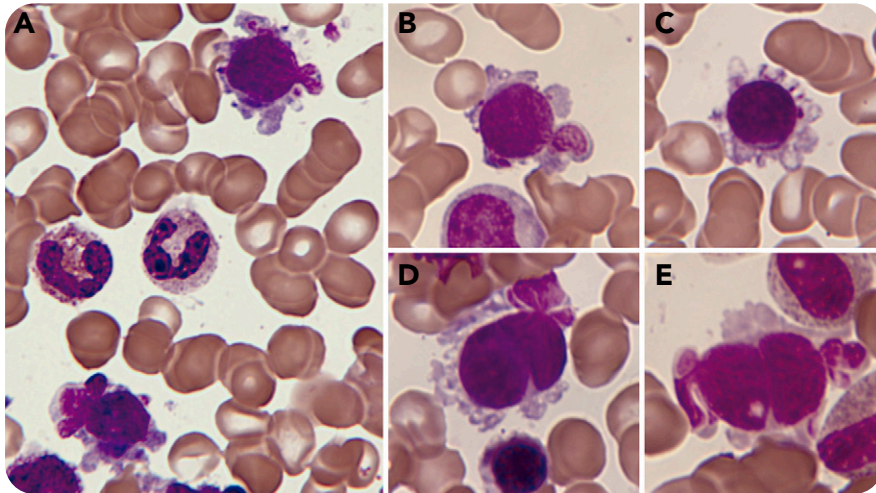


Nuclear protrusion in dysplastic micromegakaryocytes

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A 78-year-old man was diagnosed with myelodysplastic syndrome with blast excess 2, with thrombocytopenia of $34 \times 10^9/L$ (hemoglobin, 122 g/L; mean corpuscular volume, 107.9 fL; leukocytes, $4.8 \times 10^9/L$; neutrophils, $2.1 \times 10^9/L$) and 2% circulating blasts. Bone marrow aspirate revealed 10% blasts with mild dysgranulopoiesis and dyserythropoiesis; the megakaryocytic series was increased and showed severe dysplasia of 100% with a predominance of micromegakaryocytes. Most of these did not form platelets. Chromatinic material protrusion toward the cytoplasm, generally through several points, was observed in 64% of micromegakaryocytes. The micromegakaryocytes were often single lobed (panels A-C; May-Grünwald-Giemsa stain, original magnification $\times 1000$), although bilobed cells could be observed less frequently (panels D-E; May-Grünwald-Giemsa

stain, original magnification $\times 1000$) (courtesy of Ricardo Bernal; Seville, Spain). The cytogenetic analysis showed: 45,XY,der(5)t(2;5)(q24;q15),+der(5)t(2;5),-18,del(20)(q11)[8]/46,XY[12]. Fluorescence in situ hybridization confirmed the double 5q- and the rest of alterations; next-generation sequencing revealed 2 point mutations in both TP53 alleles (c.701A>G, p.Tyr234Cys and c.493, p.Gln165Ter).

Micromegakaryocytes are cells 7 to 15 μm in size (always $< 30 \mu\text{m}$), present dense chromatin and small cytoplasm, and are often platelet generators. Protrusions of chromatinic material have been described in blasts of acute megakaryoblastic leukemia. However, in this case, the nuclear protrusions are observed in micromegakaryocytes with dysplastic maturation, indicating severe cellular perturbation.