Hypersegmentation of granulocytes and monocytes in patient with primary myelofibrosis treated with hydroxycarbamide

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A 62-year-old man with a history of primary myelofibrosis was admitted to the emergency room due to abdominal pain. He remains under maintenance therapy with hydroxycarbamide. Complete blood count showed the following: white blood cells (WBC) count 169.73 x 10^9/l including 65.8% of neutrophils, and 24.4% of immature granulocytes, hemoglobin (HGB) 113 g/l, mean corpuscular volume (MCV) 115.20 fl and platelets (PLT) count 119 x 10^9/l. A peripheral blood film showed 10% blasts, macrocytosis and nuclear hypersegmentation of neutrophils, basophils and eosinophils with hypersegmented-like monocytes (Fig.1). The complete hemogram was as follows: RBC 3.02 x 10^12/l, Hct 34.8%, RDW-CV 14.9 %, MCH 37.4 pg, MCHC 32.5 g/dl.

Ineffective treatment with hydroxyurea (sustained hyperleukocytosis and splenomegaly) was displaced by cytarabine, 6-mercaptopurine and interferon alpha, obtaining leukocytosis improvement (WBC 21.63 x 10^9/l).

Hydroxycarbamide (hydroxyurea, HU) decreases the production of deoxyribonucleotides via inhibition of the ribonucleoside reductase. Cytoreductive treatment with HU often results in megaloblastic anaemia and hypersegmentation of neutrophils. However, impaired segmentation of other granulocytes’ nuclei and “polymorphonuclear” monocytes remain unusual findings. While the first report of hypersegmentation of basophils and eosinophils after treatment with HU was presented by Xu X. [1], our finding of “hypersegmented” monocytes is the first report worldwide.

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Fig.1. Hypersegmentation of white blood cells in peripheral blood of patient treated with hydroxycarbamide. The line (A) presents eosinophils, (B) - basophils, (C) - monocytes, and (D) - neutrophils.

References
1. Xu X. Nuclear hypersegmentation of neutrophils, eosinophils, and basophils due to hydroxycarbamide (hydroxyurea). Blood. 2014;124(9):1392