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"Novel biomarkers for early and accurate detection of a fatal gut inflammatory disease in preemie babies"

Necrotizing enterocolitis (NEC) is an inflammatory disease that primarily affects the intestinal tract of premature and low birthweight infants. It is one of the most common complications that occur with prematurity, which also results in high morbidity and mortality due to unchecked pathogenic bacterial growth. The median time between death and x-ray diagnosis is 1 day and, currently, there are no reliable molecular methods to predict the onset of NEC in infants. Association of intestinal alkaline phosphatase (iAP) with moderate and severe forms of the disease suggested that iAP can be a diagnostic tool that is accurate and specific for NEC. This study aims to determine the potential of iAP as a predictive biomarker for NEC. Fecal samples were obtained prospectively from premature infants admitted to neonatal intensive care units at four hospitals (Children's Hospital New Orleans, Woman's Hospital Baton Rouge, Touro Infirmary, and Washington University of St. Louis Medical School). More than 100 clarified stool samples from case patients were compared to 200+ age-matched control samples. Biospecimens were analyzed for iAP abundance, iAP enzyme activity, and total fecal protein concentration. Analyses of age-matched NEC and control samples show increased iAP abundance and decreased enzymatic activity directly correlate with NEC diagnosis as early as 3 days before x-ray and a hazard ratio of 6. These findings suggest iAP shows promise as a marker for early NEC detection in asymptomatic infants. If confirmed with a larger study, an iAP biomarker could allow physicians to identify at-risk infants that require medical intervention and allow them to personalize treatment to slow or even stop disease progression altogether.