



Hemepath Case 24: 33-Year-Old Female

HISTORY

A 33-year-old female pregnant with her first child (26 weeks 2 days gestation) notices decreased movements from her fetus over the past few days. This morning, her uterus felt slightly tender. The fetal heart strip shows a sinusoidal pattern. A Kleihauer test is performed.

DESCRIPTION OF SLIDE

Peripheral Blood Smear with Kleihauer Preparation

The Kleihauer preparation involves the use of acid to elute adult hemoglobin (but not fetal hemoglobin) from erythrocytes. The slide, subsequently stained, shows several bright red cells (fetal blood cells; see circles) against a background of barely perceptible, colorless maternal ("ghost") blood cells (see rectangles). Occasional neutrophils (see arrows) are also seen.

Finding a large number of fetal erythrocytes in maternal circulation is diagnostic of fetomaternal hemorrhage. The quantity of fetal blood lost is determined through the use of a nomogram, and consideration of the mother's blood volume.

*** 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

Fetomaternal hemorrhage

DISCUSSION

Fetomaternal hemorrhage (FMH) is a common event occurring in most pregnancies, and usually involves the transfer of a small volume of blood (<1 ml) from fetus to mother. If the hemorrhage is massive (blood volume of >30 ml, given that a term fetus has a blood volume around 300 ml), there may be significant effects on the fetus, including fetal death. Most cases of FMH are idiopathic; others are secondary to obstetrical complications (e.g. abruptio placenta, placenta previa) or medical procedures (e.g. amniocentesis, caesarian section). If the fetus is Rh D antigen-positive and the mother is Rh D-negative, FMH may lead to maternal alloimmunization and increase the risk of hemolytic disease of the newborn in a subsequent pregnancy.