Hemopoietic Study Chart – Chapter 9 (Eisenberg)

Referenced from ANPH 202 course textbooks:
Eisenberg, R. L. and Johnson, N. L. Comprehensive Radiographic Pathology. St. Louis, MO: Elsevier Patton, K. T. and Thibodeau, G.A. The Human Body in Health and Disease. St. Louis, Missouri: Elsevier

Anemia	**What is it?** Abnormally low levels of RBC's (erythrocytes) in the blood. The most common cause is iron deficiency due to poor diet, or chronic blood loss from an ulcer, malignant tumor or during excessive menstruation. Can also have a hereditary origin where RBC's do not form properly or do not last as long as they should.	**Complications:** Anemic patients appear pale. This is most apparent in the gums, inside of the lower eyelids (conjunctiva) and in nail beds. Because of decreased oxygen concentrations in the blood, tissues are poorly oxygenated which causes fatigue, muscle weakness, shortness of breath, increased respiration and heart-rate. Extensive red bone marrow hyperplasia is caused by increased levels of ineffective erythropoiesis.	**Radiographic Appearances:** Hyperplasia in the red bone marrow appears as generalized osteoporosis in the bones. Medullary canals are widened and cortical bone appears thinner. Expanding marrow can cause normal concavity in the shafts of long bones to flatten out or even become convex in severe cases. Trabecular patterns become coarser. In the skull the expanding marrow bursts through the inner table of the skull and lays down bone spicules under the periosteum. This causes a "hair–on-end" appearance.	**Eisenberg Figures 9-3 and 9-4** are very interesting.

Leukemia	What is it? Cancer of the leukocytes: an overproduction of white blood cells. The different types of leukemia are named after the tissue they effect. Some forms of leukemia are specific to children, and others are more specific to adults, but **AML (acute myelocytic leukemia)** can affect anyone regardless of age.	**Complications:** increased white blood cell count causes decreased production of other formed elements leading to anemia, bleeding, and infection. Can infiltrate the liver and the spleen. Acute leukemia has a sudden onset and is characterized by a generalized increase in hemorrhagic episodes. Patients with AML will die if left untreated for more than 6 months. Chronic forms are less aggressive, with an average survival rate of 3-4 years.	**Radiographic indications:** Diagnosed with blood tests, bone marrow biopsies and cytogenic tests. CT is used to identify where the disease is located in the body. Lumbar punctures are used to determine whether or not the central nervous system is affected. All types require the destruction of WBC's using radiation or chemotherapy which leaves the patient immunosuppressed. Bone marrow transplants have also been successful.	No image.
Lymphoma: Hodgkin's and non-Hodgkin's lymphoma	**What is it?** Cancer of the lymphoid cells (B and T lymphocytes) in the lymph nodes, bone marrow, liver and GI tract. 90% of the time the cancer originates in the lymph nodes. Once diagnosed the disease needs to be: 1) **graded** – a process that determines how aggressive or malignant a tumor is and 2) **staged** – a process that determines how widespread the cancer is in the body	**Complications**: Symptoms mimic those of many common ailments such as flu. Some patients can manage this disease reasonably well, but for others it is life threatening. Patients can also develop anemia. The difference between HL and NHL is the pattern of the nodes affected.	**Radiographic Indications:** Enlarged mediastinal lymph nodes is most common radiographic finding. CT of the chest abdomen and pelvis is first imaging exam of choice. Pleural effusion will develop in 1/3 of patients with thoracic lymphomas. Histologic exams (biopsies) help to differentiate this disease from leukemia, or other cancers. Treated with radiation and chemo therapy,	**Eisenberg figures 9-14 and 9-17** Also, a clear explanation of lymphoma and associated treatment options is discussed by a physician at this You-tube link: https://www.youtube.com/watch?v=tDJ54AmRbMk