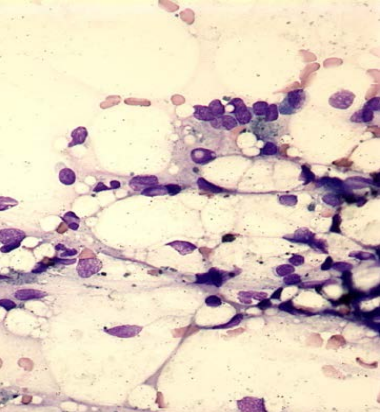
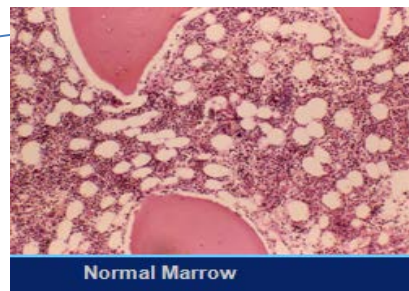


Pancytopenia

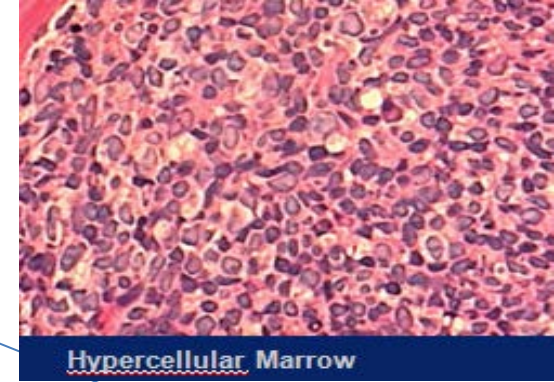
(anemia, ↓ retics, recurrent infection, easy bruising/bleeding)



Hypocellular Bone Marrow (BM) (Aplastic Anemia)



Normal Marrow



Hypercellular Marrow

Hypercellular BM

Cellular/Normal BM

- Hypersplenism
- Alcoholism
- TB
- Sarcoidosis

Malignant Infiltration

(excessively proliferating clone of certain marrow cells, displacing RBC/WBC/Plt precursors out of marrow)

- Acute Leukemia (blasts!)
- Myelodysplasia (CML, PV, ET)
- Myelofibrosis
- Lymphoma (stage IV)

Tx:

- Chemo for the appropriate cancers
- HSCT if necessary

Inadequate B12/Folate

(due to ineffective hematopoiesis, BM is packed with abnormally-produced blood cells)

- Macrocytic, oval RBCs
- Hypersegmented neutrophils
- Associated with malabsorption

Tx:

- B12 IM to restore levels, maintain with oral supplement
- Oral folic acid supplement

Inherited

- Fanconi's anemia
- Shwachman-diamond syndrome

Acquired

- Auto-immune (SLE, GVHD, etc)
 - Radiation/chemotherapy
 - Toxins (benzene, lindane)
- Infections: HIV, EBV, Hepatitis, Parvovirus, sepsis (severe infection)
- Drugs (NSAIDs, Methotrexate, chloramphenicol, anti-thyroids, anti-epileptics)
- Paroxysmal Nocturnal Hemoglobinuria (PNH)

Tx:

- Withdraw causative agents (drugs, chemo, radiation)
- Immune-suppression of marrow-suppressing T-cells (Antithymocyte globulin, ATG; steroids, cyclosporine)
- Hematopoietic Stem Cell Transplant (HSCT)
- Supportive Care