

NCCU CLINICAL GUIDELINES  
SECTION: 13

SURGICAL CONDITIONS

Section: 13 Surgical Conditions  
Necrotising enterocolitis  
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Neonatology Clinical Guidelines  
King Edward Memorial/Princess Margaret Hospitals  
Perth Western Australia  
Authorisation and review by  
Neonatal Coordinating Group

## NECROTISING ENTEROCOLITIS (NEC)

Inflammatory condition of the gut characterised by gastro-intestinal and systemic signs and symptoms including feed intolerance, abdominal distension and tenderness, occult or gross blood and mucus per rectum, lethargy, temperature instability, apnoea and poor peripheral perfusion.

Use of breast milk, pasteurized human donor milk, standardised feeding regimens and probiotic supplementation have been shown to minimise the risk of NEC in preterm infants. Observational studies have suggested that packed red cell transfusion may increase the risk of NEC.

The following clinical stages are recognised (Dominguez et al 2012):

STAGE	SYSTEMIC FEATURES	ABDOMINAL FEATURES	RADIOLOGICAL FEATURES
<i>1a: suspected NEC</i>	Temperature instability, apnea, bradycardia	Increased gastric residuals, mild abdominal distension, occult blood in stool	Normal or intestinal dilatation, mild ileus
<i>1b: suspected NEC</i>	Same as above	Grossly bloody stool	Same as above
<i>2a: definite NEC; mildly ill</i>	Same as above	Same as stage 1 plus lack of bowel sounds, possible abdominal tenderness	Ileus Pneumatosis intestinalis
<i>2b: definite NEC; moderately ill</i>	Same as stage 1 plus mild metabolic acidosis, mild thrombocytopenia	Same as above plus peritonitis, definite abdominal tenderness, possible cellulitis, right lower quadrant mass	Same as above plus possible portal venous gas
<i>3a: advanced NEC; severely ill, intact bowel</i>	Same as stage 2b plus hypotension, severe apnea, combined respiratory and metabolic acidosis, disseminated intravascular coagulation, and neutropenia	Same as above with marked tenderness and abdominal distension	Same as above plus ascites
<i>3b: advanced NEC; severely ill, perforated bowel</i>	Same as stage 3a	Same as stage 3a	Pneumoperitoneum

## **EPIDEMIOLOGY**

Predominantly a disease of prematurity, but can occur in full term infants also.  
NEC incidence: 6 – 10% in infants <1.5kg

## **PHYSIOLOGY / PATHOPHYSIOLOGY**

Thought to result from a complex interaction of initially a mucosal injury (ischaemia, infections, intraluminal hyperosmolar solutions) and the host response to that injury (circulatory, immunologic, inflammatory). The commonest sites involved are the terminal ileum and ascending colon.

## **CLINICAL PRESENTATION**

Time of onset is usually in the first two weeks of life. Suspect NEC in any immature or acutely unwell infant with:

- feed intolerance, abdominal distension, bile stained aspirates
- acidosis, thrombocytopenia
- abdominal tenderness, abdominal mass
- blood or mucus per rectum.

## **INVESTIGATIONS**

- Abdominal X-ray supine and left lateral decubitus (Gas in bowel wall, peritoneal fluid, thickened bowel wall, intrahepatic gas, free intraperitoneal gas).
- Abdominal ultrasound including Doppler studies (discuss with radiologist)
- Septic screen, FBC, coagulation studies, U&Es, blood gas,

## **MANAGEMENT OF CONFIRMED NEC**

Prevent progression of the disease and treat symptoms.

1. Stop feeds – NPO to allow the GIT to rest.
2. Surgical consult
3. Intra gastric tube to free drainage – minimum size 6, may need an 8FG
4. Monitor vital signs, blood pressure, peripheral circulation and fluid balance (urine output).
5. Antibiotics – cover gram positive and negative organisms and add metronidazole for anaerobic organisms.
6. Remove UA and UV catheters if in situ.
7. Intubation and mechanical ventilation if the baby is haemodynamically unstable or having frequent apnea/bradycardia or severe acidosis.
8. Morphine for pain relief if definite NEC.
9. Parenteral nutrition, may need central line.
10. Regular abdominal X rays looking for pneumoperitoneum; frequency depends on severity.

## PROGNOSIS

NEC can lead to significant short term as well as long term morbidities. The short term morbidities are sepsis, prolonged TPN, stoma problems, intestinal strictures, fistula etc.

Occasionally an infant can develop short bowel syndrome because of resection of extensive sections of the gut. NEC also carries a high risk of long term neurodevelopmental morbidity.

Surgical NEC results in higher rate of mortality and long term neurodevelopmental morbidity

## REFERENCES

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