Objectives

- Outline the development and differentiation of the various blood cell components of the hematologic system
- Describe the application of blood count findings in the diagnosis of neonatal disorders including early-onset neonatal sepsis
- Identify laboratory tests used in the diagnosis of early-onset neonatal sepsis and discuss the importance of sensitivity and specificity in evaluating test results
- Summarize globin gene synthesis and hemoglobin development including the transition process from fetal to adult hemoglobin concentrations
- List the factors that influence oxygen-hemoglobin affinity and oxygen transport

Content Outline

1. Complete Blood Count
   1.1 Overview of hematopoiesis
   1.2 Components of the complete blood count (CBC)
   1.3 White blood cell (WBC) abnormalities and use of WBC calculations
   1.4 Thrombocyte count including abnormalities

2. Adjunct Laboratory Tests in the Diagnosis of Early-Onset Neonatal Sepsis
   2.1 Distinction between sensitivity and specificity
   2.2 Body fluid and surface cultures used in diagnostic testing
   2.3 Use of hematologic test results as single finding or in a scoring system
   2.4 Description and role of acute-phase reactants and cytokines

3. The Biology of Hemoglobin
   3.1 Developmental aspects of hemoglobin synthesis and the role of globin genes
   3.2 Characteristics of fetal versus adult hemoglobin
   3.3 Interaction of nitric oxide and hemoglobin
   3.4 Mechanisms of oxygen transfer and factors affecting hemoglobin-oxygen affinity including 2, 3-DPG

Reading Material Resources

This self assessment module is based on the resources listed below. A copy of each article is included with the module.


"Core Concepts: Intraventricular Hemorrhage", Whitelaw, MD, Andrew, Neonatal Reviews, Volume 12, No.. 2, February 2011, pp. e94-e100