



Hemepath Case 25: 60-Year-Old Male

HISTORY

A 60-year-old male complains of frequent episodes of headache and dizziness that are gradually worsening in severity. Three months prior he stopped playing golf with his friends as he became increasingly dyspneic from walking, and his vision often became blurred.

On physical examination, the patient's body appears quite erythematous, and his face is noted to be red and swollen. Fundoscopy reveals plethora of the retinal veins. His spleen is firm, non-tender, and palpable 6 cm below the left costal margin. Several bruises are observed on his lower legs.

CBC

Hgb (g/L)	High
RBC	High
MCV	Low
WBC	High
Plt	High

DESCRIPTION OF SLIDE

Peripheral Blood Smear

The peripheral blood smear shows microcytosis without anemia – indeed, RBCs are increased. RBC morphology – hypochromia, anisochromia, anisocytosis, with pencil cells (see rectangles) and target cells (see circles) – is suggestive of iron deficiency. WBCs and platelets are generally unremarkable, although several large and giant platelets (see arrows) are seen. There are no circulating blasts.

*** To see the slide annotations in Imagescope, click on VIEW, then ANNOTATIONS, and then on the "eye" icon adjacent to the word "Layers". In the "Layer Attributes" box, a brief description of the annotations is provided. You may also click on individual layer region (e.g. region 1) in the "Layer Regions" box to locate each annotation – this is especially helpful in identifying annotations when the slide is not zoomed in. ***

MORPHOLOGICAL DIAGNOSIS

Polycythemia vera

DISCUSSION

Polycythemia vera (PV) is a rare myeloproliferative disorder characterized by uncontrolled production of erythrocytes (and often leukocytes and platelets). In the majority of patients, a mutated JAK2 tyrosine kinase in a multipotent hematopoietic stem cell acquires constitutive enzymatic activity, allowing excess cellular growth independent of erythropoietin. The resultant increase in erythroid mass leads to increased blood viscosity, which can impair circulation to organs such as the retinae (leading to blurred vision and occasionally blindness following retinal infarction). The bone marrow is hypercellular in all cell lines, and is usually erythroid dominant. Frequently the patients have an iron deficient RBC morphology because the increased erythrocyte production uses up the body's iron stores.

Patients with PV lack the Philadelphia chromosome seen in Chronic Myelogenous Leukemia.