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Letter to the Editor

Histopathological evaluation of the bone marrow in refractory anemia with ring sideroblasts and thrombocytosis associated to the JAK2-V617F mutation

Dear Editor,

The myelodysplastic syndromes (MDS) are a group of clonal disorders of the hematopoietic stem cell, characterized by cytopenia(s), dysplasia of one or more of the myeloid lineages, ineffective hematopoiesis, and an increased risk of developing acute myeloid leukemia (AML).¹ Refractory anemia with ringed sideroblasts and thrombocytosis (RARS-T), is a provisional entity that, according to the World Health Organization (WHO), joined the group of myelodysplastic/myeloproliferative neoplasms (MDS/MPN).² The diagnostic criteria for RARS-T are the presence of persistent thrombocytosis (above $600 \times 10^9/L$), $\geq 15\%$ ringed sideroblasts, and $< 5\%$ blasts in the bone marrow.^{3,4} An acquired JAK2-V617F mutation, resulting in a substitution of valine for phenylalanine at codon 617 of the JAK2 gene, is reported in 90% of cases of Polycythemia vera (PV), and in about 50% of cases of myelofibrosis (MF), and essential thrombocythemia (ET).⁴ The JAK2-V617F mutation is positive in about 60% of cases of RARS-T, and in a minority of cases in other subtypes of MDS/MPN.⁵ Studies have evaluated the relationship between the state of the JAK2-V617F to morphological, clinical, and laboratory parameters, and survival in RARS-T,⁶ suggesting that the mutation confers a favorable prognosis, and is associated with an increase in hemoglobin, decrease in mean corpuscular volume (MCV), and increases in leukocyte and platelet counts.

The figures below show the case of an 80-year-old JAK2-V617F-positive male patient with RARS-T and systemic hypertension, who was submitted to radiotherapy in 2007 for a prostate adenocarcinoma:

Myelogram: Dyserythropoiesis and dysmegakaryopoiesis above 10%; asynchrony of maturation and binucleation; presence of micromegakaryocytes and hypolobulated megakaryocytes; 1% of plasmocyte, and 81% ringed sideroblasts.

Bone marrow biopsy: hypercellular marrow disorder architecture, characterized by megaloblastoid erythroblasts, peripheral megakaryocytes, and a slight increase in the network of reticulin myelofibrosis (grade I). Cytogenetics revealed 46, XY karyotype. Immunohistochemical expression was p53 negative. Hematological parameters: hemoglobin: 7.8 g/dL; leukocyte count: $7.740 \times 10^3/\mu L$ and platelet count: 949

$\times 10^3/\mu L$. Figure 1 illustrates the presence of megakaryocytes with separate cores, along with a nuclear hyperchromasia and cane aspect in band, observed megaloblastoid erythroblasts distributed in a dispersed interstitial manner with hematopoietic marrow dysmegakaryopoiesis and dyserythropoiesis. Figure 2 illustrates a bone marrow biopsy with reticulin and interstitial condensation (grade I). The images show the relevance of the histopathological findings of the bone marrow biopsy in diagnosing this rare subtype of MDS.

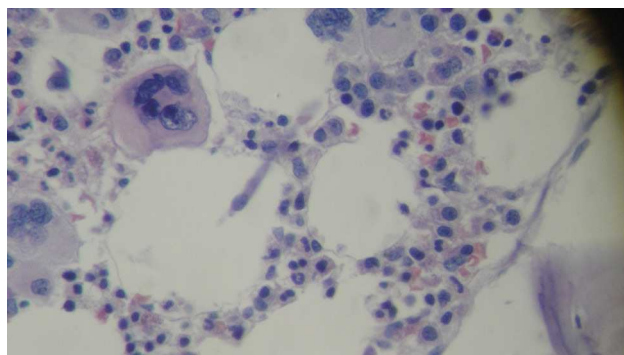


Figure 1 – Bone marrow with dysmegakaryopoiesis and dyserythropoiesis. Hematoxylin and eosin stain, original magnification 400 $\times$.

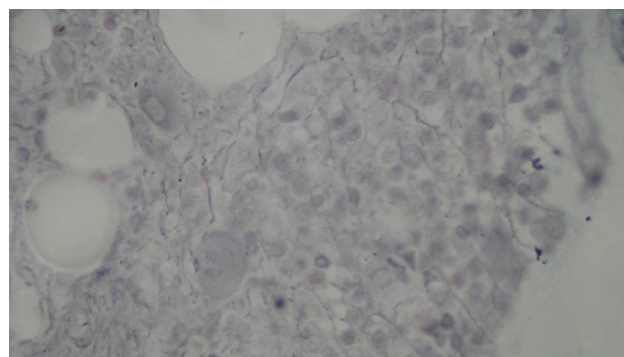


Figure 2 – Bone marrow biopsy with reticulin and interstitial condensation (grade I) Hematoxylin and eosin stain, original magnification 400 $\times$.

Conflicts of interest

The authors declare no conflicts of interest.

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