Necrotizing Enterocolitis

- Acquired inflammatory disease

Epidemiology

- 0.5% of all births
- Up to 10% of LBW (<1500g)
- Mortality is 10-20%
- Typically present in first 10 days of life
- Risk factors:
    - Prematurity
    - Low birth weight
    - Early formula feeding (breast may improve maturation and immunity)
    - Cardiac disease
    - Sepsis
    - Maternal PET, cocaine abuse, Hypotension, hypothyroidism

Pathogenesis

Poorly understood but thought to be multifactorial with poor gut maturity, impaired barriers and endogenous bacterial translocation

Diagnosis

- Non specific features of sepsis
- Abdo distention, vomits, high residual gastric volumes post feeds
- Bloods: Neutropenia, anemia, thrombocytopaenia and met acidosis
- Elevated PCT, IL-6 and CRP but not specific
- Cornerstone is X-Ray with pneumatosis intestinalis, portal vein gas and pneumoperitoneum

Bell Classification (Abbreviated)

- Stage IA – Suspected NEC
- Stage IB – Suspected with PR blood
- Stage IIA – Proven NEC, Mildly ill
- Stage IIB – Proven, Moderately ill
- Stage IIIA – Severely ill, bowel intact
- Stage IIIB – Severely ill, bowel perforated

Surgical approach

Options:

- Peritoneal drain and resus
- Clip and drop
- Resection with enterostomy
- Resection with anastomoses
- Patch, drain, wait

Transverse supraubilical incision

Anaesthetic Considerations

- Premature neonate considerations
- Big aspiration risk
- Ketamine with fentanyl and muscle relaxants are a popular combination
- Caution volatiles with hypotension
- Avoid N2O
- Avoid regionals with sepsis and coagulopathy risk
- Good IV access
- A-Line “essential” according to WITS refresher
- Goal directed fluid therapy and inotropesif indicated

Prognosis

- Mortality high 30-90% with panintestinal
- Morbidity 25% with stricture, short bowel, failure to thrive and need for long term TPN and its complications

Stage	*Systemic signs*	*Abdominal signs*	*Radiographic signs*	*Treatment*
IA Suspected NEC	- tempt instability - apnoea - bradycardia - lethargy	- gastric retention - mild abd distention - emesis - positive faecal occult blood	- normal - mild intestinal dilatation - mild ileus	Supportive therapy – NPO, bowel decompression, IV resus, 3/7 antibiotics
IB Suspected NEC	As above	- fresh blood pR	As above	Same as above
IIA Proven NEC – mildly ill	As above	As above, plus - absent bowel sounds - +/- abd tenderness	- intestinal dilation - ileus - pneumatosis Intestinalis	NPO, antibiotics 7 – 10 days
IIB Proven NEC – moderately ill	As above, plus - metabolic acidosis - mild thrombocytopenia	As above, plus - absent bowel sounds - abd tenderness - +/- abd wall cellulitis - RLQ mass	As above, plus - portal vein gas - +/- ascites	NPO, antiobiotics 14/7, suggested CVP for TPN
IIIA Advanced NEC – severely ill, bowel intact	As above, plus - hypotension, bradycardia, severe apnoea - combined resp & metabolic acidosis - DIC - neutropenia	As above, plus - signs of generalised peritonitis	As above, plus - definite ascites	NPO, antibiotics 14/7, fluid resus, inotropic support, ventilator therapy, paracentesis
IIIB Advanced NEC – severely ill, bowel perforated	As above	As above	As above, plus - pneumoperitoneum	As above, plus surgery

Table 1 Modified Bell Staging Criteria for Necrotising Enterocolitis