Abstract 21

**Comparison of Clinical Presentation and Outcome of NEC and Non-NEC Focal Intestinal Perforation in Extremely Low Birth Weight Neonates - Theory of Natural Selection: A Surgical Perspective**

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**Keywords:** Necrotizing enterocolitis, focal intestinal perforation, ELBW.

**Abstract**

**STUDY OBJECTIVE:** To review and study clinical characteristics and clinico-pathologic cause of bowel perforation in NEC and Non-NEC FIP neonates with ELBW at a suburban children’s hospital.

**METHODS:** ELBW neonates (< 1000 gms) admitted with NEC perforations and Non-NEC FIP were analyzed retrospectively from 2009-2013 over a four year period. The data sheets analyzed regarding age of presentation, clinico-pathologic cause of bowel perforation, management offered and subsequent outcome achieved.

**RESULTS:** NEC GROUP (33): 9 out of 33 NEC babies were ELBW with perforations. NON-NEC GROUP (21): Twelve of the twenty-one babies with Non-NEC perforations qualified as FIPs; the other nine neonates had mechanical cause for perforations and had to be excluded from the study. Out of total of 21 babies in the Non-NEC Group, only seven qualified for the study. Other five ELBW had mechanical cause for perforations: Gastric perforations: 3, cecal perforation: 1 and two neonates had duodenal perforations secondary to neonatal intestinal obstruction.

**NEC GROUP:** All the nine babies in the group had universal inflammatory changes throughout the small and large intestines. These babies had a very fast progression of symptoms, tended to be sicker in a shorter span and were unstable pre-operatively. Intra-operative a quick lavage with drainage with stomas being mainstay of surgical treatment. More than half of them required two or more operative procedures. Post-operatively these babies had a longer hospital stay. Mortality was higher compared to Non-NEC FIP group (Table 1).

**NON-NEC FIP Group:** The inflammatory changes were less florid; mostly localized to one segment of bowel usually terminal ileum or cecum / colon or rectum in one instance. There was a large perforation with dehiscence of almost upto one third segment of anti-mesenteric bowel wall. In spite of such large perforation, the infection was rather localized. Interestingly this group was relatively less unstable pre-operatively, did well intra-operatively with resection anastomosis, usually ended without stomas and had a shorter hospital stay. Mortality was lower in this group compared to the NEC group (Table 1).

**CONCLUSION:** It should be possible to differentiate between NEC perforations and Non-NEC FIP depending on clinical characteristics and parameters available thus enabling to predict a favorable outcome for this cohort of neonates.

**Table 1:**

<table>
<thead>
<tr>
<th>Total Babies with Pneumoperitoneum (54)</th>
<th>ELBW (16)</th>
<th>Mortality (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEC Group (33)</td>
<td>9</td>
<td>5 (56%)</td>
</tr>
<tr>
<td>Non-NEC Group (Focal Intestinal Perforations) (21)</td>
<td>7</td>
<td>1 (14%)</td>
</tr>
</tbody>
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