Neonatal Thrombocytopenia

Causes: consider spurious result

Early Onset (<72 hrs)
- Placental insufficiency
- Extreme prematurity
- Hypoxia (fetal or perinatal)
- Perinatal infection
- CMV, rubella, HIV
- NAITP (<5%)
- Autoimmune (e.g., maternal ITP or SLE)
- Rhesus disease (severe)
- DIC
- Thrombosis
- Bone marrow replacement
- Sequestration
- Trisomy 13/18/21
- Metabolic
- Inherited e.g. TAR

Late Onset (> 72 hrs)
- Sepsis
- NEC
- Congenital infection
- Autoimmune (e.g., maternal ITP or SLE)
- Sequestration
- Metabolic
- Inherited e.g. TAR

Practicalities
- Transfuse 10-20 ml/kg of platelets (single donor) over 30 mins using blood product giving set with filter. Platelets are administered at room temperature to avoid clumping, leads to shorter lifespan.

Definition: platelet count < 150 x 10^9/L, but treatment not usually required unless <50 x 10^9/L

1) Presentation
- Often incidental finding, especially in NICU babies
- Bleeding (see examination)

2) Examination
- IS THERE EVIDENCE OF BLEEDING? Examine for:
  - IVH, petechiae, purpura, pulmonary, GI, umbilical cord or urinary bleeding or bleeding from venepuncture sites
  - Is the baby well or unwell?
  - Premature or term?

3) Investigations: see causes
- FBC: are WCC and Hb normal?
- PT and APTT
- Group and crossmatch
- Consider NAITP (send samples from baby and parents for platelet antigen testing)
- Investigate for infection/TORCH if indicated
- Cranial US
- Review medications (including mother’s) for potential causes of bleeding or thrombocytopenia (implicated drugs include penicillins, indomethacin, antiepileptics, heparin, quinine and digoxin).
- NSAIDS and steroids can contribute to GI bleeding

4) Treatment
- TREAT IDENTIFIED CAUSE
- There is a lack of strong evidence to support any one transfusion threshold. Unwell or premature babies may need transfusion at higher platelet counts than suggested here. Ongoing clinical trial (PlaNet 2) comparing thresholds (50 x 10^9/L versus 25 x 10^9/L).

IF BLEEDING:
- Transfuse 10-20ml/kg platelets if <50 x 10^9/L
- Consider transfusing if <100 x 10^9/L in the presence of major bleeding or planned surgical procedures
- Cranial US
- Consult haematology if not improving.

IF NOT BLEEDING:
- Transfuse 10-20ml/kg platelets if <30 x 10^9/L.

IF NAITP QUIERED:
- Platelets negative for HPA 1a and 5b should be used, but random donor platelets may be needed in an emergency. Note platelet depletion will occur post-transfusion: RE-ASSESS
- Consult haematology; may need IVIG (dose 1g/kg)/ steroids
- Cranial US essential

5) Monitor and ensure response to treatment, re-transfuse and reassess as clinically indicated. Monitor for signs of sepsis.

Neonatal alloimmune thrombocytopenia (NAITP)
- Major cause of morbidity. If untreated, intracranial bleeding occurs in 10-20% of cases and can occur in utero
- Platelet count falls in early days, then rises in weeks 2-4

Autoimmune
- Intracranial bleed in <1% of cases
- Maternal ITP and SLE are common causes, but 90% of babies born to such mothers will have platelet counts > 50 x10^9/L
- More severe thrombocytopenia in baby if mum has had splenectomy, platelet count <50 x 10^9/L during pregnancy or a previous affected baby.
- Platelet transfusion is usually less effective due to maternal ABs against all platelets. IVIG/steroids may be indicated.
References:

- of Haematology; 2004:124;433–453
- Roberts I. Thrombocytopenia in the neonate. Blood reviews 2008;22;173-186
- Transfusion guidelines for neonates and older children. British Journal
- UK Blood Transfusion and Tissue Transplantation Services: Transfusion Handbook

This care pathway has been produced by the National Paediatric and Neonatology Clinical Programme. It is aimed at medical, nursing and allied health professionals working in Irish neonatal units.