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Numerous ring sideroblasts in chronic neutrophilic leukemia

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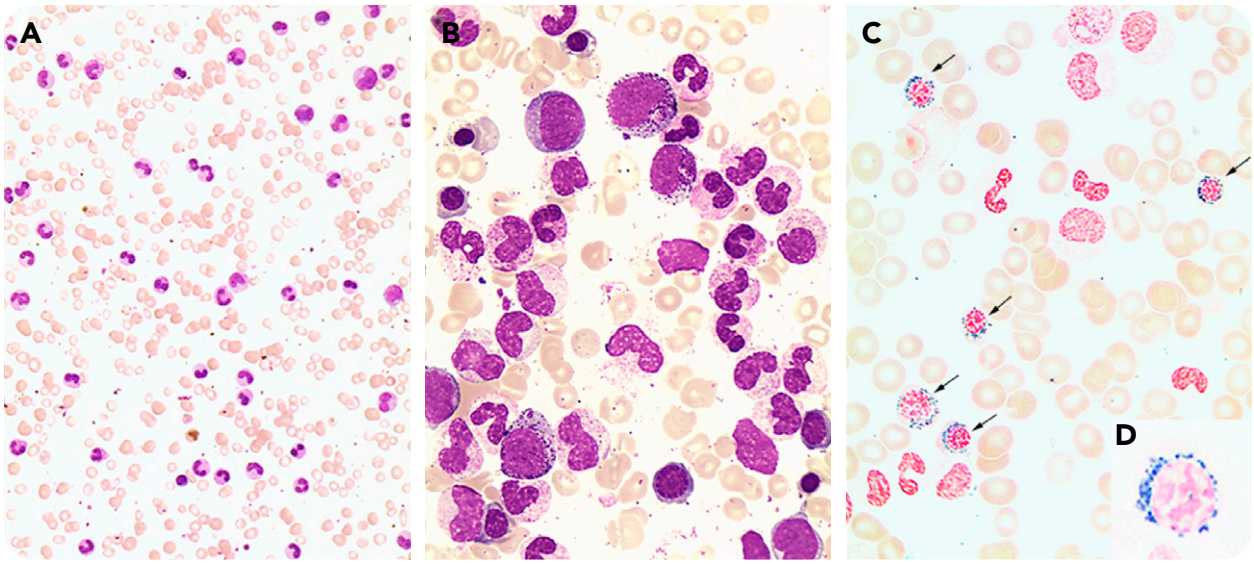

A 72-year-old man was admitted to the hospital with anemia and bilateral lower-extremity edema for 2 months. Anemia had once been noted 5 years ago. Laboratory findings showed white blood cells 31.08 × 10^9/L (86% neutrophils, 1% myelocytes, 4% metamyelocytes, 1% monocytes, 8% lymphocytes), hemoglobin 68 g/L, platelets 96 × 10^9/L (panel A; Wright-Giemsa stain, original magnification ×400). Computed tomography scan showed splenomegaly. Bone marrow revealed marked granulocytic hyperplasia with 0.8% blasts but no dysplasia (panel B; Wright-Giemsa stain, original magnification ×1000). Ring sideroblasts comprising 54% of erythroid precursor were identified on iron-stained marrow smear (panel C; Prussian blue stain, original magnification ×1000, arrows; insert D; Prussian blue stain, original magnification ×1000). Bone marrow biopsy showed a predominance of granulocytic cells with grade 2 reticulin fibrosis. Karyotype was 46,XY[20]. *BCR-ABL1*, *JAK2*, *CARL*, *MPL* were negative. *CSF3R T618I/W818X*, *ASXL1*, *TET2*, and *SF3B1* mutations were detected by next-generation sequencing. The diagnosis of chronic neutrophilic leukemia (CNL) was made.

Cases with ring sideroblasts and *SF3B1* mutation are usually diagnosed as myelodysplastic syndrome with ring sideroblasts or myelodysplastic/myeloproliferative neoplasm with ring sideroblasts and thrombocytosis. *CSF3R* mutations occur frequently in CNL and are rare in atypical chronic myeloid leukemia (aCML). In our case, the morphological features and *CSF3R* mutation support CNL rather than aCML or chronic myelomonocytic leukemia. CNL with ring sideroblasts and *SF3B1* mutations had not been reported so far, so the significance in CNL is unknown.

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