blood work
images in hematology

Microgranular variant of acute promyelocytic leukemia with cytoplasmic projections resembling micromegakaryocytes

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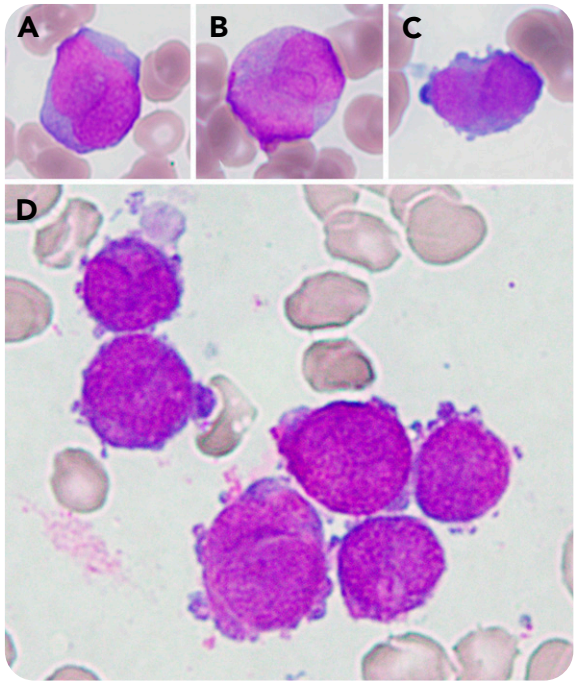

A 94-year-old man presented with hemoptysis, hematuria, and weight loss. A blood count showed pancytopenia (hemoglobin 7.5 g/dL, neutrophils 0.15 × 10^9/L, platelets 25 × 10^9/L). The peripheral smear (original magnification ×1000; May-Grünwald-Giemsa stain) showed 40% promyelocytes with distinct bilobed nuclei and sparse, fine azurophilic granules (panels A-C). Occasional promyelocytes with cytoplasmic projections (panel C) were seen. Bone marrow smears showed 55% promyelocytes with deep cytoplasmic basophilia and prominent cytoplasmic projections resembling micromegakaryocytes (panel D). Auer rods were absent. There was mild nuclear-cytoplasmic asynchrony of erythroblasts, without other dysplastic changes. Flow cytometry showed an abnormal immature myeloid population with phenotype $CD34^-$ $CD33^+$ $CD117^+$ MPO^+ HLA-DR weak. Based on these findings, the patient was commenced on chemotherapy-free induction with tretinoin and arsenic trioxide for acute promyelocytic leukemia (APL). Subsequently, fluorescence in situ hybridization of the bone marrow aspirate confirmed PML-RARA fusion, and a t(15;17) translocation was detected by karyotyping. Molecular tests revealed a FLT3-ITD mutation. The patient achieved complete remission at 28 days postinduction and proceeded to consolidation therapy.

This case illustrates the rare microgranular hyperbasophilic variant of APL with cytoplasmic projections resembling micromegakaryocytes. Promyelocytes with cytoplasmic projections have been described in both hypergranular and microgranular forms of APL. Recognition of this variant is important for the morphological diagnosis of APL.

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