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Necrotizing Enterocolitis: Pathophysiology from a historical context

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ABSTRACT

Necrotizing Enterocolitis (NEC) continues to afflict approximately 7% of preterm infants born weighing less than 1500 grams, though recent investigations have provided novel insights into the pathogenesis of this complex disease. The disease has been a major cause of morbidity and mortality in neonatal intensive care units worldwide for many years, and our current understanding reflects exceptional observations made decades ago. In this review, we will describe NEC from a historical context and summarize seminal findings that underscore the importance of enteral feeding, the gut microbiota, and intestinal inflammation in this complex pathophysiology.

HISTORICAL PERSPECTIVE

Although not described as classic NEC, a report from almost 200 years ago by Charles Billard described a case from the Hopital Des Enfants Trouves in Paris, France in which 'a foundling newborn developed a swollen abdomen with greenish then bloody diarrhea, developing a tense abdomen, cold extremities, bradycardia, and subsequent death.' The autopsy of this patient described an intensely red and swollen terminal ileum, with friable mucosa and the surface covered with blood. In fact, the mucosa was so soft that it 'turned to mash when scraped with the fingernail'. This description is consistent with clinical findings that are sometimes observed in our NEC patients now, and may be the first published account of NEC.¹

In 1944 Heinrich Willi reported on 62 cases of 'malignant enteritis' in newborns. These cases were of interest in that 2/3 of them had birthweights under 2500 grams, they seemed to be associated with overcrowding in the nursery, and they typically occurred in clusters. These observations may be the first describing what subsequently was reported as a 'NEC epidemic', though these events are distinctly uncommon in the current era.²

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