Megakaryocyte

Megacariócitos

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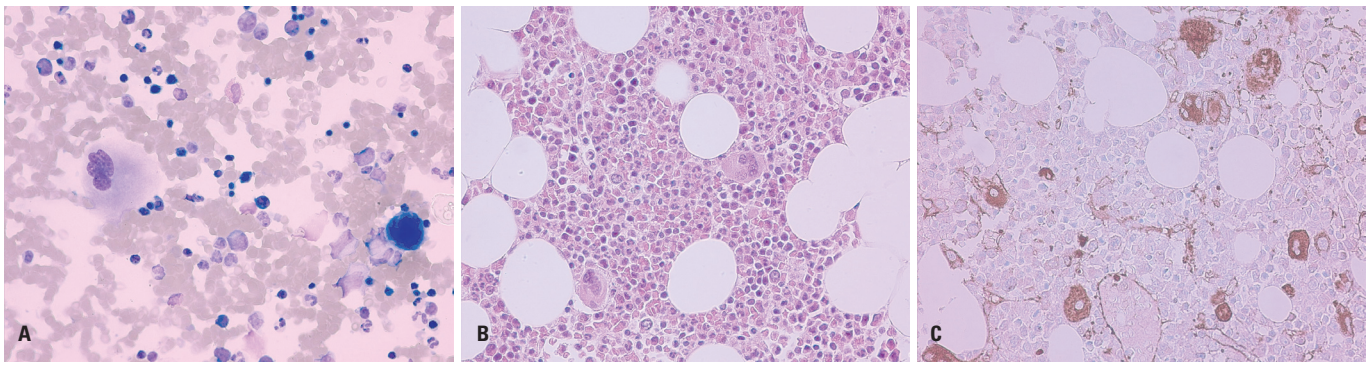

Figure 1. (A) Normal megakaryocytes from bone marrow aspirate smear (cytology, Leishmann staining, X1000). (B) Normal megakaryocytes from bone marrow biopsy (histopathology, hematoxylin and eosin, X1000). It is worth noting that normal megakaryocytes present a characteristic cohese nucleus with many lobes. (C) Bone marrow immunohistochemistry, identifying megakaryocytes by positive staining for von Willebrand factor, which is present on cell surface

Megakaryocytes are cells responsible for the production of platelets, and present unique morphological characteristics, particularly their great size and certain singular aspects of their cytoplasm and nucleus[1,2]. Thus, they are easy to identify under routine microscopic examination. Frequently cytologic and/or histologic bone marrow analysis enables the diagnosis or detection of hematologic disorders that involve megakaryocytes[3]. Among these disorders myelodysplastic syndromes and myeloproliferative neoplasms stand out[4,5] (Figures 1-8).

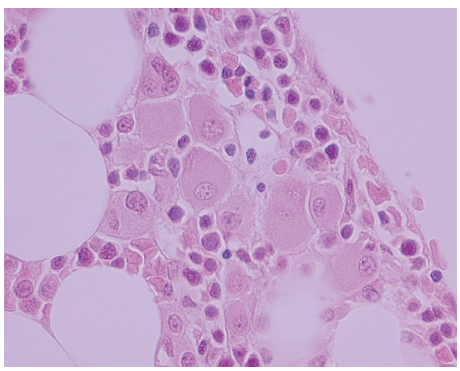

Figure 2. Monolobulated megakaryocytes (hematoxylin and eosin, X1000), characteristic of the "5q- syndrome". This subtype of myelodysplastic syndrome is characterized by macrocytic anemia, normal or increased platelet count, deletion of the long arm of chromossome 5 as the sole cytogenetic anomaly, good prognosis and good response to lenalidomide

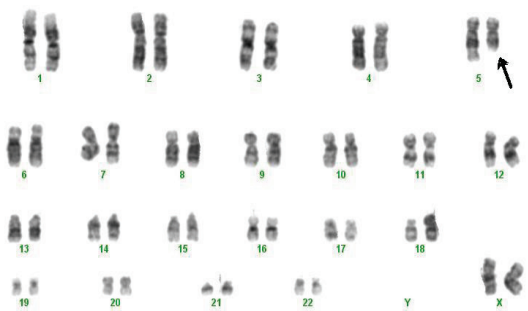

Figure 3. Bone marrow karyotype (G band), highlighting the characteristic anomaly of the 5q- syndrome (interstitial deletion of chromosome 5)

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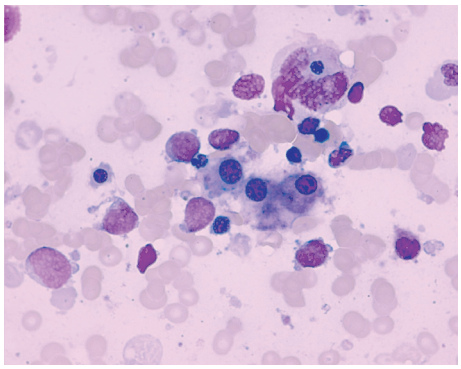

Figure 4. Micromegakaryocytes in bone marrow aspirate smear (Leismann staining, X1000), representing small monolobulated cells (smaller than two neutrophyls). Although common in myelodydsplastic syndromes, they have no diagnostic specificity

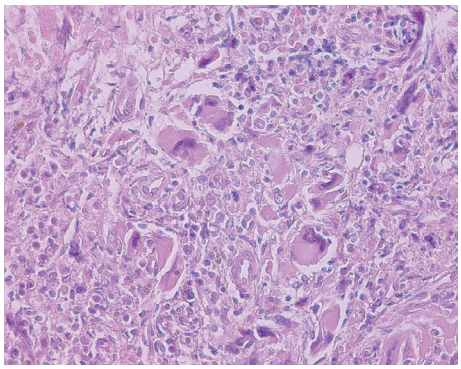

Figure 7. Bone marrow (hematoxylin and eosin, X1000) in myelofibrosis, showing increased number of megakaryocytes with distorted base, caused by medullar fibrosis

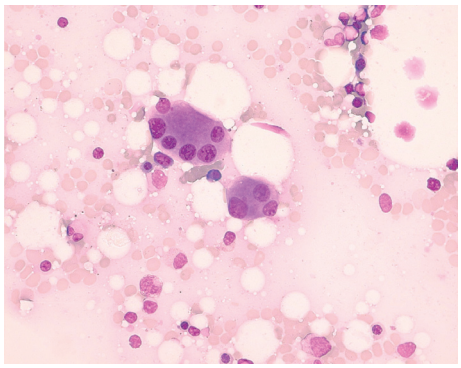

Figure 5. Abnormal multinucleated megakaryocytes presenting karyolysis in bone marrow aspirate smear (Leishmann staining, X1000). Although common in myelodydsplastic syndromes, they have no diagnostic specificity

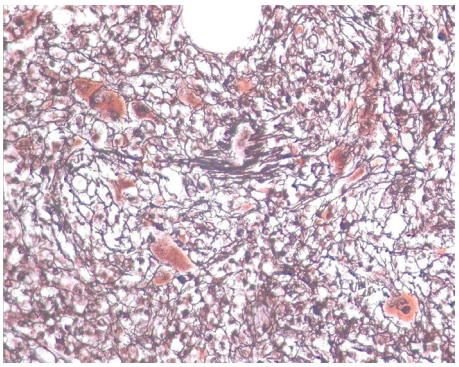

Figure 8. Severe myelofibrosis highlighted by specific staining technique (silver stain), displaying distorted megakaryocytes permeated by thickened reticulin fibers

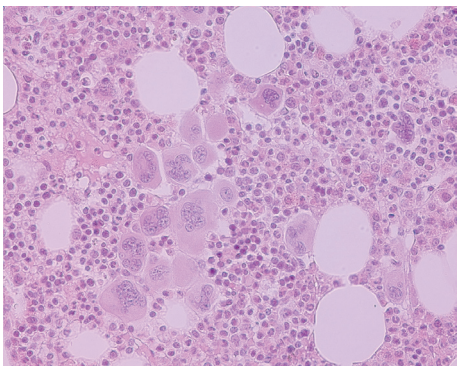

Figure 6. Megakaryocyte in myeloproliferative neoplasm, characterized by cluster formation. The morphologic aspect does not allow identifying the subtype of myeloproliferation, which could occur in chronic myeloid leukemia (CML), myelofibrosis (cellular phase), polycythemia vera, or essential thrombocythemia. Correct diagnosis depends on molecular studies to identify the BCR-ABL rearrangement (diagnosis of CML) or a JAK-2 mutation (myelofibrosis, polycythemia vera or essential thrombocythemia)

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