Neonatal Intestinal Obstruction Due to Intussusception: A Case Report and Review of Literature

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INTRODUCTION
Neonatal intestinal obstruction is regarded as a major cause of neonatal surgical emergencies. (1) Among causes of neonatal intestinal obstruction, intussusception is a rare cause, particularly in the preterm. (2)

Intussusception in the neonatal period is difficult to diagnose, depending on clinical examination and x-rays. In most reported cases, the diagnosis is made intraoperatively. (2,3)

We report a preterm infant having ileoileal intussusception, which was discovered during laparotomy for neonatal intestinal obstruction.

CASE REPORT
A 2 kg, preterm male neonate delivered vaginally for a primigravida mother with no history of hypertension, diabetes mellitus, anemia, or urinary tract infection during pregnancy. The neonate was managed as a case of respiratory distress syndrome. First meconium passage was on the first day after delivery. At day 6 of life, the neonate developed bile-stained vomiting and abdominal distention; the next day, the neonate was referred to the Pediatric Surgery department in Basrah Children’s Hospital and admitted to the Neonatal Intensive Care Unit (NICU). Physical examination revealed a moderate abdominal distention with

ABSTRACT
Intussusception is a very rare cause of neonatal intestinal obstruction, particularly in preterm neonates. This rarity may lead to a significant delay in diagnosis. We present a case report of ileo-ileal intussusception occurring in a preterm neonate. Intussusception should be suspected in any neonate suffering from intestinal obstruction. Performing an abdominal ultrasound may confirm the diagnosis.
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visible peristalsis and exaggerated bowel sound on auscultation. Rectal stimulation by thermometer revealed normal-colored stool, HR 120 BPM, RR 50 CBM, Temp 37 c. Hematological tests were performed: (WBC = 17500/μL, Hematocrit = 37%, PLT = 137,000/μL), blood glucose = 1.2 mmol/L, blood urea = 9.7 mmol/L, total serum bilirubin = 171 mmol/L. Abdominal radiograph demonstrated small bowel dilatation with multiple air-fluid levels (Fig. 1).

After preoperative preparation with a nasogastric tube, intravenous fluid, vitamin K, and intravenous antibiotics (ceftriaxone and metronidazole), explorative laparotomy was done. The cause of the bowel obstruction was ileoileal intussusception (Fig. 2). The bowel was dusky, with gangrenous changes at the site of the intussusception (Fig. 3,4). Resection of the affected bowel, with end to end anastomosis, was performed. The lead point of the intussusception was Meckel’s diverticulum. At the 5th postoperative day, enteral feeding started, and the neonate was discharged well at the 9th postoperative day.

**DISCUSSION**

Surgical causes of neonatal intestinal obstruction include small bowel atresia, meconium ileus, malrotation, anorectal malformation, congenital megacolon, and other rare causes, like intestinal duplication and small left colon syndrome. (1)

The commonest cause of intestinal obstruction in children aged between 6 months and 18 months is intussusception, while in neonates, intussusception comprised only 3% of all cases of intestinal obstruction.

Neonatal intussusception is commonly misdiagnosed as necrotizing enterocolitis (NEC), especially in preterm neonates. (5,6)

Intussusception in neonates is usually diagnosed late, and in most cases, it is discovered intraoperatively. Late diagnosis and treatment of intussusception increase the risk of bowel ischemia. (7) In our case, the time between the onset of bilious vomiting and the operation was 48 hours, and this delay may result in gangrenous changes in the bowel wall.

Only a few cases of the reported neonatal intussusceptions are diagnosed before laparotomy. (2,5,8)

In most cases of intussusception in preterm infants, no anatomical lead points are found during surgery. (7) But in the present case, the patient was preterm, and the pathological lead point was a Meckel’s diverticulum.

The imaging findings in preterm infants with intussusception are bowel loop dilatation, with or without air-fluid levels. (2,7) In our case, the findings generally go with mechanical small bowel obstruction.

Most cases of intussusception involving the small bowel in preterm infants are without a colonic component, so contrast enema is rarely helpful in the diagnosis. (2,3,4,9)
Ultrasound examination can be used to diagnose neonatal intussusception. (2,4,5,7,8) Raza et al. (10) reported that the diagnosis of colocolic intussusception in preterm infants was made by abdominal ultrasound. Aydin(11) stated that his case report of ileoileal intussusception in a preterm neonate is the earliest case diagnosed preoperatively by ultrasound examination, and the only case reduced manually; meanwhile, Shad et al. (12) reported that the ultrasonic examination of preterm infants suffering from intestinal obstruction could not detect ileocecal intussusception. However, no ultrasound examination was performed on our patient because the clinical and radiological features were enough to perform urgent surgery without further delay.

CONCLUSION

• The high degree of suspicion is required for the diagnosis of intussusception, especially in preterm neonates who appear to have necrotizing enterocolitis.
• Early diagnosis is required for optimal management.
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Figure 4. The resected small bowel segment containing the intussusception

REFERENCES

1. Grosfeld JL. Jejunoileal atresia and stenosis. In: Grosfeld JL, O’Neil JA Jr., Fonkalsrud EW, Coran AG, editors. Pediatric Surgery. 6th edition. Philadelphia, Pa, USA: Mosby; 2006. p1269-87

2. Avansino JR, Bjerke S, Hendrickson M, Stelzner M, Sawin R. Clinical features and treatment outcome of intussusception in premature neonates. Journal of pediatric surgery. 2003 Dec 1;38(12):1818-21.

3. Mooney DP, Steinthorsson G, Shorter NA. Perinatal intussusception in premature infants. Journal of pediatric surgery. 1996 May 1;31(5):695-7.

4. Wang NL, Yeh ML, Chang PY, Sheu JC, Chen CC, Lee HC, Hung HY, Hsu CH. Prenatal and neonatal intussusception. Pediatric surgery international. 1998 Apr 1;13(4):232-6.

5. Martínez Biarge M, García-Alix A, Luisa del Hoyo M, Alarcón A, Sáenz de Pipaón M, Hernández F, et al. Intussusception in a preterm neonate; a very rare, major intestinal problem-systematic review of cases. J Perinat Med. 2004; 32:190-4.

6. Yoo RP, Touloukian RJ. Intussusception in the newborn: A unique clinical entity. J Pediatr Surg. 1974 Aug 1;9(4):495-8.

7. Görgen-Pauly U, Schultz C, Kohl M, Sigge W, Möller J, Gortner L. Intussusception in preterm infants: Case report and literature review. Eur J Pediatr. 1999 Sep 1;158(10):830-2.

8. Ueki I, Nakashima E, Kumagai M, Tananari Y, Kimura A, Fukuda S, et al. Intussusception in neonates: analysis of 14 Japanese patients. J Paediatr Child Health. 2004 Jul;40(7):388-91.

9. Loukas I, Baltogiannis N, Plataras C, Skiathitou A-V, Siahanidou S, Geroulanos G. Intussusception in a premature neonate: a rare often misdiagnosed cause of intestinal obstruction. Case Rep Med. 2009;2009.
10. Raza HA, Basamad MS, El Komy MS, Al Maghrabi A, Habbach H, Abokrecha AY. Diagnosing intussusception in preterm neonates: case report and overview. J Clin Neonatol. 2014 Apr;3(2):103.

11. Aydin E. Intussusception in a preterm newborn. Pediatrics & Neonatology. 2018 Jun 1;59(3):312-4.

12. Shad J, Biswas R. Ileo colic intussusception in premature neonate. BMJ case reports. 2011 Dec 6;2011:bcr1120115109.

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