Nuclear hypersegmentation of neutrophils, eosinophils, and basophils due to hydroxycarbamide (hydroxyurea)

The patient was a 72-year-old man who had a diagnosis of polycythemia vera (PV) in 2010. A JAK2 V617F mutation was positive. Hydroxycarbamide (hydroxyurea [HU]) was started at 500 mg and gradually increased to 1250 mg daily. His recent complete blood count showed the following: white blood cell (WBC) count, 11.5 × 10^9/L; red blood cell count, 3.55 × 10^12/L; hemoglobin, 13 g/dL; hematocrit, 37.8%; mean corpuscular volume, 106.5 fL; platelets, 423 × 10^9/L. A review of the peripheral blood smear identified 5% circulating blasts (not shown), macrocytosis, and marked megaloblastic changes in WBCs. Interestingly, nuclear hypersegmentation was identified in eosinophils (panels A-C), basophils (panels D-F), and neutrophils (panels G-I).

HU inhibits DNA synthesis by reducing the enzymatic activity of ribonucleoside reductase and is the mainstream cytozoic agent for PV. Even though hypersegmented neutrophils are often observed with HU treatment, eosinophilic or basophilic hypersegmentation is an unusual observation.

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