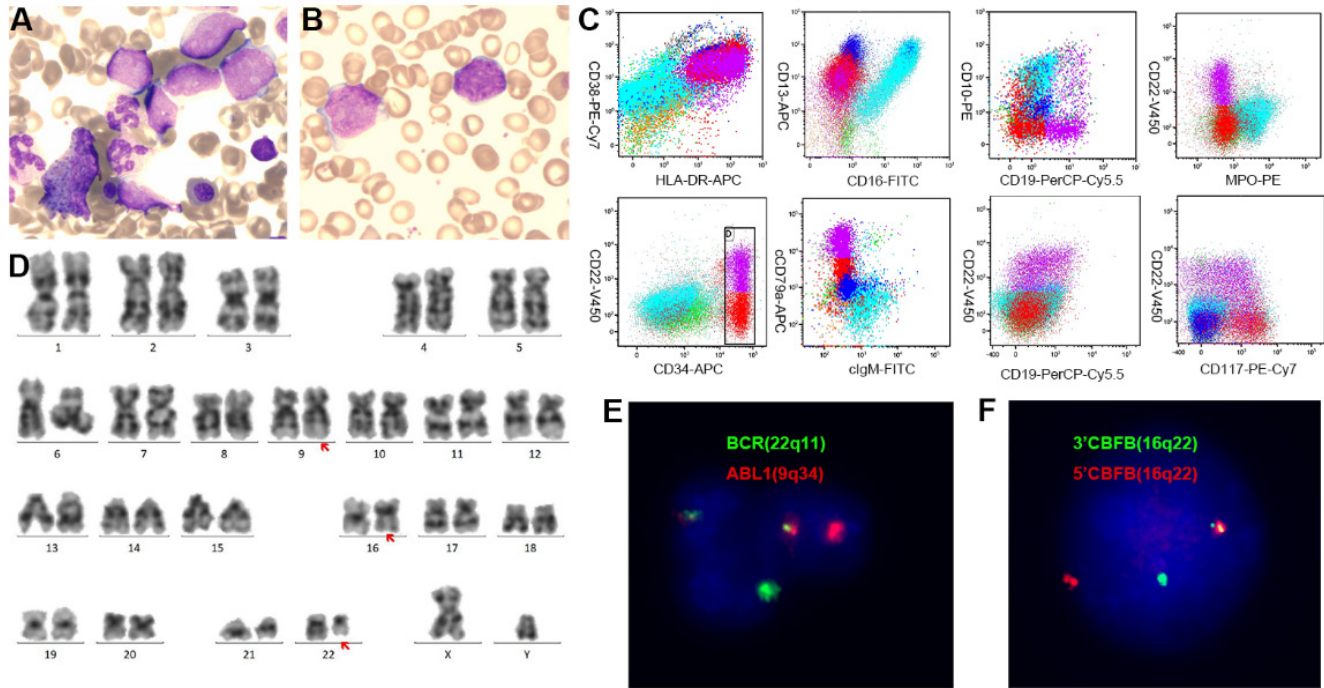


Figure 1. A, B) Bone marrow aspirate and peripheral blood smear revealed 57% and 34% blasts, respectively. C) Flow cytometry revealed two abnormal cell populations; see text for details. D) Cytogenetic analysis revealed 46,XY,t(9;22)(q34.1;q11.2),inv(16)(p13.1q22)[20]. E, F) Fluorescence in situ hybridization revealed *BCR::ABL1* and *CBFβ* rearrangement positivity.



Address for Correspondence/Yazışma Adresi: Zhijian Xiao, M.D., State Key Laboratory of Experimental Hematology, National Clinical Research Center for Blood Diseases, Haihe Laboratory of Cell Ecosystem, Chinese Academy of Medical Sciences and Peking Union Medical College, Tianjin, P.R. China  
E-mail: zjxiao@ihcams.ac.cn ORCID: orcid.org/0000-0001-8008-7385

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A 14-year-old male patient presented with dizziness, nausea, and fever. Blood tests revealed white blood cell count of  $89.71 \times 10^9/L$ , hemoglobin of 98 g/L, and platelet count of  $392 \times 10^9/L$ . Bone marrow aspirate and peripheral blood smear revealed 57% and 34% blasts, respectively (Figures 1A and 1B). Flow cytometry (FCM) revealed two abnormal cell populations, one of which expressed CD34, CD123, TDT, CD38, HLA-DR, CD33, CD13, CD117 (strong), CD7, and CD36 (partial) while the other expressed CD19, cCD79a, CD22, TDT, CD34, CD38, HLA-DR, CD13, CD33, CD123, and CD117 (partial) (Figure 1C). Cytogenetic analysis revealed 46,XY,t(9;22)(q34.1;q11.2),inv(16)(p13.1q22)[20] (Figure 1D). Fluorescence in situ hybridization (FISH) revealed *BCR::ABL1* and *CBFB* rearrangement positivity (Figures 1E and 1F). Whole-transcriptome RNA sequencing of fusion genes revealed the existence of *CBFβ::MYH11*, *BCR::ABL1* (p210), and *ABL1::BCR*. After one cycle of chemotherapy including vincristine, daunorubicin, PEG-asparaginase, and prednisone concurrently with dasatinib, morphological complete response was achieved and minimal residual disease was negative by FCM, but both fusion signals remained positive by FISH.

Considering the presence of splenomegaly and the *BCR::ABL1* fusion signal detected in lobulated granulocytes, this case was deemed to have originated from the blast crisis phase of chronic myeloid leukemia [1,2]. Cases of acute leukemia of mixed B/myeloid lineage together with *BCR::ABL1* and *CBFβ::MYH11* have rarely been reported to date. Early use of tyrosine kinase inhibitors in conjunction with hematopoietic stem cell transplantation may improve outcomes [3].

**Keywords:** Acute leukemia, Mixed B/myeloid lineage, *BCR::ABL1*, *CBFβ::MYH11*

**Anahtar Sözcükler:** Akut lösemi, Karma B/miyeloid köken, *BCR::ABL1*, *CBFβ::MYH11*

## Ethics

**Informed Consent:** No personally identifying patient information is included in this publication and informed consent was not required.

## Footnotes

### Authorship Contributions

Data Collection or Processing: X.L.; Analysis or Interpretation: Z.X.; Literature Search: X.C., C.L.; Writing: X.L., J.X.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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