

Necrotizing Enterocolitis in a Preterm Infant Newborn and Role of Feeding - An Update!

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It is a clinical case presentation of a male premature baby new-born (+31 weeks) that was delivered in our hospital and transferred to NICU due to prematurity, VLBW and wish of respiratory support. Baby shortly underwent NEC on fifth day of life shortly after starting of expressed milk feeding. It had been early detected by the utilization of near infrared abdominal spectroscopy (NIRS). Baby was deteriorated clinically during a few hours and undergone intestinal perforation with peritonitis. So, abdominal exploration surgery with intestinal resection and end to finish anastomosis was done urgently. Baby improved gradually and early feedings was started and gradually increased up to full feedings with the utilization of human fortified milk (HMF), probiotics and prebiotics. The study stated the evidence-based feeding strategy guidelines for NEC among very low birth weight infants and role of trophic feedings, probiotics, prebiotics and micronutrients in prophylaxis, prevention and management of NEC. Prematurity is that the single greatest risk factor for NEC and avoidance of premature birth is that the best thanks to prevent NEC; the role of feeding within the pathogenesis of NEC is uncertain, but it seems prudent to use breast milk and advance feedings slowly and cautiously; NEC is one among the leading causes of mortality, and therefore the commonest reason for emergent GI surgery in new-borns; NEC remains a serious unsolved medical challenge, that no specific therapy exists, and its pathogenesis remains controversial; a far better understanding of the pathophysiology will offer new and innovative therapeutic approaches, and future studies should be focused on the roles of the epithelial barrier, natural immunity, and micro biota during this disorder; and bioinformatics modelling may be a new emerging strategy aimed toward understanding the dynamics of varied inflammatory markers and their application in early diagnosis and treatment.

Overall, NEC affects one in 2,000 to 4,000 births, or between one-hundredth and five per cent of neonatal medical care unit admissions. The disease occurs in nearly 10 per cent of premature infants but is rare fully term infants. Although the precise explanation for NEC remains unknown, there are many theories to elucidate why NEC affects mainly premature infants. The sole consistent observations made in infants who develop NEC are the presence of prematurity and formula feeding. The premature baby has immature lungs and immature intestines. As minimal decrease in oxygen delivery to the intestines, because the lungs cannot oxygenate the blood adequately, will damage the liner of the intestinal wall. This damage to the bowel wall will allow bacteria that normally live inside the intestine to invade the wall of the intestine and cause local infection and inflammation which will eventually cause rupture or perforation of the intestine. NEC typically develops within the primary 2 weeks of life during a premature baby who is being fed with formula as against breast milk. One among the primary signs of NEC is that the inability of the infant to tolerate the feedings. This is often related to abdominal distension (bloating) and vomiting bile (green). The infant can also have bloody stools due to the infection of the bowel wall. If the infection isn't recognized early, then the kid may develop a coffee rate of respiration or Cheyne-Stokes respiration

and a coffee pulse which will necessitate insertion of a breathing tube. The bulk of infants with NEC are initially treated medically and symptoms often resolve without requiring surgery. Initial treatment of NEC consists of the following:

- Discontinue the feedings
- Insert an orogastric tube (a tube that goes from the mouth to the stomach to get rid of air and fluid from the stomach and intestine)
- Administer intravenous fluids and antibiotics
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Several challenges exist for preterm nutritional support. Many preterm infants, especially those born <1500 g and gestation, are not able to breastfeed or start enteral feeds shortly after birth. The suck-swallow-breathe rhythm of oral feeding may not be possible for preterm infants because of coordination issues and/or low body stores of energy. Intense respiratory or cardiac support can limit or preclude an infant from oral or enteral feeds. The use of high-dose or multiple medications that compromise gut perfusion, cardiac lesions, substantial bladder pressure, acute abdominal issues, 48-h post hypoxic-ischemic encephalopathy or cardiopulmonary resuscitation, or persistent feeding intolerance are also contraindications for enteral feeds. Aggressive enteral feeding in the presence of ≥ 1 of these contraindications may potentiate NEC. For these reasons, intravenous delivery of nutrients is often initiated for preterm infants after birth. PN is initiated slowly, individually prescribed to ensure tolerance and safety, and advanced to meet the infant's nutritional and fluid needs. There are several risks associated with PN, such as line infections, liver damage, or gut atrophy. A clinician's aim is to wean PN and start enteral feeds as soon as possible while maintaining adequate energy and protein intake to promote appropriate growth velocity. A tool used to monitor and evaluate health and nutritional status for preterm infants is the Fenton preterm growth charts for boys and girls. Expected postnatal growth velocities of preterm infants are based on an intrauterine growth of $15 \text{ g} \cdot \text{kg}^{-1}$. Although this approach may not be precise given the differences between intra- and extra uterine environments, to our knowledge there are currently no alternative standards. Nutritional goals for clinically stable infants are set to help them reach their genetic growth potentials and track on corrected gestational age- and sex-specific Fenton growth chart centiles for weight, length, and head circumference. After birth, it is expected that infants lose $\leq 10\%$ of their birth weight but this weight is normally regained within 2 weeks. Preterm infants often require enteral or parenteral nutritional support to help them achieve their growth

potential. There is no need, however, to accelerate weight gain beyond the centile that the infant is tracking provided that growth is meeting patient-specific expectations.