Management of Neonatal Thrombocytopaenia - Paediatric Full Clinical Guideline – Burton only

Reference no.: WC/NP/54N/V006

Introduction:

Thrombocytopenia (less than 150 x 10>9/L) is a common neonatal problem occurring in about 1 to 5% of all newborns at birth and severe thrombocytopenia (less than 50 x 10>9/L) occurs in about 0.1 to 0.5% of all newborns. Fortunately, most episodes are mild or moderate and resolve spontaneously.

Causes of Thrombocytopenia

The commonest cause of a falsely low platelet count is a clot in the sample. Repeat if in doubt, especially if capillary sample or difficult peripheral venepuncture.

In an otherwise well term infant, the commonest cause of thrombocytopenia is alloimmune. In a preterm or systemically unwell baby, the commonest cause is sepsis. The causes (common emboldened) of thrombocytopenia are below.

Early <72 hours	**Chronic fetal hypoxia**
	Perinatal asphyxia
	Perinatal infection e.g. E.Coli, GBS
	Disseminated intravascular coagulation
	Neonatal alloimmune thrombocytopenia (NAIT)
	Neonatal autoimmune thromobocytopenia (ITP, SLE)
	Congential infection e.g. CMV, toxoplasma, rubella, Coxsackie
	Thrombosis e.g. renal, aortic
	Bone marrow replacement e.g. congenital leukaemia
	Kasabach Merritt syndrome
	Metabolic disease e.g. proprionic and methylmalonic acidaemia
	Chromosomal disorders e.g. T21, T18, T13
	Inherited e.g. congenital amegakaryocytic thrombocytopenia
Late >72 hours	**Late onset sepsis**
	NEC
	Congential infection e.g. CMV, toxoplasma, rubella, Coxsackie
	Autoimmune
	Kasabach Merritt syndrome
	Metabolic disease e.g. proprionic and methylmalonic acidaemia
	Inherited e.g. congenital amegakaryocytic thrombocytopenia

Management of Thrombocytopenia:

- Family history:
  -Affected siblings

- Maternal factors in this pregnancy:
  - Symptoms suggestive of congenital infection
  - Autoimmune disease
  - Platelet count
  - Drugs taken during pregnancy

- Infant factors:
- Is the infant haemorrhagic? (Petechiae, purpura, mucosal bleeding)
- Is the infant dysmorphic?
- Symptoms/ signs of current infection
- Congenital anomalies, e.g. TAR, capillary haemangioma
- Central venous catheters

Investigations:

Infants with platelets persistently < 100 should have the following;

- Repeat FBC: confirm low platelets, assess trends in Platelet count / Hb / WCC
- Peripheral blood film
- Consider blood cultures (consider starting antibiotics if unwell baby or severe thrombocytopenia).
- Coagulation screen (NB. A coagulation sample reported as 'clotted' reflects an activated sample but not necessarily normal clotting. This sample must be repeated). Fibrinogen should be specifically requested, as they may provide the only sign of low grade DIC and so may explain increased platelet consumption.
- Consider maternal platelet count
- Consider screening for congenital infection

Treatment:

1. Treat the cause

Amount of platelets to be transfused = 10mls/kg over 30min

2. Transfuse if: *(Transfusion threshold BSH 2016)*

Platelet count	**Indication for Transfusion**
<25 x10^9 /L	Neonates with no bleeding (including neonates with NAIT if no bleeding and no family history of Intracranial haemorrhage)
<50 x10^9 /L	Transfuse if any bleeding, current coagulopathy, or infants with NAIT if previously affected sibling with ICH
< 100 x10^9 /L	Transfuse if major bleeding or requiring major surgery
>100 x10^9 /L	Do not transfuse

SPECIFIC PROBLEMS:

a) NEONATAL ALLOIMMUNE THROMBOCYTOPENIA (NAIT)

In Caucasian populations the two most common platelet alloantigens are HPA-1a and HPA-5. Severe thrombocytopaenia is most often seen with HPA 1A antibodies. In addition to thrombocytopenia, platelet aggregation is reduced and is antibody- mediated. NAIT should be suspected in any term infant with a platelet count <50 x 10^9/L

Presentation:

- Intracranial haemorrhage (10–30% have antenatal intracranial bleed)
- Obvious petechiae/ mucosal bleeding
- Most often an incidental diagnosis in an otherwise well child with petechial rash.

Investigation:

Specific blood samples for a NAIT screen need to be sent to NHSBT; Contact Blood Bank for sample requirements.

- Maternal blood (1 x 6ml EDTA, 1 x 6ml clotted blood)
- Paternal blood (1 x 6mls EDTA)
- Neonate or cord blood (1ml EDTA)

Treatment:

Transfuse HPA 1a–ve, 5b–ve platelets if platelet count < 25 x10^9/L. (see threshold table above)

- Only use HPA-random platelets as a last resort, as they are rapidly consumed
- FBC should be repeated 1hour post-platelet transfusion, as a poor increment may help in diagnosis.
- Babies who are well with severe unexplained thrombocytopenia should be treated (pending serology) as having alloimmune disease.

As 2nd line if HPA1-ve, 5b-ve platelets not available use high dose immunoglobulin with random platelets.

- Give 1g/kg/day on 2 consecutive days. This is effective in 65% of cases. but there is a significant delay in achieving a ‘safe’ platelet count compared to platelet transfusion, but the evidence is based on case series data.

b) INFANTS OF MOTHERS WITH LOW PLATELET COUNT

Presentation:

- Most infants will be born with a normal platelet count and will not be affected by the maternal platelet count. 0.5-1.5% will have a low platelet count as a consequence. The highest risk infants are those born to mothers with severe thrombocytopenia, male gender, low birth weight and if there is an immune mediated pathology for maternal low platelet count.

- For non-immune mediated thrombocytopenia in mother, cord blood should be taken for FBC. If the cord platelet count is low, this should be confirmed with a sample from the infant.

Treatment (for non-immune mediated causes):

- IM injections should be avoided until the platelet count is known. If thrombocytopenia is confirmed, the blood count should be monitored until platelet counts start to recover.

c) INFANTS OF MOTHERS WITH AUTOIMMUNE ITP.

Most mothers with anti-platelet antibodies deliver healthy infants with normal platelet counts. However, maternal antibody will cross react with neonatal platelets and leads to their increased destruction in a

minority of babies, incidence varies in studies from 10-29%.

Presentation:

- Most affected infants have normal platelet count at birth.
- Check FBC on cord blood, then at 24 and 48 hours. If platelets are normal at 48 hours, they are unlikely to fall rapidly
- Monitoring can be stopped. In affected babies, the platelet count may not reach its trough until day 5, and typically recover by day 7 to day 14.

Management:

- Cranial ultrasound in those with a platelet count <50
- Neonatal thrombocytopenia secondary to ITP may last for months.
- Severe neonatal thrombocytopenia and bleeding are rare due to maternal ITP so when present NAIT should be excluded.

Treatment:

- Give immunoglobulin 1g/kg daily for 2 days if platelets <30 x 10^9/L as first line treatment. Response to immunoglobulin faster than response to steroids. Repeat once if necessary
- Prednisolone 2 mg/kg/day Used alone or with immunoglobulin if no response after 2 days. Unclear whether steroids add to the response from immunoglobulin alone.
- In life-threatening situations, give a double dose of platelet transfusions with immunoglobulin.
- Unfortunately, platelets produce a poor increment and the platelet count rapidly falls back to pre-transfusion levels (this can help support the diagnosis)

References

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Documentation Controls

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