Hemepath Case 15: 22-Year-Old Male

HISTORY

A 22-year-old African-Canadian male presents with a 3-day history of extreme fatigue and weakness, and “cola”-colored urine. His girlfriend comments that his skin and eyes have also become increasingly yellow.

The patient has always been in good health, apart from severe acne for which he started taking sulfacetamide 5 or 6 days ago. He remarks that his brother had similar symptoms while preparing for a trip to Haiti.

CBC

Hgb (g/L)	Low
MCV	N
Reticulocyte Count	High
WBC	N
Plt	N

DESCRIPTION OF SLIDE

Peripheral Blood Smear

The peripheral blood smear shows moderate anemia with numerous blister cells (see circles) and occasional bite cells (see rectangles). Some cells resemble schistocytes (see arrows) and even spherocytes. Leukocytes and platelets are morphologically unremarkable.

*** 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

Glucose-6-phosphate dehydrogenase (G6PD) deficiency

DISCUSSION

Glucose-6-phosphate dehydrogenase (G6PD) deficiency is an X-linked disorder seen more commonly in parts of Africa, Asia, the Mediterranean, and the Middle East, as it confers some protection against malaria. The G6PD enzyme catalyzes the oxidation of glucose-6-phosphate; this reaction is coupled to the reduction of $NADP^+$ to NADPH. As

this step provides the only source of NADPH for erythrocytes, which is required to reduce oxidized hemoglobin, the RBCs of patients with G6PD deficiency are susceptible to rapid hemolysis from oxidative stress.

Most patients with this condition are usually asymptomatic, and only experience complaints related to hemolysis (such as hemoglobinuria or jaundice) when exposed to certain drugs, such as anti-malarials and certain antibiotics. Sulfacetamide is one of the implicated oxidative drugs.