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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2011, 28(3):429–430

Hematology Quiz – Case 25

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A 71-year-old man was admitted to our hospital due to epistaxis and gingival bleeding. The patient had a history of myelodysplastic syndrome, RAEB-II, diagnosed one year before, after thorough examination for the cause of moderate anemia and leukopenia. During the last six months, blood transfusions were necessitated. The patient needed 2–3 blood transfusions per month to maintain a hemoglobin level between 8–9 g/dL. The white blood cell counts (WBC) ranged from $2–3\times10^9$/L. The peripheral blood smear at the time of diagnosis revealed hypersegmented neutrophils (20–30% of the total WBS; fig. 1) and blast counts of 2–5%. The bone marrow aspirate was hyperplastic and an infiltration of 15% by blast cells was evident. Dyserythropoiesis, dysgranulopoiesis and abnormal megakaryocyte morphology was also present. The Prussian bleu staining revealed no ringed sideroblasts.

One month before admission, the patient developed a pruritic rash, ameliorated by antihistaminics and low doses of steroids; however, a few days later it turned to be hemorrhagic. Epistaxis and gingival bleeding was also added. On clinical examination, a mild hepatosplenomegaly was noted. Patient's hematology was as follows: Ht 25%, Hb 8.4 g/dL, reticulocytes 85×10^9/L, WBC $8,5\times10^9$/L (differential count: neutrophils 4%, lymphocytes 50%, monocytes 5%, promonocytes 8%, eosinophils 13%, blasts 20%), platelet counts 13×10^9/L. Atypical eosinophils containing large basophilic granules were observed in the peripheral blood smear (fig. 2).

The bone marrow aspirate was hypercellular; infiltration of 35% by blast cells of intermediate size, round nuclei with prominent nucleoli, abundant cytoplasm with a few of azurophilic granules in a marked eosinophilic infiltration was noted (fig. 3). The blast cell cytochemistry was myeloperoxidase (+), Napthol ASD cloroacetate esterase (++), α-Napthol acetate esterase (++), PAS (+) and the blast immunophenotyping was positive for HLA-DR, CD33, CD13, CD15, CD11b and CD11c. Bone marrow karyotype was normal.

Comment

Our patient had a history of myelodysplastic syndrome, of refractory anemia with excess of blasts (RAEB)-II subtype, and presented with severe thrombocytopenia, anemia and mild to moderate eosinophilia with atypical eosinophils in the peripheral blood. Eosinophilia is typically found in various myeloproliferative disorders (MPD). In Philadelphia chromosome positive (Ph+) chronic myeloid leukemia, eosinophilia and basophilia are almost always present at diagnosis, and often also when the disease progresses. In patients with typical JAK2 V617F+ MPD, eosinophilia is less frequently detected, but may also occur. However, in distinct variants of MPD, namely those that develop on the basis of an oncogenic form of PDGFRA, PDGFRB, or FGFR1, eosinophilia is a common finding. This is also true for myeloid neoplasms classified as MDS/MPD overlap disease, such as chronic myelomonocytic leukemia (CMML-eos), and for atypical variants of MDS (MDS-eos).

In patients with MDS, eosinophilia at diagnosis is of prognostic significance. These patients apparently have an increased risk to develop acute myeloblastic leukemia (AML) and a reduced survival. In MDS or MDS/MPD, eosinophilia can also develop during the course of the disease. In particular, about 10% of all patients with MDS develop moderate to severe eosinophilia (>1.5×10^9/L in blood) in the follow-up. In some of these cases, the occurrence of eosinophilia is associated with disease progression to AML. This was also the case in our patient. He had RAEB-II and the presence of eosinophilia was

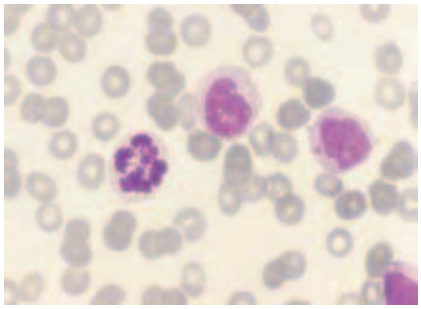

Figure 1

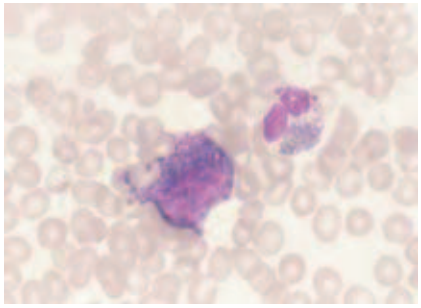

Figure 2

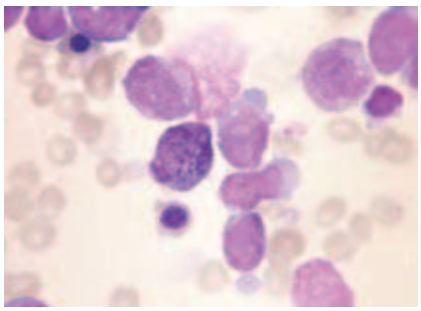

Figure 3

associated with disease progression to acute monoblastic leukemia with eosinophils (AML-M4eos).

The WHO classification 2008 defines two groups of patients with neoplastic eosinophils. One group of patients is suffering from a "myeloid or lymphoid (or stem cell) neoplasm with eosinophilia and abnormalities in PDGFRA, PDGFRB, or FGFR1 genes". The second group, integrated in a subchapter as MPD category, is termed "chronic eosinophilic leukemia, not otherwise specified". The advantage of the WHO classification is that it is based on potential targets, and therefore is in support of therapy-related algorithms that will facilitate the management and treatment of patients and will increase the awareness for cytogenetic and molecular markers in various centers. A disadvantage of the classification may be that eosinophil neoplasms are splitted into two categories, and that one category consists of a mixture of myeloid and lymphoid neoplasms.

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