HYDROPS FETALIS

DEFINITION

- Abnormal accumulation of fluid in ≥2 compartments of the fetus (pleural and pericardial effusions, ascites and/or subcutaneous oedema)
- Often associated with polycythaemia and placental thickening
- High but variable mortality rates dependent on underlying cause

TYPES

- Traditionally classified into 2 types:
- non-immune hydrops fetalis occurs in the absence of maternal antibodies; accounts for 90% of fetal hydrops in Western countries
- immune hydrops fetalis occurs when maternal allo-immune antibodies are produced against fetal red cells causing haemolysis; rare since introduction of anti-D immunoglobulins

AETIOLOGY

- Imbalance of fluid movement between fetal intravascular and interstitial spaces
- Multiple causes including cardiac abnormalities (structural or arrhythmias), chromosomal/ genetic, infection, haematological, metabolic and non-cardiac structural anomalies
- No identifiable cause found in 15–31% of babies

ANTENATAL MANAGEMENT

- Hydrops fetalis is diagnosed antenatally via ultrasound
- Refer to fetal medicine team [important as confirmed antenatal diagnosis aids appropriate counselling of families, and further intensive monitoring required throughout pregnancy (discussion of this is beyond the scope of this guideline)]
- Possible antenatal interventions include intra-uterine blood transfusion and in-utero procedures e.g. paracentesis/thoracentesis
- High risk of premature delivery

Refer all antenatally diagnosed hydrops fetalis to a regional fetal medicine centre for further assessment and management

NEONATAL MANAGEMENT

Resuscitation

- Resuscitation and stabilisation can be difficult
- An expert team including a neonatal consultant should be present at delivery
- Manage according to Neonatal Life Support (NLS)

Consider concurrent pleural/ascitic drains to facilitate resuscitation

- In cases of severe anaemia, give urgent Group O RhD negative blood transfusions
- Baby may need further grouped and crossmatched blood transfusions in NNU

Give only CMV negative and irradiated blood

Ventilation

- Ensure adequate oxygenation and ventilation
- May require high frequency oscillatory ventilation [see **Ventilation: high frequency oscillatory ventilation (HFOV)** guideline] and muscle relaxation
- If pulmonary hypertension present may require nitric oxide (see **Nitric oxide** guideline)

Cardiovascular system

- Use inotropes to support heart and blood pressure
- If intravascular fluid depletion give colloid

- Strict fluid balance
- If severe compromise may require further pleural and ascitic taps
- Immune hydrops may require exchange transfusion. See **Jaundice** and **Exchange transfusion** guidelines

NEONATAL INVESTIGATIONS

- Due to the extensive list of potential causes, direct investigations according to clinical history and presentation
- Initial investigations to consider include:

	Initial investigations	Further investigations to be considered if underlying cause is not ascertained
Haematology	• FBC (including blood film) • Group and direct Coombs test • Maternal Kleihauer test	• Red cell enzyme deficiency (e.g. G6PD deficiency) • Red cell membrane defects (e.g. hereditary spherocytosis) • Haemoglobinopathies (e.g. thalassaemia)
Biochemistry	• Liver function tests including albumin • Urea, creatinine and electrolytes	• If pleural/ascitic tap done – send for fluid MC+S and biochemistry
Cardiac	• ECG to exclude cardiac dysrhythmias • Echocardiography to exclude structural heart defects	
Placenta	• Send to pathologist	
Genetic testing	• Chromosomes • Microarray	• Investigate for congenital metabolic conditions • Non-immune hydrops − discuss whole exome sequencing with genetics team
Infection	• Toxoplasma, rubella, CMV, parvovirus, herpes simplex virus	
Radiology	• Chest X-ray • Abdominal X-ray • Cranial ultrasound scan	• Further investigations to be guided by clinical picture

Even with optimal management, the mortality rate is high. Suggest a post-mortem in the event of a death