

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Hematology Quiz – Case 24

A 67-year-old man presented to the Outpatient Department because of severe headache, dizziness, weakness, and pruritus. Headache and giddiness were started six months before his admission. The administration of medication did not improve the symptoms. Vertigo and tinnitus were added and the ENT examination revealed Meniere's syndrome. The patient also complained of intense itching, especially after warm bath; thus, bathing with warm water was avoided. He was treated with potent antihistaminic agents (cetirizine and loratadine) without any improvement. His past medical history included only a duodenal ulcer two years ago.

Physical examination revealed mild hypertension (160/95 mmHg), while the pulse rate was 67/min and the respiratory rate was 18/min. A palpable non-tender spleen of 4 cm below the costal margin and a mild hepatomegaly (2 cm below the right costal margin) were also found. Hematology tests revealed erythrocytosis ($7.1 \times 10^{12}/L$) with an increased number of both white cell counts ($16.2 \times 10^9/L$, differential count: Neutrophils 62%, lymphocytes 21%, monocytes 3%, eosinophils 4%, basophils 3%, myelocytes 2% and metamyelocytes 5%) and platelet counts ($654 \times 10^9/L$). Hemoglobin and hematocrit levels were also high (18.1g/dL and 56.4%, respectively). Slight anisocytosis and polychromatophilia were observed in peripheral blood smears and in some fields numerous cells as those shown in figure 1. The reticulocyte count was 2.1% and the red blood cells mass was 41 mL/kg. Serum biochemical tests revealed only a moderate hyperuricemia (8.9 g/dL) and increased B12 levels (1,200 pg/mL).

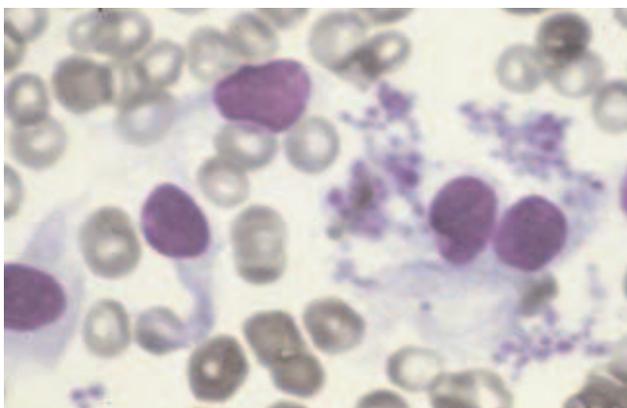


Figure 1

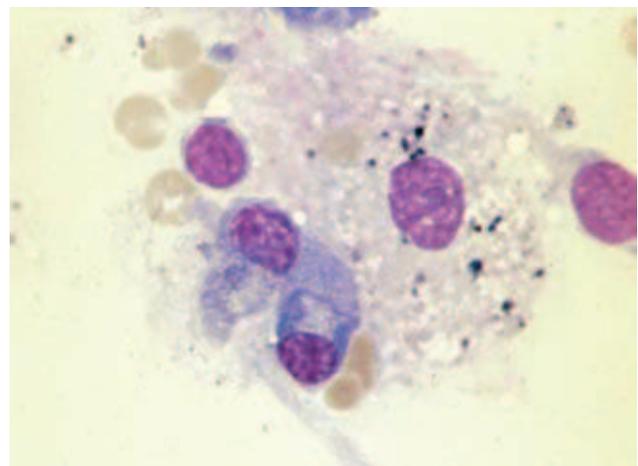


Figure 2

ARCHIVES OF HELLENIC MEDICINE 2011, 28(4):574–575
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2011, 28(4):574–575

J. Meletis,¹
J.V. Asimakopoulos,¹
L. Papageorgiou,¹
V. Karali,¹
G. Boutsikas,¹
K. Petevi,¹
Th. Dalagiorgos,¹
A. Kanellopoulos,¹
G. Gainarou,¹
P. Flevari,¹
E. Koutsi,¹
E. Terpos²

¹Department of Hematology and Bone Marrow Transplantation Unit, National and Kapodistrian University of Athens, School of Medicine, "Laiko" General Hospital, Athens

²Department of Clinical Therapeutics, National and Kapodistrian University of Athens, School of Medicine, "Alexandra" Hospital, Athens, Greece

Radiological and functional evaluation of respiratory system was normal as well as arterial blood oxygen saturation. The bone marrow was hypercellular with a slight hyperplasia of erythroid series and increased number of eosinophils and basophils. An elevated number of macrophages with phagocytic debris were also observed (fig. 2). No cytogenetic abnormalities were present. Hydroxyurea treatment resulted in a dramatic reduction of the

number of red cell, neutrophil and platelet counts to normal levels and in an improvement of patient's symptoms.

Comment

Polycythemia vera (PV) is a clonal stem cell disorder that is characterized by the presence of abnormal erythroid cells, white blood cells, and platelets in the absence of a secondary cause, extramedullary hematopoiesis, marrow fibrosis, and rarely transformation to acute leukemia. Polycythemia vera belongs to Ph-chromosome (-) chronic myeloproliferative neoplasms in the 2008 WHO classification along with essential thrombocytosis and primary myelofibrosis.

The clinical presentation of PV includes variable features. Patients may present with typical findings, i.e. increased red blood cell, thrombocytopenia, leukocytosis and splenomegaly, or they may present with myelofibrosis. Thrombocytosis can be presented with ocular migraine, digital ischemia or erythromelalgia. If thrombocytosis is marked (>1,500,000/ μ L), it may be correlated with an acquired type 2A von Willebrand disease (VWD) due to reduction of high molecular weight vWF multimers and a reduction of ristocetin cofactor (RCof) activity. Pruritus is usually present, while progressive splenomegaly is another feature of PV that can cause inanition, weight loss, portal hypertension, and variceal formation. Sometimes hepatomegaly and pulmonary hypertension may be present. Polycythemia vera can be accompanied by increased marrow reticulin fibrosis, which is mainly a reactive phenomenon. Very rarely, PV can evolve into acute leukemia.

The diagnosis of PV is based on traditional tests, like the measurement of red cell mass, the serum erythropoietin level and the absence of secondary erythrocytosis. However, the presence of clonal erythrocytosis, which is the main diagnostic feature of PV, is characterized by the JAK2 mutation (JAK2V617F or exon 12). Therefore, in a patient with erythrocytosis, the diagnostic work-up has to include always the evaluation of JAK2 mutation analysis in order to distinguish PV from secondary erythrocytosis.

The presenting features of PV do not correlate with prognosis, with the exception of thrombosis. Thrombotic complications represent the main cause of morbidity and mortality in PV patients. Blood hyperviscosity along with platelet and leukocyte quantitative and qualitative abnormalities are implicated into the pathogenesis of thrombophilia in PV.

The treatment of PV includes the prevention of vascular events and the reduction of disease risk of transition to acute leukemia. Phlebotomy and low dose of aspirin remains the cornerstone of treatment in patients at low risk, while hydroxyurea is often administered in elderly subjects or subjects with a previous vascular history. Pegylated interferon and JAK2 inhibitors have been used in clinical trials with encouraging results but they are still under evaluation.

References

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Corresponding author:

J. Meletis, Department of Hematology and Bone Marrow Transplantation Unit, National and Kapodistrian University of Athens, School of Medicine, "Laiko" General Hospital, Athens, Greece, tel.: +30 210 74 66 902, fax: +30 210 7456698, e-mail: imeletis@med.uoa.gr