Department of Surgery
2026 Research Day
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Title:
Necrotizing Enterocolitis Severity and Its Impact on Neurological Outcomes: A Retrospective Review

Author(s) and Affiliations:
Niharika Singh, MD[1]; Tania Gennell, MD[2], Cuilee Sha[3], Zachary Plona, MD[1], Ashla Gaibi Rodriguez MD[1], Devin Midura, MD[2], Rachel Kim, MD[3], Louis Manganas, MD, PhD[4], Esther Speer, MD[5], Erica Fallon, MD[2], and Helen Hsieh MD, PhD[1]
[1]Department of Surgery, Stony Brook University Medical Center, Stony Brook, NY [2]Department of Surgery, CUIMC/New York-Presbyterian Morgan Stanley Children's Hospital, NY, NY [3]Renaissance School of Medicine, Stony Brook, NY [4]Department of Neurology, NYU Langone Hospital-Grossman Long Island School of Medicine, Mineola, NY [5]Department of Pediatrics, Stony Brook University Medical Center, Stony Brook, NY

Faculty Mentor(s):
Dr. Helen Hsieh

Background:
Necrotizing enterocolitis (NEC) is a devastating disease for premature infants. The major long-term consequences of NEC are diminished growth and neurodevelopmental impairment. We sought to determine if NEC severity, as determined by need for surgical intervention, is associated with long-term neurological outcomes.

Methods:
A retrospective review of patients with NEC treated at two tertiary pediatric institutions between January 2009 and December 2019 was performed. Birth factors and clinical outcomes were collected during hospitalization. Post-discharge assessment of neurological outcomes, such as imaging, need for special services, was conducted. Head circumference was measured at 1-, 3-, and 6-months post-diagnosis.

Results (or Preliminary Results):
Of 94 NEC patients, 63% patients were treated medically and 37% patients were treated surgically. More surgical NEC patients (97%) were delivered preterm compared to medical NEC (85%). Mortality was 43% in NEC patients treated surgically, compared to 0% of those treated medically. Of NEC survivors, there were no significant differences in motor deficits ($p = 0.06$), cerebral palsy ($p = 0.15$), and developmental delay ($p = 0.34$). However, surgically treated NEC patients had significantly increased rates of early intervention and speech and swallow therapy compared to medically managed NEC patients (p=0.008). The corrected head circumference of surgical NEC patients decreased during follow-up, whereas head circumference in medical NEC patients stabilized at 50th percentile.

Conclusions (or Preliminary Conclusions):
We demonstrated significantly reduced head growth and an increased need for ancillary services in NEC patients managed surgically versus medically. Further prospective and multicenter studies will provide insight into the pathophysiology of NEC severity and neurodevelopment.