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Editorial

Epidermal growth factor as a reliable marker of necrotizing enterocolitis in preterm neonates

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Necrotizing enterocolitis (NEC) is the most common surgical gastrointestinal emergency in premature neonates.[1,2] The prevalence of NEC is 7% in infants with a birth weight of 500–1,500 g in the United States and Canada, with a mortality rate of approximately 42%.[3] Globally, the overall mortality rate is 20%–40%.[4] The clinical signs of NEC can vary in severity, ranging from nonspecific symptoms, such as apnea and temperature instability, to specific symptoms, such as abdominal distension, bloody stools, pneumatosis intestinalis, and shock.[2] Medical treatments for NEC consist of broad-spectrum antibiotics, volume loading, and bowel rest. However, many patients with NEC require surgical removal of the necrotic bowel and develop short bowel syndrome with prolonged medical expenses and chronic gastrointestinal difficulties. Furthermore, surgical NEC is a significant predictor of neurodevelopmental morbidity in preterm infants.[5] The exact pathogenesis of NEC remains poorly understood, but its etiology is possibly multifactorial. The treatment strategies are mainly supportive.

The epithelial lining of the intestine provides the first line of defense against bacteria, viruses, and toxins. Epidermal growth factor (EGF) is essential for epithelial cell proliferation, decreases inflammatory mediator expression, and reduces epithelial apoptosis.[3] Many studies have examined the effect of EGF in NEC. Recent studies have shown that exogenous EGF administration reduces mucosal histological damage in animal models.[6] In addition, EGF treatment in NEC normalizes occludin and claudin expressions.[7] All the above-mentioned studies were conducted in animals, while few have been conducted in humans.

Ahmed and Kamel[8] presented the correlation between serum EGF levels and NEC in neonates. In this prospective study, the mean serum EGF levels were significantly lower in the NEC group than in the sepsis or control groups, and there was a significant negative association between EGF levels and gestational age as predictors of NEC development. He et al.[9] reported that the breast milk of mothers of premature infants contains 50%–80% more EGF than that of mothers of full-term infants. These results suggest that NEC is correlated with lower EGF levels and younger gestational age and that breast milk of mothers of premature infants is protective against NEC.[3,10] Furthermore, Ahmed and Kamel[8] presented the cutoff serum EGF value using receiver operating characteristic curves that could identify it as a NEC biomarker.

Early diagnosis and treatment are very important in NEC. EGF could be a reliable NEC biomarker in preterm infants. Additional research is needed to confirm the application of EGF as an early diagnostic tool for NEC.

Conflicts of interest

No potential conflict of interest relevant to this article was reported.

See the article "The relation between serum levels of epidermal growth factor and necrotizing enterocolitis in preterm neonates" via https://doi.org/10.3345/kjp.2018.07108.

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