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Pneumoperitoneum in a 5-day-old, 26-week Infant: What is the Diagnosis?

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Pneumoperitoneum is a radiological diagnosis (ICD-10-Code K66.8), while necrotizing enterocolitis (NEC)- [ICD-10 Code P77 NEC of newborn, P77.1 Stage 1 NEC in newborn, P77.2 Stage 2 NEC in newborn, P77.3 Stage 3 NEC in newborn, P77.9 NEC in newborn, unspecified)] and spontaneous intestinal perforation (SIP)- ICD-10-Code K63.1, are clinical, radiological, and pathological diagnoses.

"Pneumoperitoneum in this 5-day-old, 26-week infant could be due to SIP or NEC. Based on the Bell staging criteria, the infant could be classified as Bell Stage III (or modified Bell stage IIIB) 1 due to pneumoperitoneum."

Pneumoperitoneum in this 5-day-old, 26-week infant could be due to SIP or NEC. Based on the Bell staging criteria, the infant could be classified as Bell Stage III (or modified Bell stage IIIB) 1 due to pneumoperitoneum. The differentiation is complex and requires direct visualization of the affected bowel and histopathological examination (2). The current data suggest increasing SIP and decreasing NEC among preterm infants (3). For bedside diagnosis of NEC and SIP, two out of three and three out of five rules have been suggested (3).

The infant underwent exploratory laparotomy. After removing 22 cm of the small intestine, a double barrel jejunostomy was done. The pathology showed chronic inflammatory and reparative changes compatible with NEC.

NEC has many definitions. Patel et al. (4) summarized eight definitions of NEC with similarities and differences in clinical signs and radiographic features. They highlighted the importance of a global consensus on defining NEC to improve NEC research and outcomes.

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It remains a dilemma for NICU providers to diagnose and differentiate between SIP and NEC. Although they may mimic each other, the impact is very different. Juhl et al. (2) reported 60% mortality with stage 3 NEC while 18% with SIP. Also, NEC is a quality indicator associated with neuro-developmental outcomes (5-7).

Artificial intelligence might help in the future, but we need more literature and research. Developing clinically valid and relevant AI requires large, high-quality multimodal datasets (8).

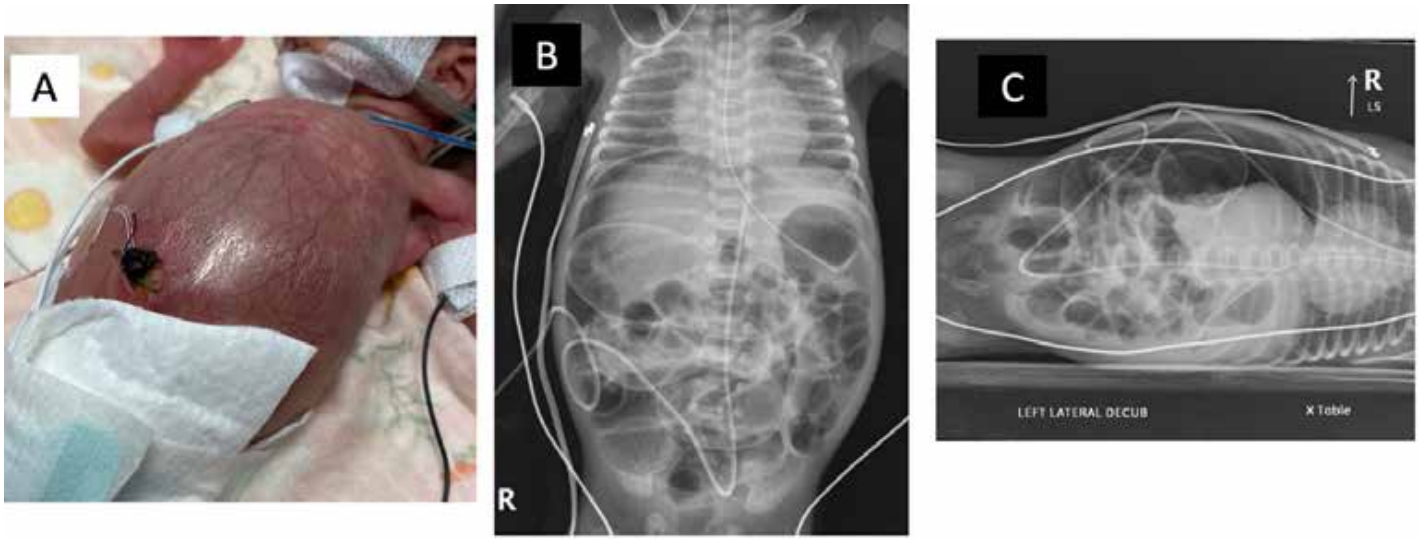

Image 1: Common physical and radiographic findings in NEC

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