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Circulating Monocytes Phagocytosing Lymphocytes in the Small-Cell Variant of T-Cell Prolymphocytic Leukemia

T-Hücreli Prolenfositik Löseminin Küçük Hücreli Varyantında Lenfositleri Fagosite Eden Monositler

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To the Editor,

A 66-year-old man was admitted because of wheezing after physical activity for 1 month. Physical examination showed multiple enlarged lymph nodes in the neck, axilla, and groin, and the largest one was about 4x1.5 cm. The liver was palpable 7 cm below the right subcostal margin and the spleen 10 cm below the left. The patient developed abdominal distention and decreased breath sounds in the right lung without tenderness or rebound pain. A complete blood count showed remarkable leukocytosis (white blood count: $317.96x10^9$/L) with 98% abnormal mature lymphocytes, hemoglobin concentration of 111 g/L, and severe thrombocytopenia (platelets: $23x10^9$/L). Other laboratory results indicated elevated levels of lactic dehydrogenase (LDH; 1232 U/L) and β2-microglobulin (6.36 mg/L). Chest computed tomography revealed hepatosplenomegaly and right-sided pleural effusion with atelectasis of the right lung, and the pleural effusion had high levels of LDH (4877 U/L) and adenosine deaminase (24.2 U/L).

A peripheral blood smear revealed small mature lymphocytes with clumped chromatin, regular nuclei, invisible nucleoli, and scant basophilic cytoplasm (Figure 1a-1d). Strikingly, monocytes engaging in phagocytosis of lymphocytes were observed, showing nuclear condensation and scant cytoplasm (Figure 1a-1c), along with occasional cocci with both intracellular and extracellular monocytes (Figures 1c and 1d). Phagocytosis was not seen in the bone marrow. Flow cytometric analysis of the bone marrow aspiration demonstrated lymphocytes positive for CD3, CD4, CD2, CD7 (bright), CD5, CD45RA, and TRBC1 and negative for CD8, CD10, CD25, CD30, CD45RO, CD56, CD57, CD279, and TCRγδ. The morphological features and immunophenotyping of abnormal cells in the pleural fluid were identical to those of the marrow samples. Cytogenetic analysis showed 46,XY,inv(9)(p12q13)[18]. Fluorescence in situ hybridization revealed TRA/D rearrangement in 83% of the cells (Figures 1e and 1f). A diagnosis of T-cell prolymphocytic leukemia (T-PLL) of the small-cell variant type was made. The patient underwent chemotherapy with bendamustine, but there was no significant improvement. For economic reasons, he was discharged and blood culture was not performed.

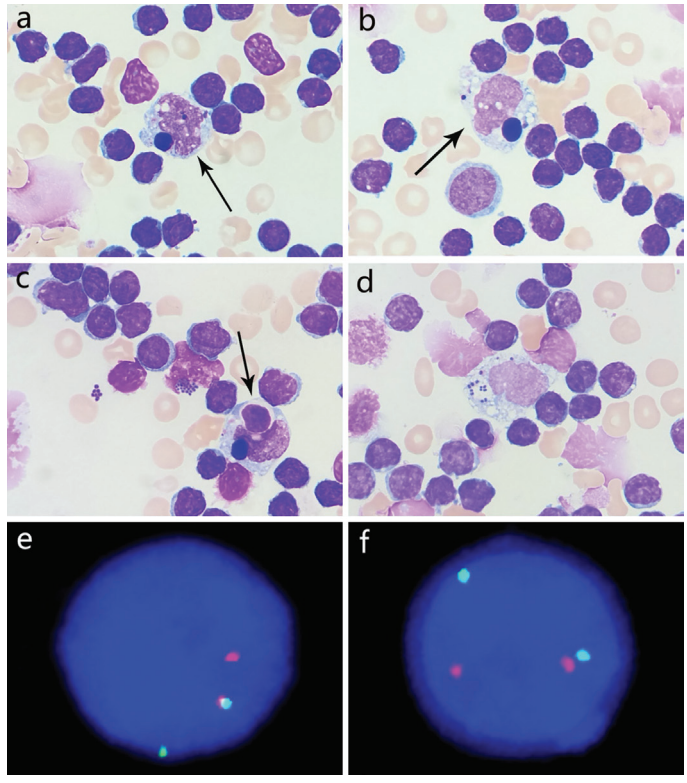

Figure 1. Peripheral blood smear revealed mature lymphocytes with clumped chromatin, regular nuclei, invisible nucleoli, and scant cytoplasm (a, b, c, d, Wright-Giemsa staining, 1000× magnification). Strikingly, monocytes engaged in the phagocytosis of lymphocytes were observed, showing nuclear condensation and scant cytoplasm (a, b, c, black arrows), along with occasional cocci with both intracellular and extracellular monocytes (c, d). Fluorescence in situ hybridization detected TRA/D rearrangement in 83% of all cells (e, f).

Very few cases of phagocytosis of lymphocytes by circulating monocytes have been reported in the literature. To our knowledge, circulating monocytes are generally considered as committed precursors for phagocytes, such as macrophages and dendritic cells [1]. Moreover, Kovács et al. [2] found that phagocytic activities of monocytes occur in patients with ovarian cancer. Phagocytic activity of circulating monocytes may be present in cases of hematological disorders or various infections. Coincidentally, Li et al. [3] documented an unusual anaerobic infection in a 46-year-old man showing the presence of phagocytosis of lymphocytes by circulating monocytes on Wright-stained blood smears. In our case, the occurrence of small lymphocytes in a small-cell variant of T-PLL together with pleural involvement and the phagocytosis of lymphocytes by circulating monocytes was extremely uncommon. In brief, we have described a rare case of the small-cell variant of T-PLL, presenting with pleural effusion and circulating monocytes phagocytosing lymphocytes on blood smears.

Keywords: Circulating monocytes, Phagocytosis, Small-cell variant, T-cell prolymphocytic leukemia, Flow cytometric analysis

Anahtar Sözcükler: Dolaşımdaki monositler, Fagositoz, Küçük hücreli varyant, T-hücreli prolenfositik lösemi, Akım sitometri analizi

Ethics

Informed Consent: Informed consent was obtained for the publication.

Authorship Contributions

Surgical and Medical Practices: S.Z., M.M., Y.L., Y.B., Z.Z., Y.Z.; Concept: S.Z., M.M., Y.L.; Design: S.Z., M.M., Y.L.; Data Collection or Processing: Y.B., Z.Z., Y.Z.; Analysis or Interpretation: Y.B., Z.Z., Y.Z.; Literature Search: Y.B., Z.Z., Y.Z.; Writing: Y.B., Z.Z., Y.Z.

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