Surgical Management of Necrotizing Enterocolitis following Congenital Diaphragmatic Hernia Repair

Nida Fatima Sakrani, MbBCh, BAO* Eman Hamza, MbBCh, BAO** Hussain Ahmed, MRCS, FEBPS*** Martin Corbally, FRCSI, FRCSEd, FRCS (Paed Surg) MRCPI (Assoc)****

Necrotizing Enterocolitis (NEC) is a significant cause of in-hospital mortality. The pathogenesis remains unclear, but may be associated with Staphylococcus epidermidis related sepsis, hypertonic feeds or other stress. It is also associated with Abdominal Compartment Syndrome (ACS) as documented after complete closure of gastroschisis. While the incidence of NEC is rare, the associated mortality is significant.

We report a case of NEC following the repair of a congenital diaphragmatic hernia (CDH); an unusual yet serious complication. A literature search revealed only one similar case which resulted in mortality. The possibility of serious postoperative complications following the repair of CDH must be considered in any neonate who exhibits deterioration in their general condition.


NEC is a leading cause of in-hospital mortality. Its causes appear to be multiple with an unclear pathogenesis but may be associated with an infectious etiology when it occurs in full-term infants. Spontaneously occurring NEC is not primarily the result of increased intra-abdominal pressure but may occur in primary repair of gastroschisis. Surgical repair of congenital diaphragmatic hernia (CDH) involves restoration of large volumes of the intestine into the abdominal cavity, which would result into an increase in intra-abdominal pressure. Despite this, the reported incidence of NEC is extremely rare in this subset of patients and appears to be associated with a high mortality.

The aim of this presentation is to report a rare case of left-sided CDH in a full term neonate complicated postoperatively by NEC. Only one such case has been recorded in the literature to date.

THE CASE

A full-term male infant was diagnosed with CDH within 3 hours of birth. Imaging revealed the stomach, spleen and a large portion of the small and large intestine in the left chest, see figure 1. Following three days of standard stabilization with ventilator support, the diaphragm was repaired through an open left upper quadrant laparotomy. The large defect was closed primarily following reduction of the spleen, stomach and small intestine. The abdominal closure was not excessively tight. The patient was kept in the Neonatal Intensive Care Unit, intubated, ventilated and given prophylactic antibiotics: Ampicillin, Cefotaxime and Metronidazole intravenously. Postoperatively, he was stable with a good urine output and acceptable blood pH levels.

Figure 1: The Stomach, Spleen and a Large Portion of the Small and Large Intestine in the Left Chest

On the second postoperative day, tight abdominal distension was noted and urgent abdominal radiography showed a shadow over the liver with free air in the peritoneum, see figure 2. The patient was otherwise stable, and blood pH level was 7.33. An urgent laparotomy revealed frank blood in the peritoneal cavity, a small bowel perforation and a mesenteric tear, which were...