



APSA
American Pediatric
Surgical Association
Saving Lifetimes

Necrotizing Enterocolitis (NEC)

Patient and family information, brought to you by the Education Committee of APSA

Overview - “What is it?”

Necrotizing enterocolitis (NEC) is an acquired infection or inflammatory disease of the intestines in newborns. NEC mostly occurs in premature infants. The more premature and smaller the infant, the higher the risk of NEC. Only about 10% of NEC cases occur in full-term infants. Key factors associated with NEC are decreased blood flow to the intestines (ischemia) and infection.

Signs and Symptoms - “What symptoms will my child have?”

Early signs/symptoms of NEC are apnea and bradycardia, temperature instability, not tolerating feedings and lethargy. Other signs include bloody stools and swelling of the belly.

Later signs/symptoms include abdominal wall discoloration (red or blue – see Figure 1), firm abdomen and shock (low blood pressure, heart rate high or low for age).



Figure 1: Abdominal wall discoloration

Photo courtesy of MJArca11/2106

Diagnosis - “What tests are done to find out what my child has?”

Labs and tests: The most common blood tests obtained are complete blood count (CBC), electrolytes and blood gas analysis. These may give indications of how severe the infection is. Lab values are followed serially to look for improvement or deterioration.

Abdominal X-rays will be obtained every few hours to monitor changes such as evidence of intestinal perforation (hole in the intestine).

Abdominal ultrasound has been used in some centers to look for evidence of non-moving intestine (likely evidence of intestine that may not recover) and fluid in abdomen (evidence of infection or intestinal rupture).

Conditions that mimic this condition include other causes of infection (blood, urine, lung, etc.). Infections in premature babies will lead to many of the early signs described above.

Treatment - “What will be done to make my child better?”

Medicine: The initial treatment for patients suspected of having NEC is to hold feedings and start intravenous (IV) antibiotics. If the diagnosis of NEC is confirmed, then infants are typically treated for 7-14 days.

Surgery: Surgery is needed for babies with evidence of intestinal rupture (hole in intestine) and/or worsening symptoms of infection. Intervention may be in the form of placing a drain or abdominal exploration. The type of intervention will be individualized and discussed by the treating team.

Placement of abdominal drain: This is usually reserved for very small and fragile babies with evidence of intestinal rupture (hole in the intestine). The procedure is done at the bedside. A small cut is made in the right lower part of the belly, entering the abdominal cavity to release air and stool. A drain is placed inside the belly, keeping the cut open for several days to allow continued drainage of stool and infected fluid. The drain is inched out about a week after its placement, provided the baby is doing well.

Abdominal exploration (exploratory laparotomy): Certain conditions warrant a laparotomy including concern that there are dead segments of intestine in the belly. The goal of surgery is to identify these segments and remove them. Most often, a stoma is created, where a segment of intestine is brought out through the belly wall. The stoma is where the baby will stool for a few weeks after surgery. In very select cases, a segment of intestine is removed, and the remaining intestine is put back together.

Preoperative preparation: Patients will continue on antibiotics and may need transfusions of blood products prior to surgery.

Postoperative care: These patients are usually very sick, requiring a breathing tube and a ventilator for support. Medicines to support blood pressure may be needed as well as transfusions of blood products. Patients will remain on antibiotics but will not be fed for a period of time after surgery. They may also require additional procedures.

Risks/Benefits: Patients who improve with antibiotics do not need surgery. However, when patients are clinically getting worse or have signs of intestinal rupture on X-ray, surgical intervention is required. Sometimes, the entire intestine may be damaged by the infection leading to a poor prognosis and possibly death.

Home Care - “What do I need to do once my child goes home?”

Diet: Will be based on how much intestine is remaining.

Activity: Normal newborn/premature activity.

Wound care: By the time baby is home, no special wound care is needed, and the baby is bathed normally. If the baby has a stoma, stoma care and management will be taught to parents prior to discharge.

Medicines: Medications your child will need to be on will be mostly related to issues from being born premature, and not because of needing surgery.

What to call the doctor for: Call your doctor for persistent vomiting (especially if green or bright yellow), no stools, watery stools, swelling of the belly, fever.

Follow-up care: Surgery follow-up in 1-2 weeks. Routine NICU follow-up per institutional schedule.

Long Term Outcomes - “Are there future conditions to worry about?”

Long-term outcomes are based on the amount of intestines remaining after surgery. Another potential condition is the development of scar tissue within the abdomen (adhesions) that can lead to intestinal blockage.

Updated: 2019

Author: Steven L. Lee, MD

Editors: Patricia Lange, MD; Marjorie J. Arca, MD; Andrea Lo, MD