Platelet Disorders (Thrombocytopathy)

Normal range 150-500 x 109. Live 7-10d.
Platelet disorders often manifest as 1° haemostatic phenomena (e.g. ↑bleeding times, petechiae, purpura) rather than 2° haemostatic phenomena (e.g. haemarthrosis, muscle haematomas).
Sub divided into thrombocytopaenia (too few), plt dysfunction or thrombocytosis (too many).

Presentation

History

- Epistaxis, bleeding gums, metromenorrhagia, excessive post-op bleeding, bruising.
- 2° bleeding revealed: haemoptysis, haematemesis, haematuria, haematochezia, melaena.

Examination

- This may reveal petechiae (<2 mm), purpura (0.2-1 cm) and ecchymoses on the skin.
- Splenomegaly, haemarthrosis and deep muscle haematomas are unusual in platelet disorders and suggest an alternative diagnosis should be sought (e.g. factor deficiencies).

Investigations

Bloods: FBC & film (plt number, check not clotted sample), bleeding time (plt function), shear test (plt function),
Platelet Aggregation test (vWF/Glycoprotein test), BMT

Thrombocytopaenia (<150x10^9/L)

Decreased Production

Marrow suppression

- Aplastic anaemia, chemo/DXT, haematological malignancies, Vit B12 def., chronic EtOH.

Wiskcott-Aldrich Syndrome

- X-linked
- Thrombocytopaenia (with small platelets) + eczema + immunodeficiency

Fanconi's Syndrome

Increased Destruction

Idiopathic Thrombocytopenia Purpura (ITP)

- Commonest idiopathic thrombocytopenic autoimmune disease.
- IgG antibodies against various platelet antigens.
- Commonly follows infection in children (EBV, rubella, other viruses) & lasts 6-8wks.
- F>M in adulthood.
- Acute form more usually in children, chronic (>6mo) more common in adult women
- Mx: often self-limiting in children (& thus the need for Rx controversial). Otherwise:
    - Avoid unnecessary trauma, medications (e.g. NSAIDs). Risk ICH 0.1-2%.
    - **prednisolone** 1mg/kg PO od if plt<50
    - **Immunoglubulin** 1g/kg/day IV x 3d if plt<5
    - **Anti-D Ig** 75mcg/kg IM if Rh+ve & plt<30 (& not asplenic)
    - Splenectomy if chronic
    - Other drugs: vincristine, danazol or newer Rx: rituximab, eltrombopag
    - Life-threatening bleed: methylpred 10mg/kg, plts,rFVIIa, IVIG, splenectomy

Alloimmune Thrombocytopenia

- ~10d post blood transfusion.
- Transfused plt antigens → immune response that destroys transfused and native plts.
- Can last weeks or even months.

Neonatal Alloimmune Thrombocytopenia

- Similar phenomenon produced by maternal Abs against paternal antigens on fetal plts.
- Commonest cause of severe neonatal thrombocytopenia - ICH & mortality are high.

Drug Induced Thrombocytopenia Purpura

Caused by direct marrow suppression or immune mechanisms. E.g.:

- Heparin
- Phenytoin
- Carbamazepine
- Valproate
- Amiodarone
- Thiazides
- Frusemide
- Captopril
- Sulphonamides
- Glibenclamide
- Ranitidine
- Cimetidine
- Aspirin
- Ibuprofen
- Vancomycin
- Quinidine
- Interferon
- Tamoxifen
- Gold

Thrombotic Thrombocytopenia Purpura

- Thrombotic microangiopathic haemolysis and thrombocytopenia → plt microaggregates
- Most often adults - ADAMTS 13 enzyme deficiency → large multimers of vWf
- Mx: Medical emergency – plasma exchange, FFP, **prednisolone**, ± splenectomy

Haemolytic Uraemic Syndrome

- Infection with E.coli O157:H7 or Shigella. Also malignancy, post-chemo or familial.
- Shiga toxin → RBC & plt destruction → thrombotic microangiopathic haemolysis → ARF
- Mx: Supportive avoid ABx, immunoperfusion + staph protein A column, dialysis/exchange

Platelet Dysfunction

von Willebrand's Disease

- AD ↓production of vWf → ↓plt adhesion to endothelium and ↑factor VIII degradation.
- Mx: **Desmopressin (DDVAP)** [type I] or **vWf concentrate** [types II & III]

Bernard-Soulier Syndrome

- AR inherited deficiency of platelet glycoprotein Ib
- Rare but sev. bleeding disorder where plts large & automatic counters may count as RBC

Glanzmann's Thrombasthenia

- Deficiency of the glycoprotein IIb/IIIa complex → platelets fail to aggregate.

Gray Platelet Syndrome (Platelet alpha granule deficiency)

- Rare autosomal recessive disorder with large grey platelets.

Uraemia & Renal Failure

- Associated with impaired platelet function.

Thrombocytosis/Thrombocythaemia (>500x10^9/L)

1° - Essential thrombocythaemia, PCV, CML, myelofibrosis. 2° (Reactive) - Infection, inflammatory disorders (Kawasaki, RA, HSP), haemorrhage, splenectomy, Fe-def, malignancy

Essential Thrombocythaemia

- Cx: hyperviscosity, thrombotic, haemorrhage, splenomegaly, miscarriage, AML
- Mx: plateletpheresis, **hydroxyurea**, **interferon alpha**, **hydroxycarbamide**, **anagrelide**