Polycythemia Vera Labs

Polycythemia is a chronic myeloproliferative disorder where the bone marrow produces too many red blood cells. Patients often have increased WBCs and platelets as well, as this disease is a panmyelosis. Classic symptoms include headache and pruritis, especially after exposure to hot water. This disorder is caused by a mutation in the JAK2 tyrosine kinase, leading to hypersensitivity to erythropoetin (EPO).As polycythemia vera is not curable, treatment for this disorder involves regular phlebotomy to normalize hematocrit levels, as well as low dose aspirin.

PLAY PICMONIC

Lab Findings (The 4 H's)

Hypervolemia

Hiker-volume-cup with blood

Patients with polycythemia vera have a mutation leading to increased RBC generation. This can cause hypervolemia due to increased blood volume, resulting from the large increase in blood product being formed (RBCs).

Histaminemia

History-man-in-blood

Patients with polycythemia vera display histaminemia due to release from mast cells. This is the proposed mechanism for intense pruritis experienced by patients with this disorder.

Hyperviscosity

Hiker-viscous-honey

Hematocrit is a large determinant in blood viscosity. Patients develop circulating hyperviscosity, due to the large number of red blood cells being generated (thus, raising hematocrit). Complications of hyperviscosity include reduced blood flow, capillary perfusion and possibly increased congestion in organs.

Hyperuricemia

Hiker-unicorn

Patients with PCV display hyperuricemia. Uric acid is high as a result of increased but ineffective hematopoiesis (destruction taking place in the marrow).

Diagnosis

Elevated Hemoglobin or Hematocrit

Up-arrow He-man-globe and He-man-critic

Patients can be diagnosed with polycythemia vera with a complete blood count, where the hemoglobin or hematocrit levels would be greatly increased.

Positive Jak2 Mutation

(+) Jack in (2) Tutu

Patients could also be diagnosed with PCV if they displayed symptoms of the disorder and were found to have a JAK2 tyrosine kinase mutation in blood cells.