Necrotizing enterocolitis (NEC) is a common and devastating neonatal disease affecting 6-10% of preterm infants. Despite technological advances in care, acute morbidity, mortality and long-term disability associated with NEC remain constant. Intestinal motility, secretion, and blood flow are important in gut integrity and are mediated by the vagus nerve. Heart Rate Variability (HRV) provides a measure of sympathetic and parasympathetic balance. The High Frequency (HF) power spectrum of HRV reflects parasympathetic system innervation (vagal tone). Thus, low vagal tone may be a biomarker for impending GI disease.

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Low vagal tone as measured by HRV in the first week of life will be associated with NEC in healthy preterm infants.

This pilot study found that markedly low HF power (i.e. low vagal tone) was associated with the onset of NEC in preterm infants. Hence, low vagal tone may be useful in identifying a subgroup of infants most susceptible to developing NEC.

Conclusion

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Clinical Implications

The early recognition and treatment of NEC is critical to infant survival and the prevention of long-term disability in preterm infants. Low HF power may serve as a useful biomarker for NEC allowing prompt recognition, early treatment, and potentially improved neonatal outcomes for infants with NEC.

Selected References


This project was supported by grants from: Johnson & Johnson Consumer and Personal Products Worldwide
Penn State University Health Behaviors & the Quality of Life: Research Innovation Grant & The Children’s Miracle Network.