NCCU CLINICAL GUIDELINES

SECTION: 9

HAEMATOLOGY

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Anaemia and Bleeding Disorders
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Neonatology Clinical Guidelines
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ANAEMIA & BLEEDING DISORDERS

CAUSES OF ANAEMIA

1. Early onset within the first week (Acute or chronic blood loss)
2. Later onset after the first week (Decreased red cell production and/or shortened red cell survival)

In normal healthy newborns haemoglobin levels decrease from a mean of 19.3 g/dl at birth to a nadir of 10.7g /dl (8.9 -12.5) at 9 weeks. The Hb levels of preterm infants are only slightly lower than full term infants however the nadir occurs earlier and is lower.

EARLY ONSET

- Haemolytic disease
- Fetomaternal
- Twin to twin transfusion – donor
- Subgaleal haemorrhage
- APH – Placenta Praevia, Abruption, Velamentous cord insertion / cord rupture
- Hepatic rupture
- Congenital infections ie. CMV
- Deceased twin - disseminated intravascular coagulopathy (DIC)
- Isoimmunisation ~ Rh disease / ABO incompatibility

LATER ONSET

- Iatrogenic blood loss from frequent blood sampling
- Infections, NEC
- Anaemia of prematurity
- Haemoglobinopathies
- Haemorrhagic disease - Vitamin K deficiency, Thrombocytopenia
- Hereditary spherocytosis

HISTORY

A detailed history is essential. Family and obstetric history may reveal a familial bleeding disorder (haemophilia, rare autosomal recessive platelet function disorders or thrombocytopaenia-maternal ITP or alloimmune thrombocytopaenia with a previously affected sibling).

LABORATORY TESTS

Includes:

- Full Blood count and film
- Group and Direct Coombs (Antiglobulin test)
- Maternal Kleihauer (Determination of fetal haemoglobin in maternal circulation)
- Exclude haemoglobinopathies
- SBR

- Coagulation studies. (Normal neonates have a prolonged APTT, especially if preterm, and often the test is not helpful). Factor assays will be more useful for suspected haemophilia.
- Check stools for occult blood if applicable.

While new whole blood platelet factor analysers (PFA) may help diagnose the rare infant with a platelet function defect, in general these disorders and von Willebrand's disease are easier to determine at 6-12 months of age.

BLEEDING DISORDERS

Normal haemostasis requires vascular integrity, normal platelet function and a functioning coagulation system.

1. THROMBOCYTOPAENIA

15% of neonatal patients have a thrombocytopenia of between 100 - 150,000. Counts below 50,000 should be considered for investigation.

Bleeding may occur with trauma with platelet counts below 50-70,000. Spontaneous bleeding can occur with counts below 20,000. Infants with invasive lines and receiving intensive care procedures may need to be transfused with platelets earlier than well infants.

Bleeding is more likely at any given thrombocytopenic level if the cause is decreased production or there is an associated platelet function defect.

CAUSES

- Immune – Alloimmune thrombocytopenia (FMAIT), maternal immune thrombocytopenia (ITP).
- Sick infant – sepsis, viral infection, NEC, DIC, hyperviscosity, RDS
- Congenital - Kassabach-Merritt Syndrome, Type 2b von Willebrand disease, trisomy 13, 18, 21, autosomal disorders.

KEY POINT

- Platelet count may quickly drop over the first few days of life.
- Thrombocytopenia may last several weeks.
- Parents need to know if subsequent pregnancies may result in a severely affected fetus requiring monitoring and treatment during their next pregnancy.

TREATMENT

1. Discuss with the haematologist on call who will review the blood film for the size of the platelets (larger platelets are usually younger platelets and indicates increased turnover rather than decreased production)
2. Review maternal platelet count, history. Consider FMAIT and type the parents platelets.
3. If platelets <20,000-30,000 (well infant) or <50,000 (sick infant) transfuse CMV negative platelets (all platelets are now irradiated and collected with a filter so washing is not required) If FMAIT is likely (well infant and marked thrombocytopenia, request PLA1a negative platelets until the parents platelet typing is known.
4. For auto immune thrombocytopenia, IVIG 0.8g/kg, INTRAGAM P (3G AND 12 G) INTRAGAM P (3G AND 12 G). Plasma derived blood components. Transfusion medicine protocols

5. Plasma derived blood components. See Transfusion medicine protocols for infusion protocol and consent requirement. Will link to TM protocols
6. Methylprednisolone 2mg/kg/day may also help stabilise the platelet count. If no improvement bone marrow examination may be required to look for rare congenital causes of thrombocytopenia. When there is a protocol for this it will be linked to it.
7. Head ultrasound.
8. Bone marrow analysis may be required.

2. VITAMIN K DEFICIENCY

The *Classical* presentation is at 2-6 days of age in healthy full term infants and occurs because of poor placental transfer of vitamin K, low levels in breast milk and a sterile gut. It can be prevented by a single dose of 0.5mg for infants ≤ 1500g and 1mg for infants >1500g IM/IV at birth or an oral dose of 2-4mg at birth with subsequent doses. See PHYTOMENADIONE (VITAMIN K)

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