



## Necrotizing Enterocolitis- An Analysis of Recent Development

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### Abstract

Necrotizing Enterocolitis (NEC) is a dreaded gastrointestinal disease in neonates, mainly preterm neonates. It needs multipronged approach for the treatment and prevention. The first case was reported in 1823. But till now there is hardly any definite treatment in advanced stages, and prevention has the main role.

In NEC, the intestinal mucosa actually dies, becomes totally necrosed soggy and dies off. What is the actual cause of this death and why it is more prevalent in preterm, is not fully clear. Some of the recent research has thrown some lights on it. There is a great role of Toll like receptor 4 (TLR-4) for the pathogenesis. These receptors identify the pathogen (The bacterial cell wall lipo- polysaccharides-LPS) and stimulate the host to react to it, induce a pro inflammatory reaction. This activates cytokine inducing transcription factor NFkB. This TLR4 signal induces endoplasmic reticulum and enterocyte apoptosis along with reduction of mucosal repair. This results in mucosal breakdown and bacterial migration and sepsis. This TLR4 expression specifically occurs on the intestinal progenitor cells within the crypts. This TLR4 expression is higher in preterm newborn than in full term. Breast milk is a strong TLR4 signaling inhibitor. It is well enriched with NO precursor molecule and human milk oligosaccharides, which increase intestinal wall perfusion, prevent an exaggerated reaction to bacterial cell wall and NEC. Amniotic fluid also have protective role through higher concentration of epidermal growth factor an inhibitor of TLR4 signaling. Probiotic bacterial DNA also can inhibit the TLR4 signaling. Disruption of gut microbiota and its homeostasis is also an important factor for NEC development. Intestinal epithelium cell regeneration also gets hampered in NEC. Normally it renews every 3-6 days, it is driven by the vigorous proliferation of epithelium within the crypts towards the villous tip. In the crypts there is a specific stem cell zone called Intestinal stem cell (ISC), whose population is reduced in NEC.

The diagnosis of NEC is also not very easy and there is lot of scope for further advancement. Main conventional methods of diagnosis are clinical surveillance, abdominal radiograph, blood count, comprehensive metabolic panel.

### Biography:

Raktima Chakrabarti is a neonatologist and paediatrician in India. She is practising in Gurgaon, Haryana, India. She has done her medical graduation and post graduation in paediatrics from renowned universities of India and after that her carrier became enriched with the European university hospital's experience in neonatology. Her expertise is in Neonatology and paediatrics and her main focus is the respiratory and gastrointestinal problems of newborns, specifically the preterm newborns. She has taken parts in multiple studies and published numerous research reports in eminent journals. She also authored multiple neonatology text books. She is in the reviewer panel of numbers of eminent pediatric journal.

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