Mediately

Acquired aplastic anemia (AAA)

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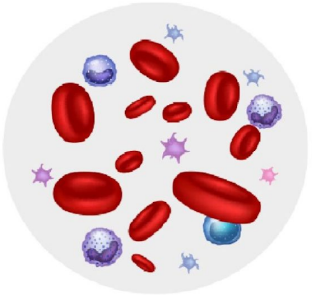
Acquired aplastic anemia (AAA)

- rare hematologic disorder
- deficit of hematopoietic stem, bone marrow hypocellularity, and peripheral blood pancytopenia
- children, young adults, and people over 60 years of age

- a life-threatening form of bone marrow failure, very high mortality

- Incidence: 2/1 million people

Normal



Aplastic Anaemia
(fewer red cells, white cells, and platelets)

https://medicoinfo.org/

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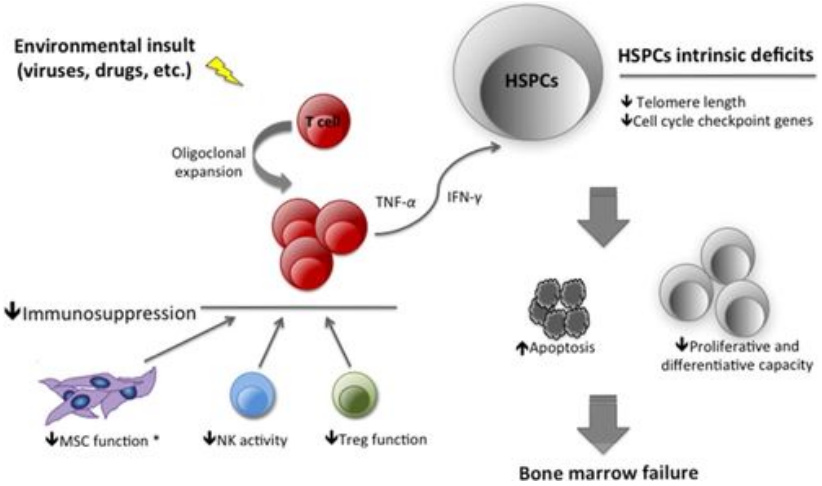
Etiology

- idiopathic
- immune injury to multipotent hematopoietic stem cells
- anti-seizure agents (carbamazepine, phenytoin)
- anti-thyroid medications (methimazole, propylthiouracil)
- viral infections (EBV, other herpes viruses, HIV)
- immune disorders (SLE, GVHD)
- paroxysmal nocturnal hemoglobinuria
- pregnancy
- thymoma
- anorexia nervosa



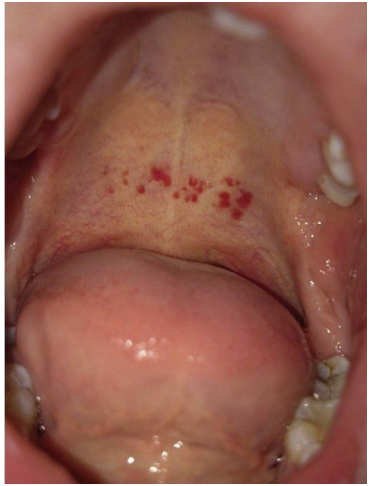
https://onlinelibrary.wiley.com/doi/10.1111/cei.12605

Clinical features

- infections, mucosal hemorrhage, fatigue
- infections are typically bacterial, including sepsis, pneumonia, skin infections (cellulitis, abscess), and urinary tract infection
- invasive fungal infection

- hemolytic anemia and/or thrombosis → paroxysmal nocturnal hemoglobinuria (PNH)

- physical findings: pallor and petechiae



https://www.semanticscholar.org/paper

https://ghealth121.com/treatments/aplastic-anemia/

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Diagnostic criteria

- pancytopenia with a hypocellular bone marrow in the absence of an abnormal infiltrate or marrow fibrosis
- no required duration of cytopenias to establish a diagnosis
- reversible causes (cytotoxic chemotherapy, viral infection); monitored for days to several weeks

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Classification of severity

Very severe AA

- SAA criteria
- absolute neutrophil count (ANC)

  < 0.2 x 10^9/L

Severe AA

- bone marrow cellularity <25%
- absolute neutrophil count (ANC)

  < 0.5 x 10^9/L
- platelet count

  < 20 x 10^9/L
- reticulocyte count

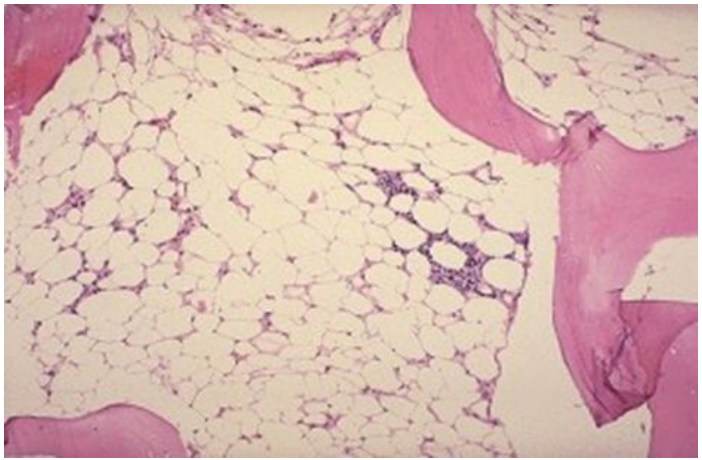
  < 60 x 10^9/L

Moderate AA

- peripheral blood cytopenias not fulfilling criteria for SAA or vSAA

Diagnosis

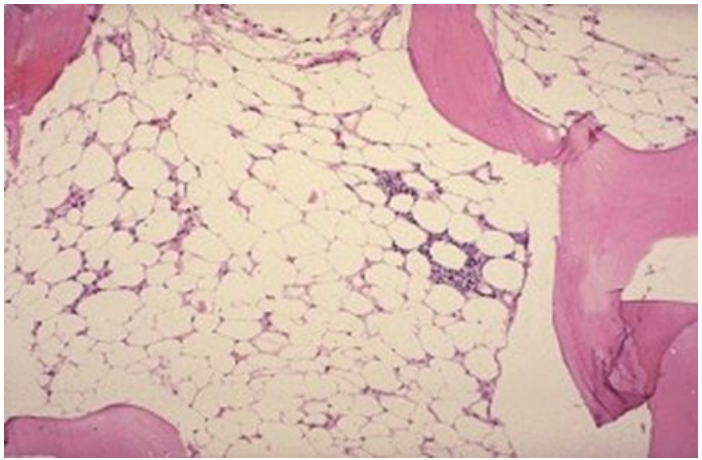
- BM biopsy is mandatory



Severe hypoplastic marrow in aplastic anemia
https://askhematologist.com/aplastic-anemia/

Diagnosis

- children: genetic testing to identify inherited genetic abnormalities (Fanconi anemia, Dyskeratosis congenita)



Severe hypoplastic marrow in aplastic anemia
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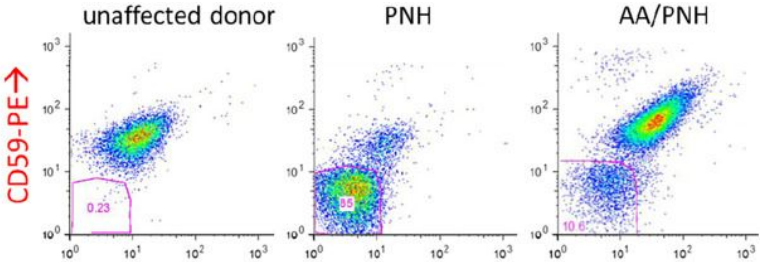
Diagnosis

- 40% to 50% of cases with AA may also have small PNH clones (flow cytometric techniques) → good response to immunosuppressive therapy
- normal cytogenetics (abnormal karyotype → hypoplastic MDS?)



Analysis of platelets by flow cytometry in patients with PNH. (PNH)https://www.sciencedirect.com/science/article/abs/pii/S1079979619302700

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Differential diagnosis

- hypoplastic MDS
- acute leukemia
- PNH
- inherited syndrome
- megaloblastic anemia, myelofibrosis, hairy cell leukemia
- certain infections (tuberculosis, HIV)
- nutritional deficiency (anorexia nervosa)
- T-cell large granular lymphocyte (T-LGL) disease

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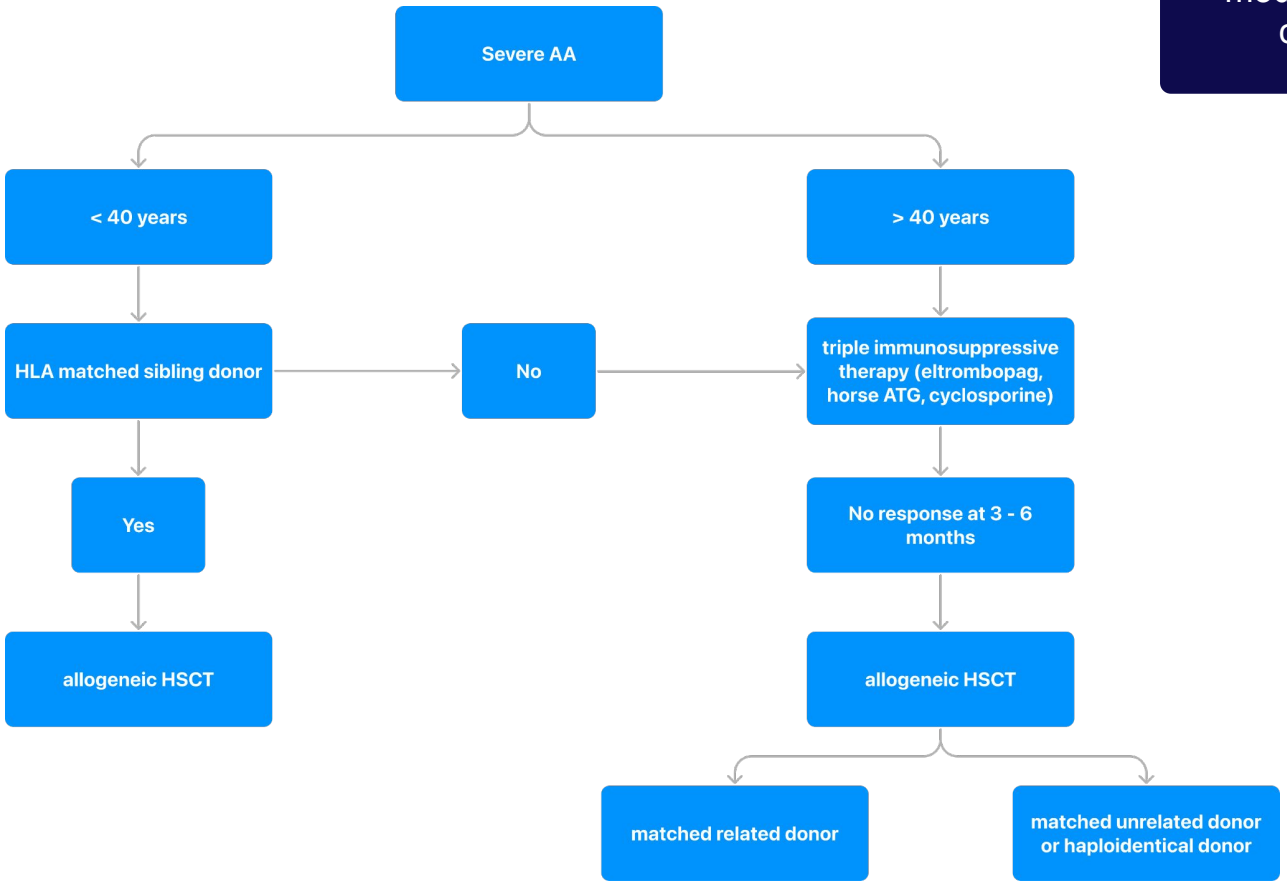
Treatment

moderate AA: single-agent cyclosporine or/and eltrombopag



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Prognosis

- The overall response rate at 3 months in patients receiving triple IST is between 60% and 80%.
- Relapses occur in up to one-third of patients.
- Current 5- or 10-year survival rates are 80 to 90%.
- Patients with AA may develop clonal cytogenetic abnormalities.
- Evolution to MDS can occur in up to 15% to 20% of patients in the first 20 years after diagnosis.

Prognosis

- The prognosis of patients with chromosome 7 abnormalities is generally poor, whereas those with trisomy 8 can respond to IST.

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Key messages

- AAA is bone marrow failure with pancytopenia.
- It primarily affects children, young adults, and people over 60 years of age.
- Is a diagnosis of exclusion.
- BM biopsy is mandatory for diagnosis.
- It manifests with infections, hemorrhage, and fatigue.
- Allogeneic HSCT should be the first-line therapy in patients younger than 40 years.
- In patients older than 40 years, and for patients without a matched sibling, triple immunosuppressive therapy should be first-line treatment option (horse antithymocyte globulin, cyclosporine and eltrombopag).


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