# Hemepath Case 47: Newborn Female

## HISTORY

A female newborn presents with severe jaundice and hepatosplenomegaly. She is tachycardic and tachypneic, and has marked peripheral edema.

## CBC

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

## OTHER LABORATORY FINDINGS

| | |
|---|---|
| Serum Bilirubin (Unconjugated) | High |

## DESCRIPTION OF SLIDE

**Peripheral Blood Smear**
Mild anemia, moderate polychromasia, and moderate spherocytosis (see circles) are evident on the peripheral smear. There are also numerous nucleated RBCs (see arrows). Neutrophils show mild reactive changes (see rectangles) while platelets are unremarkable. No abnormal circulating cells are seen.

*** 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

Hemolytic disease of the newborn

## DISCUSSION

Hemolytic disease of the newborn (HDN) occurs when there is maternal alloimmunization to fetal red blood cells. This is most commonly seen with antibodies against the D antigen in the rhesus (Rh) blood group system, but also with other Rh antibodies (e.g. antibodies to C, c, E, or e), antibodies outside the Rh family (e.g. Kell,

Duffy, Kidd), and even antibodies against the A or B antigen. Maternal IgG antibodies cross the placenta and bind to fetal erythrocytes, resulting in extravascular destruction of RBCs by the fetus' reticuloendothelial macrophages. This leads to anemia and neonatal hyperbilirubinemia (jaundice).

There is usually a brisk erythropoietic response, which may in some cases be so extreme as to include extramedullary hematopoiesis. When this occurs in the liver or spleen, it may give rise to organomegaly. In this patient, signs of hydrops (e.g. tachypnea, tachycardia, peripheral edema) are also evident, secondary to heart failure because of the anemia.