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LETTER TO THE EDITOR

A novel case of γδ T cell leukemia with recurrent genetic abnormalities accompanied by agranulocytosis

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Dear Editor,

T cell malignancies that express the γδ T cell receptor (TCR) are somewhat rare, and their clinicopathologic features are not yet fully understood. We experienced an unusual case of γδ T cell leukemia accompanied by agranulocytosis that showed KMT2A-AFDN rearrangement and BCL11B mutation. To the best of our knowledge, this is the first case in literature with such clinicopathological and molecular features.

A 21-year-old woman suffering from high-grade fever for several days presented with aberrant cells in the peripheral blood and was suspected to have acute leukemia. She was previously administered steroids for a short period and was well and afebrile when she first presented to us. Hematological examination showed mild pancytopenia; white blood cell count 2300/μL with 51% neutrophils, 34% lymphocytes, 3% monocytes, and 12% abnormal cells; hemoglobin concentration 9.8 g/dL; and platelet count 13.7×10^4/μL. Serum biochemistry showed a mild elevation in the levels of lactate dehydrogenase (291 IU/L), ferritin (620.3 ng/mL), and soluble interleukin-2 receptor (1643 U/mL). Blood tests did not show the presence of antibodies against human immunodeficiency virus or human T cell leukemia virus. Computed tomography showed no abnormal findings such as lymphadenopathy or hepatosplenomegaly. Bone marrow examination showed an increase in the abnormal small- to medium-sized cells with microgranular chromatin structures, conspicuous nucleoli, and a relatively broad pale cytoplasm (Fig. 1a). Flow cytometry (FCM) analysis (Fig. 1b) showed that these cells had an aberrant expression pattern of T cell markers—$CD3^+$, $CD2^-$, $CD5^+$, $CD7^+$, $CD4^-$, $CD8^+$, $TCR\alpha\beta^-$, and $TCR\gamma\delta^+$. These cells were positive for the B cell marker, CD19, but were negative for CD20 and the immunoglobulin light chains. They were also negative for other markers for myeloid cells (CD13, CD33), lymphoblastic cells (CD1a, terminal deoxynucleotidyl transferase [TdT]), stem cells (CD34), or natural-killer cells (CD16, CD56). G-band analysis revealed a normal karyotype. Although the viral load of the Epstein-Barr virus (EBV) in the mononuclear cells and plasma was mildly elevated (7.3×10^2 and 7.1×10^2 copies/μg DNA, respectively), the serum antibody titers for EBV showed a previous infection pattern and clonality of the EBV genome was not demonstrated by the Southern blot analysis for the terminal repeat region. Based on the above findings, we speculated this to be a case of mature T cell neoplasm. However, our diagnosis was not conclusive as the neoplasticity could not be confirmed sufficiently.

The clinical course is shown in Fig. 1f. The EBV DNA titers in the mononuclear cells and plasma spontaneously declined to undetectable levels. However, the levels of the aberrant lymphoid cells in peripheral blood did not decrease, and there was a development of neutropenia and thrombocytopenia. Anemia was not exacerbated without a decrease in reticulocytes. The administration of granulocyte colony-stimulating factor only resulted in a transient increase in neutrophils, and agranulocytosis ensued after a week. Cyclosporine A (CyA) was administered to decrease the levels of aberrant T cells; however, this treatment was ineffective. Subsequent administration of prednisolone (PSL) resulted in a decrease in the aberrant cells in peripheral blood and an improvement in thrombocytopenia; however, the neutrophil

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