

Ileo-Ileal Intussusception in a Premature Neonate: An Unusual Cause of NEC in Premature Babies

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ABSTRACT

Intussusception is a rare entity in neonates. It may present with non-specific signs including abdominal distension, feeding intolerance, vomiting and bloody stools. Symptomatology is similar to Necrotizing Enterocolitis (NEC). Ultrasound can help to establish early diagnosis in neonate. A 27-week preterm newborn was initially suspected as NEC based on abdominal distention, bilious vomiting, worsening clinical condition and dilated loops of bowel on X-ray, which turned out to be ileo-ileal intussusception. Diagnosis was made by ultrasound obtained for a palpable mass to rule out intra abdominal abscess and lack of improvement in clinical condition despite 5 days of conservative treatment. Surgery was performed consisting of removal of the necrotic intussusception area and end-to-end anastomosis and patient was discharged from hospital on day 60 of life. As a conclusion, pathological abdominal findings in preterm newborns can also be due to conditions other than NEC and ultrasound may be a useful tool for timely and accurate diagnosis.

Key Words: *Intussusception. Necrotizing enterocolitis. Preterm. Newborn.*

INTRODUCTION

Intussusception is an extremely rare clinical entity in neonates, especially among premature infants. This clinical entity is confused with other causes of intestinal obstruction making diagnostic delays in neonatal intussusception a common event. High degree of suspicion is needed to avoid misdiagnosis.¹

We report a case of intussusception in a preterm infant of 27 weeks of gestation whose initial diagnosis was Necrotizing Enterocolitis (NEC).

CASE REPORT

A baby girl weighing 1000 g was delivered vaginally at 27 weeks gestation. Apgar scores were 8/10 at 1 and 5 minutes respectively. The infant was intubated, given prophylactic surfactant, extubated in the delivery room and administered nasal Continuous Positive Airway Pressure (CPAP). Total parenteral nutrition, small volume breast milk gavage feedings and antibiotics (Ampicillin, Amikacin) were started on the first day of life. First meconium passage was on the second day of life. On day 5, the condition of the child worsened with signs of sepsis including temperature instability, leukocytosis and high level of C-Reactive Protein (CRP). Ampicillin, amikacin were changed to cefotaxime and vancomycin as per protocol.

On day 7, her condition deteriorated again with abdominal distention and gastric bile-stained aspirates. Cefotaxime was stopped and fluconazole, meropenem, metronidazole were started for suspected NEC, but cultures remained sterile. Abdominal radiographs throughout her first week of life showed dilated loops of small bowel without pneumatosis intestinalis, portal venous gas, or free air (Figure 1). On day 12, abdominal examination revealed a palpable tender mass in the right quadrant and jelly like stools were passed. Abdominal ultrasonography showed intussusception in right paraumbilical area (Figure 2) and the patient was operated urgently. Intraoperative findings were consistent with distal ileo-ileal intussusception and perforation in the intussuscepted segment. No lead point was detected. Reduction of the intussusception and resection of the necrotic intussuscepted segment with end-to-end anastomosis were performed. Histological examination of the intussuscepted bowel showed areas of mucosal ulceration, granulation tissue within the submucosa and serosa, and focal necrosis of the muscularis propria.

After the operation, the patient's condition improved gradually. Spontaneous stools were passed 5 days after the operation. Antibiotics were stopped and oro-gastric feedings resumed on the postoperative 7th day. Full enteral feedings were reached within a week. She was discharged on 60th day of life.

DISCUSSION

Intussusception occurs rarely in the neonatal period, with a reported incidence ranging from 0.3% to 2.7%.^{1,2} It is exceedingly rare in premature neonates. Intussusception in full-term neonates occurs most

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Figure 1: Abdominal radiograph that shows dilated loops of small bowel, but no pneumatisis intestinalis, portal venous gas, or free air.

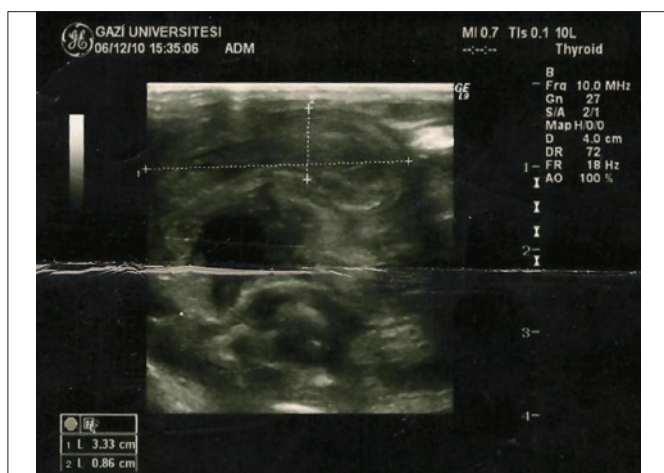


Figure 2: Abdominal ultrasonography that demonstrates intussusception in right paraumbilical area.

commonly at the level of the ileo-colic junction, although ileo-ileal, jejuno-jejunal, jejuno-ileal, or rarely colo-colic intussusception may also occur.² Ileal intussusception is the most common one in preterm.^{1,3}

Unlike intussusception in older children, the etiology remains unclear in most neonatal cases. In rare cases, intussusception may be associated with an identifiable etiology such as duplication cyst, hamartoma, Meckel's diverticulum, or mesenchymoma. Only one lead point may be found in about 8% of cases.⁴ In premature infants, it is suggested that common perinatal risk factors resulting in intestinal hypoperfusion/hypoxia, dysmotility and stricture formation may act as a lead point for intussusception.⁵ However, there was no history of intrauterine or extrauterine hypoxia, cardiopulmonary resuscitation or hypothyroidism in this patient. On the

other hand NEC and intussusception may occur together, because enteric vascular ischemia may be the common underlying cause for both of them.⁶ A palpable abdominal mass is present less commonly in newborns although it was the major finding in our case.^{1,3,5} The presence of NEC together with the intussusception was ruled out in this patient by the histopathological investigation of the ileal segment removed during surgery.

NEC should be considered first in a preterm presenting with abdominal distention and feeding problems. However, this results in an average delay of approximately 7 days for correct diagnosis in cases of intussusception.¹ This period gets longer in cases not complicated with perforation. The most common imaging finding in patients with intussusception in premature neonates is dilated bowel loops.⁶ Similarly, in this case the radiograph of the abdomen showed dilated loops that persisted till operation, no pneumatisis intestinalis, portal venous gas or free air was present. Ultrasonography (USG) is capable of establishing early diagnosis of intussusception in neonate and a reliable imaging tool for rapid and accurate diagnosis.^{6,7} Recently, USG has been validated as a first-line test for assessment of intussusception.⁸

In conclusion, although NEC is the leading cause of serious gastrointestinal problems in preterm newborns, other reasons should also be considered in patients who do not improve with the usual treatment modalities. Early abdominal ultrasonography should be performed.

REFERENCES

1. Wang NL, Yeh ML, Chang PY. Prenatal and neonatal intussusception. *Pediatr Surg Int* 1998; **13**:232-6.
2. Al-Jahdali A, Lees GM, Gay DP, Al-Sairafi R. Colocolic intussusception in a preterm infant with intestinal malrotation. *J Pediatr Surg* 2009; **44**: 17-8.
3. Al Salem AH, Hasbash BM. Ileo-ileal intussusception: a report of 4 cases. *Ann Saudi Med* 2000; **20**:310-12.
4. Loukas I, Baltogiannis N, Plataras C, Skiathitou AV, Sihanidou S, Geroulanos G. Intussusception in a premature neonate: a rare often misdiagnosed cause of intestinal obstruction. *Case Report Med* 2009.
5. Slam KD, Teitelbaum DH. Multiple sequential intussusceptions causing bowel obstruction in a preterm neonate. *J Pediatr Surg* 2007; **42**:1279-81.
6. Avansino JR, Bjerke S, Hendrickson M, Stelzner M, Sawin R. Clinical features and treatment outcome of intussusception in premature neonates. *J Pediatr Surg* 2003; **38**:1818-21.
7. Martínez Biarge M, García-Alix A, Luisa del Hoyo M. Intussusception in a preterm neonate; a very rare, major intestinal problem – systematic review of cases. *J Perinat Med* 2004; **32**:190-94.
8. Hryhorczuk AL, Strouse PJ. Validation of US as a first-line diagnostic test for assessment of pediatric ileo-colic intussusception. *Pediatr Radiol* 2009; **39**:1075-9.

