POLYCYTHAEMIA

RECOGNITION AND ASSESSMENT

Definition

- Peripheral venous haematocrit (Hct) >65%
- Symptoms rarely occur with a peripheral Hct of <70%
- Hct peaks at 2 hr after birth and then decreases with significant changes occurring by 6 hr

Clinical consequences

- Hyperviscosity
- Decreased blood flow and impaired tissue perfusion
- Microthrombus formation

Complications

- Cerebral micro-infarction and adverse neurodevelopmental outcome
- Renal vein thrombosis
- Necrotizing enterocolitis (NEC)

Causes

Intra-uterine erythropoiesis	Erythrocyte transfusion
• Placental insufficiency (SGA) • Postmaturity • Maternal diabetes • Maternal smoking • Chromosomal abnormalities – trisomy 21, 18, 13 • Beckwith–Wiedemann syndrome • Congenital adrenal hyperplasia • Neonatal thryotoxicosis • Congenital hypothyroidism	• Maternal-fetal • Twin-to-twin transfusion • Delayed cord clamping • Unattended delivery

Symptoms and signs

- Commonly plethoric but asymptomatic

Cardiorespiratory

- Respiratory distress
- PPHN (persistent pulmonary hypertension of the newborn)
- Congestive cardiac failure

CNS

- Lethargy, hypotonia within 6 hr
- Difficult arousal, irritability
- Jittery
- Easily startled
- Seizures

GIT

- Poor feeding
- Vomiting
- NEC

Metabolic

- Hypoglycaemia
- Hypocalcaemia
- Jaundice

Haematological

- Thrombocytopenia

Renal

- Renal vein thrombosis

- Renal failure

INVESTIGATIONS

In all unwell infants and at-risk infants who look plethoric (as mentioned above)

- FBC/Hct
- If Hct >65%, repeat using a 21 gauge needle to check that venous blood flows freely, or obtain arterial Hct
- If polycythaemic, check blood glucose and calcium

IMMEDIATE TREATMENT

- Ensure infants at risk have liberal fluid intake – 90 mL/kg/24 hr
- Asymptomatic infants with Hct >70%:
- give increased fluids
- repeat venous Hct after 6 hr
- if still high, discuss with consultant (current evidence does not show any benefit in treating asymptomatic babies)
- Symptomatic babies with Hct >65% (e.g. fits and excessive jitteriness, with neurological signs and refractory hypoglycaemia) – will need dilutional exchange transfusion. Discuss with consultant
- Explain need for exchange and possible risks to parents before performing dilutional exchange transfusion using sodium chloride 0.9% (see **Exchange transfusion** guideline). Partial exchange transfusion slightly increases risk of NEC
- Volume to be exchanged = 20 mL/kg
- Perform exchange via UVC or via peripheral arterial and IV lines
- Take 5-10 mL aliquots and complete procedure over 15-20 min

SUBSEQUENT MANAGEMENT

- Babies who required dilutional exchange transfusion require long term neuro-developmental follow-up
- Otherwise, follow-up will be dependent on background problem