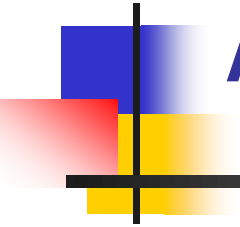


# Aplastic and Hypoplastic Anemias



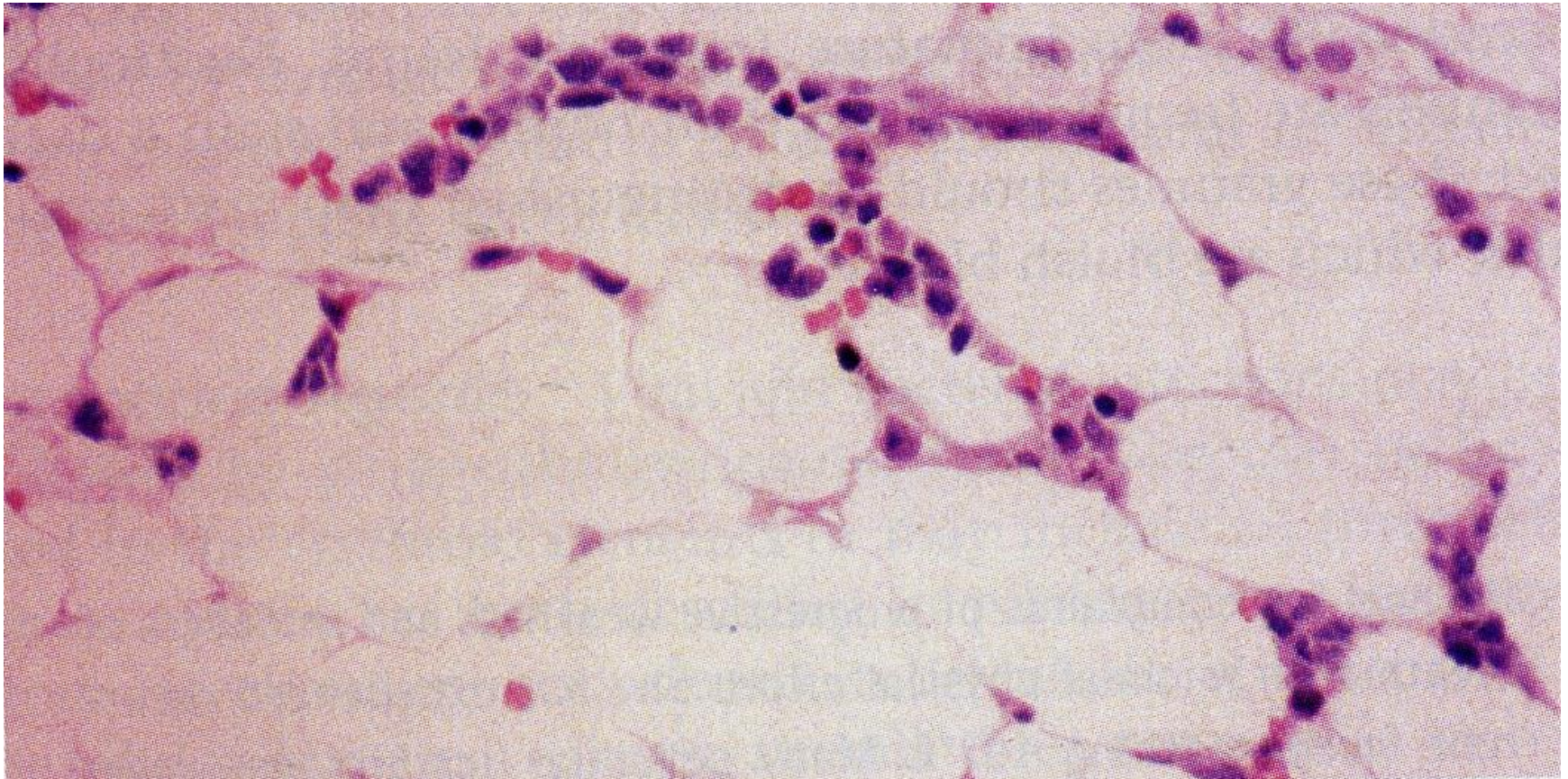


# Aplastic anemia

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- The disease is characterized by peripheral pancytopenia and a hypocellular bone marrow.

# aplastic anemia -hypocellular bone marrow



### Blood Count in Severe Aplastic Anaemia

Hb	6.2 g/dl
RBC	$2.0 \times 10^{12}/l$
PCV	22%
MCV	110fl
MCH	31pg
reticulocytes	0.1%
WBC	$0.9 \times 10^9/l$
neutrophils	13%
eosinophils	0%
basophils	0%
monocytes	21%
lymphocytes	66%
platelets	$5 \times 10^9/l$

Fig. 6.2  
Typical blood count in severe aplastic anaemia.



Fig. 6.3  
Aplastic anaemia: spontaneous mucosal haemorrhages in a 10-year-old boy with severe congenital (Fanconi) anaemia. Hb:7.3g/dl;



# Aplastic anemia acquired

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- The primary defect is a reduction of hematopoietic precursor stem cells with decreased production of all cell lines.
- This leads to the peripheral pancytopenia.
  - This may be due to quantitative or qualitative damage to the pluripotential stem cell.
  - In rare instances it is the result of abnormal hormonal stimulation of stem cell proliferation
  - or the result of a defective bone marrow microenvironment or from cellular or humoral immunosuppression of hematopoiesis.



# Aplastic anemia -acquired

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- Most cases of aplastic anemia are idiopathic
- Exposure to ionizing radiation –
- Chemical agents – include chemical agents with a benzene ring, chemotherapeutic agents, and certain insecticides.



# Aplastic anemia acquired

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- Infections – viral and bacterial infections such as infectious mononucleosis, infectious hepatitis, cytomegalovirus infections, and miliary tuberculosis occasionally lead to aplastic anemia
- Paroxysmal nocturnal hemoglobinuria – this is a stem cell disease in which the membranes of RBCs, WBC.s and platlets have an abnormality making them susceptible to complement mediated lysis.
- *Congenital disorders*



# Secondary Aplastic Anemia

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- Infections (Viruses)
  - EBV, Hepatitis (C > A & B), HIV, Parvovirus
- Immune Diseases
  - Eosinophilic fasciitis
  - Hypoimmunoglobulinemia
- Others
  - PNH, Preleukemia, Pregnancy, Thymoma, Radiation

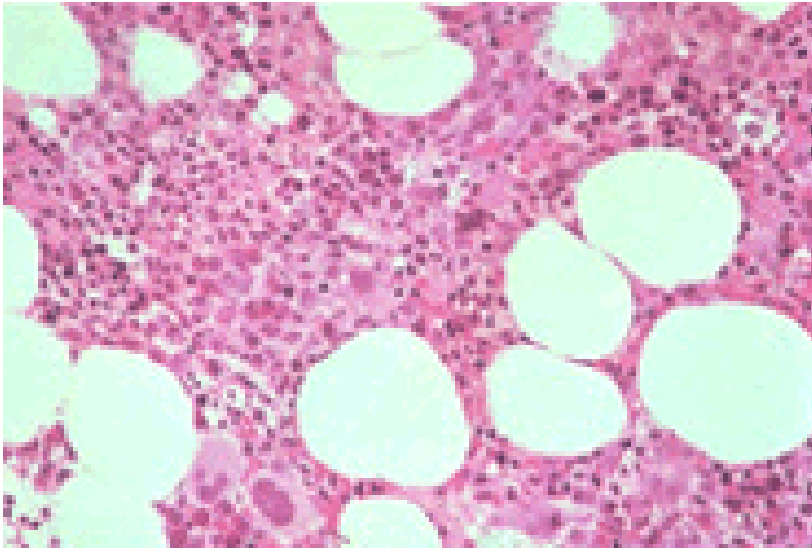
# Evaluation of Bone Marrow

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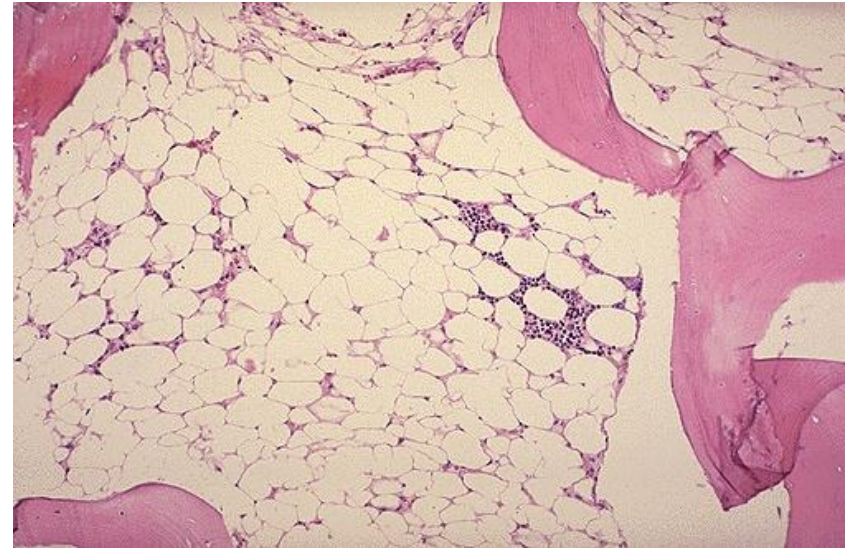
- Bone Marrow Aspirate
  - Hypocellular
  - Hypercellular
- Bone Marrow Biopsy
  - Hypocellular
    - < 30% cellular in individuals younger than 60 years
    - > 70% marrow lymphocytes correlated with poor prognosis
  - Fatty replacement of marrow

*Aplastic Anemia*

# Bone Marrow Biopsy



Normal BM Biopsy



Severely Aplastic BM Biopsy



*Aplastic Anemia*

# Clinical Presentation

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- Anemia
  - ,
- Thrombocytopenia
- Neutropenia
  -