

## Clinical Image

# Large Granular Lymphocytes with Tortuous and Twisted Shapes of Aggressive Natural-Killer Cell Leukemia

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Received: September 20, 2018; Accepted: October 23, 2018; Published: October 30, 2018

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A 50-year-old man presented with a 3-week history of fever, nose bleeding, lymphadenopathy, hepatomegaly, and splenomegaly. Blood tests revealed a hemoglobin concentration of 98g/L, a platelet count of  $116 \times 10^9/L$ . White blood cell count was  $3.73 \times 10^9/L$ , with 7% large granular lymphocytes. The serum lactate dehydrogenase was markedly elevated (554U/L). Cytogenetic analyses show a highly complex karyotype (Figure 1). The FDGPET/CT demonstrated hepatomegaly and splenomegaly with normal tracer uptake.

The Peripheral Blood (PB) and Bone Marrow (BM) smears showed infiltration of Large Granular Lymphocyte (LGLs). The morphology of the LGLs showed tortuous and twisted shapes with basophilic cytoplasm, coarse basophilic granules. The nuclei showed a slightly immature chromatin pattern and inconspicuous nucleoli (A,B). The infiltration of LGLs in the BM biopsy tissue shows the

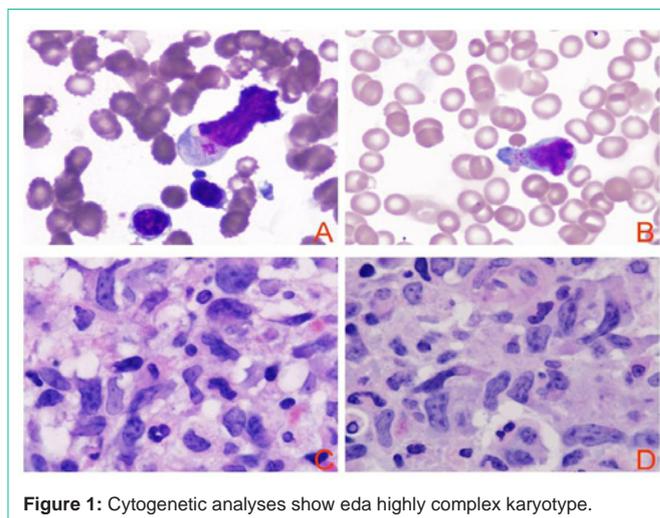


Figure 1: Cytogenetic analyses show a highly complex karyotype.

extensive involvement of large-size lymphoid cells with irregular nuclear contours and distinct nucleoli (C,D). Immunophenotype of the LGLs by flow cytometric analyses were typically positive for CD56, CD2, CD7, and CD16, and were negative for CD3, CD4, CD5, CD8, and CD57. A diagnosis of aggressive NK-cell leukemia was made. The patient received intensive chemotherapy (L-asparaginase, high-dose of methotrexate and dexamethasone regimens) but died of neutropenic fungal infection.