



## Neonatal ICU working diagnosis of Neonatal Necrotising Enterocolitis: The Paediatric Surgical perspective

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### Introduction

A neonate with features of intestinal obstruction continue to baffle experienced neonatologists and even paediatric surgeons. Hence, when a neonate with such features is admitted to an NICU, it has been observed that the resident physician makes a working diagnosis of NNEC in many cases. We observed that the preliminary diagnosis may bias subsequent judgement and management in few cases where the diagnosis is unwarranted and actual pathology are different.

### Aims

The aim of the study was to analyse the actual pathologies in cases of neonatal intestinal obstruction, which were initially treated with a working diagnosis of NNEC in the Neonatal ICU, and later proven to be other causes during further evaluation. [Refer Figure 1]. An attempt was also made to define factors which would help differentiate the other possible surgical / medical causes.

### Methods

A Retrospective analysis of neonates referred for surgical opinion from the neonatal ICU with a preliminary diagnosis of NNEC and detected to

have another major surgical / medical problem on evaluation / surgery during the period of Jan 2011 to Jan 2016.

20 Cases were selected for analysis based on availability of all necessary data. All cases had an initial working diagnosis of NNEC before being referred for surgical opinion. [Refer Table 1].

**Table 1 : Clinical Presentation**

Common presenting features	N=20
Abdominal distension	17
Non passage/ Delay in passage of meconium	15
Bilious vomiting/ bilious nasogastric tube aspirate	14
Blood in stools	4
Antenatal polyhydramnios	2
Maternal diabetes mellitus	5
Maternal hypothyroidism	4

The clinical records, investigation reports, surgical notes and post operative findings, in cases which were operated, were reviewed.

[Refer Table 2].

**Table 2 : Radiological findings including plain radiograph and contrast enema**

Radiological findings including contrast enema in 13 cases	N=20
Proximal gut obstruction	2
Distal small bowel obstruction	7
Large bowel obstruction	6
Non specific	5

**Results**

On detailed evaluation in all cases and surgery in select cases, the final diagnosis was established to be other significant medical/surgical in these cases including [Refer Table 3];

- Hirschsprung’s disease
- Hypothyroidism
- Ileal atresia
- Meconium Peritonitis / Idiopathic Bowel perforation
- NSLCS
- Malrotation with Midgut Volvulus
- Meconium ileus
- Meconium plug syndrome

**Table 3 :** Final diagnosis in cases where the initial working diagnosis was NNEC

Final diagnosis	N=20
Hirschsprung’s disease	4
Hypothyroidism	4
Ileal atresia	3
Meconium Peritonitis / Idiopathic Bowel perforation	3
Neonatal Small Left Colon Syndrome	2
Malrotation with Midgut Volvulus	2
Meconium ileus	1
Meconium plug syndrome	1

The factors predictive of a pathology other than NNEC were

1. Absent risk factors of NNEC like prematurity, low birth weight, perinatal complications or formula feeding<sup>(8)</sup>
2. Atypical History, not fitting that of typical NNEC<sup>(7)</sup>
3. Absence of physical findings typical of NNEC like abdominal wall erythema or blood in stools<sup>(7)</sup>
4. Improperly done/read initial radiograph<sup>(9)</sup>
5. Absent evidence of NNEC on radiograph (pneumatosis intestinalis/portal venous gas/pneumoperitoneum)<sup>(10)</sup>



**Figure 1 :** Meconium peritonitis



**Figure 2 :** Meconium Plug Syndrome



**Figure 3 :** Hirschsprung’s disease



**Figure 4 :** Malrotation with Midgut Volvulus



**Figure 5 :** Type IIIb Apple peel Atresia



**Figure 6 :** Ileal Atresia

### Conclusions

A high index of suspicion is necessary while attending a patient treated for suspected NNEC. Exclusion of usual risk factors for NNEC, a proper interpretation of radiograph and targeted evaluation will clinch the diagnosis.

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