



Hemepath Case 3: 5-Year-Old Boy

HISTORY

A 5-year-old Caucasian boy is brought in by his mother, who notes that her son has appeared quite pale in the last week. He is constantly tired and takes several naps a day, and complains that he can no longer play tag with his friends because he “can’t breathe” when he runs.

Physical exam reveals a diffuse petechial rash and several large bruises over his trunk and extremities. A liver edge is palpated 2.5 cm below the costal margin. The spleen is also palpable.

CBC

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

DESCRIPTION OF SLIDE

Peripheral Blood Smear

The peripheral smear shows pancytopenia. All three normal cell lines exhibit normal morphology. There are numerous small malignant blasts (see circles) characterized by high N/C ratios, fine nuclear chromatin, and cytoplasmic vacuolations. There are occasional nucleated RBCs.

*** 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

Acute lymphoblastic leukemia (ALL)

DISCUSSION

Acute lymphoblastic leukemia (ALL) is the most commonly diagnosed malignancy of childhood, and the cause is idiopathic in most patients. It is characterized by a monoclonal proliferation of lymphoblasts in the bone marrow, which usually spill out

into the peripheral blood. Classically patients present with symptoms related not to the blasts per se but to the associated cytopenias. A diagnosis of ALL is made when lymphoblasts constitute $\geq 20\%$ of cells on the bone marrow aspirate. Approximately 90% of children with ALL will be cured with proper treatment.