Hemepath Case 6: 15-Year-Old Girl

HISTORY

A 15-year-old girl visits her family physician for an annual physical exam and a CBC is ordered.

The girl returns for a follow-up because of the CBC results (see below). Upon focused questioning, the patient notes that her menses have always been heavy (8-9 days per cycle). She also remembers bleeding profusely when a tooth was extracted at the dentist's office. The girl says that this amount of bleeding from dental visits is common in her family – both her mom and her uncle have similar complaints.

CBC

Hgb (g/L)	N
MCV	N
WBC	N
Plt	Low

DESCRIPTION OF SLIDE

Peripheral Blood Smear
RBCs and WBCs are unremarkable, apart from occasional Döhle-like inclusions in neutrophils (see arrows). Large and giant platelets are observed (see rectangles), with a clear reduction in platelet number.

*** 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

Giant platelet syndrome, consistent with May-Hegglin anomaly

DISCUSSION

May-Hegglin anomaly, the most common Giant Platelet Syndrome, is a rare autosomal dominant disorder resulting from mutation of the *MYH9* gene on chromosome 22q. The gene encodes for NMMHC-IIA (non-muscle myosin heavy chain), a contractile protein present in the cytoskeleton of megakaryocytes. Mutation leads to defective shedding of megakaryocytes, and gives rise to a low platelet count and subsequent abnormal

bleeding, as well as macrothrombocytes. *In vitro* platelet function is mostly retained, although the platelets exhibit a poor response to epinephrine in lumiaggregometry.

NMMHC-IIA is also found in leukocytes, and aggregate to form cytoplasmic Döhle-like inclusions.