Lecture 1 - Hematopoiesis

OBJECTIVES

1. Define the components of hematopoiesis with respect to production, development, maturation, and differentiation of blood cells.

2. Describe the evolution and formation of blood cells from embryo to fetus to adult, including anatomic sites and cells produced.

3. Predict the likelihood of encountering active marrow from biopsy sites when given the patient's age.

4. Relate normal and abnormal hematopoiesis to the various organs involved in the hematopoietic process.

5. Describe the four functions of the spleen.

6. Define the myeloid:erythroid ratio.

7. Differentiate between intramedullary and extramedullary hematopoiesis.

8. Explain the stem cell theory of hematopoiesis, including the characteristics of hematopoietic stem cells, the names of various progenitor cells, and their lineage associations.

9. Discuss the roles of various cytokines and hematopoietic growth factors in differentiation and maturation of hematopoietic progenitor cells, including nonspecific and lineage-specific factors.

10. Describe general morphologic changes that occur during blood cell maturation.

11. Define apoptosis and discuss the relationship between apoptosis, growth factors, and hematopoietic stem cell differentiation.

12. Discuss therapeutic applications of cytokines and hematopoietic growth factors.