Ileoileal intussusception due to Meckel’s diverticulum: an uncommon aetiology

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Abstract
Introduction
Intussusception is a major cause of acute intestinal obstruction in children. Most cases of intussusception (90%) are considered idiopathic and only about 6% of cases have a pathological lead point. Majority of the paediatric cases (95%) are ileocolic type and Meckel’s diverticulum is considered a rare cause.

Case Report
We are presenting an unusual case of ileoileal intussusception due to inverted Meckel’s diverticulum in an 18-month-old male child.

Discussion
The classic clinical triad of intussusception is colicky abdominal pain, vomiting and bloody (red currant jelly) stools; however, it is found in only 20% of patients. Contrast enema has diagnostic as well as significant therapeutic value, having reduction rate of intussusception between 70% and 90%. Surgical intervention is indicated if intussusception is not reduced by an enema or if features of bowel ischaemia, perforation, shock and peritonitis are evident. Delay in seeking medical advice or delay in diagnosis may lead to ischaemic necrosis and perforation of involved bowel.

Conclusion
Meckel’s diverticulum may act as a lead point lesion for childhood intussusceptions. Delay in seeking medical advice or delay in diagnosis may lead to ischaemic necrosis and perforation of the involved bowel.

Case Report
An 18-month-old male child visited emergency department of our institution with a history of on and off colicky pain in the abdomen and blood in stools for the past 24 hours. Episodes of pain used to last for a few minutes and were occasionally associated with vomiting. The child was being treated conservatively at home and he was refusing any feed for the same duration. He had developed abdominal distension in the last 6 hours and became listless. There was no history of respiratory infection, diarrhoea or trauma.

On examination, the child was lethargic and dehydrated with a heart rate of 128 beats/min and blood pressure of 80/60 mmHg. He presented gross distension with profound tenderness all over the abdomen suggestive of peritonitis. Owing to distension, no mass or organomegaly was palpable. There was polymorphonuclear leucocytosis on haematological investigations, but other parameters were normal. Plain X-ray of the abdomen revealed free gas in the peritoneal cavity with multiple air fluid levels. Abdominal sonography confirmed these findings and additionally suggested the possibility of intussusception. After resuscitation, the child was taken for emergency laparotomy.

During surgery, on opening the abdomen, there was a large amount of haemorrhagic fluid in the peritoneal cavity with a gangrenous ileoileal intussusception. This intussusception was approximately 5 cm of ileum invaginating into the distal segment of the ileum, approximately 25 cm from the ileocolic junction (Figure 1). On reduction, we found a Meckel’s diverticulum with inversion of Meckel’s diverticulum.

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Plain X-ray of the abdomen is usually the first investigation done in cases of suspected intestinal obstruction. However, its sensitivity is only 45% for the diagnosis of intussusception\(^1\). Classic plain radiograph findings for intussusceptions are absence of air in the ascending colon, a soft tissue density in the upper abdomen, target sign or crescent sign\(^10\). Abdominal sonography is a fast non-invasive test with high sensitivity (98–100%) and specificity (88–100%) if performed by skilled personnel\(^13\). Classical findings on sonography include the target lesion or doughnut sign on transverse view and pseudokidney sign on longitudinal view. Although considered the investigation of choice in adults (sensitivity and specificity in the range of 88–100%), computed tomography is usually not indicated in children due to radiation exposure and sedation-associated risk\(^8,14\).

Air, water-soluble or barium contrast enemas are diagnostic approaches with significant therapeutic value, with reduction rate between 70% and 90%. At present, air contrast enema is considered as the gold standard for paediatric intussusceptions, as barium enema has a risk of perforation with chemical peritonitis and shock\(^8,15\). Barium enema is contraindicated in suspected bowel ischaemia with necrosis, severe shock, sepsis or extreme age\(^10\).

Surgical intervention is indicated if intussusception is not reduced by an enema or if features of bowel ischaemia, perforation, shock and peritonitis are evident.

### Conclusion

Meckel’s diverticulum may act as a lead point lesion for childhood intussusceptions. Delay in seeking medical advice or delay in diagnosis may lead to ischaemic necrosis and perforation of the involved bowel.

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**Figure 1:** Ileoileal intussusception with gangrene.

[Image of intussusception with gangrene]

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**Discussion**

Intussusception is one of the most frequent causes of bowel obstruction in the paediatric population with reported incidence of 1.5–4 cases per 1000 live births\(^9\). Intussusception is usually seen in children aged between 3 months and 3 years and 80% of them occur before the age of 2 years\(^10\). The majority of the paediatric cases (95%) are of ileocolic type and Meckel’s diverticulum is considered a rare cause\(^4,8\).

The classic clinical triad of intussusception is colicky abdominal pain, vomiting and bloody (red currant jelly) stools; however, it is found in only 20% of patients\(^11\). In ileocolic type, abdominal examination may reveal a sausage-shaped mass in the right upper quadrant along with empty right iliac fossa. Clinical presentation in paediatric intussusception may range from painless intussusception to constipation, vomiting, dehydration, diarrhoea, intestinal prolapse, sepsis, shock, syncope and altered mental status (lethargy or irritability)\(^10\). Intussusception is likely to be fatal in 2–5 days, of onset of symptoms, if left untreated.

Plain X-ray of the abdomen is usually the first investigation done in cases of suspected intestinal obstruction. However, its sensitivity is only 45% for the diagnosis of intussusception\(^1\). Classic plain radiograph findings for intussusceptions are absence of air in the ascending colon, a soft tissue density in the upper abdomen, target sign or crescent sign\(^10\). Abdominal sonography is a fast non-invasive test with high sensitivity (98–100%) and specificity (88–100%) if performed by skilled personnel\(^13\). Classical findings on sonography include the target lesion or doughnut sign on transverse view and pseudokidney sign on longitudinal view. Although considered the investigation of choice in adults (sensitivity and specificity in the range of 88–100%), computed tomography is usually not indicated in children due to radiation exposure and sedation-associated risk\(^8,14\).

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Surgical intervention is indicated if intussusception is not reduced by an enema or if features of bowel ischaemia, perforation, shock and peritonitis are evident.

### Conclusion

Meckel’s diverticulum may act as a lead point lesion for childhood intussusceptions. Delay in seeking medical advice or delay in diagnosis may lead to ischaemic necrosis and perforation of the involved bowel.
Case report


Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review from the Editor-in-Chief of this journal.

References


Figure 2: Gangrenous Meckel’s diverticulum, which acts as lead point lesion for the intussusception.