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Internal herniation presented with life threatening small bowel strangulation in the pediatric emergency department: Case report

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Abstract
Context. Internal hernias (HIs) are characterized by the protrusion of a viscus or a solid organ, partially or entirely through a peritoneal, mesenteric, omental, or diaphragmatic aperture. An internal herniation is a rare cause of intestinal obstruction, especially in the emergency department. It has been demonstrated that they often remain undiagnosed before emergency laparotomy since the symptoms of internal hernia may be nonspecific. Ranging from mild abdominal pain to sudden onset intestinal obstruction. *Objective.* We report a case of a five years old boy with internal hernia presenting as life-threatening extensive small bowel strangulation. *Patient.* The patient is a five years old boy, previously healthy, was presented to our emergency department, with an 18 hours history of abdominal pain and vomiting. The pain was sudden and diffuse, with repeated vomiting. Upon arrival at the emergency patient was lethargic, had decreased Glasgow Coma Scale (GCS), delayed capillary refill, had cold extremities, was hypotensive, and was severely dehydrated. The abdomen was tense, with tenderness all over the abdomen. *Conclusions.* The internal hernia in a pediatric patient is rare but should be included in the differential diagnosis of small bowel obstruction. A high index of clinical suspicion and early intervention saves the patient from extensive bowel resection and other serious complications.

Keywords: internal hernias, intestinal obstruction, strangulation, pediatric

Introduction

Internal hernias (HIs) are characterized by the protrusion of a viscus or a solid organ, partially or entirely through a peritoneal, mesenteric, omental, or diaphragmatic aperture. They are classified into congenital and acquired hernias. Congenital hernias are usually caused by abnormal anatomic structural defects such as paraduodenal, transmesenteric, pericecal, transmesosigmoidal, supra- or perivesical Winslow's foramen, omental hernia, and rarely, hernia through the broad ligament, the mesoappendix, or the mesentery of a Meckel's diverticulum. In contrast, acquired hernias happen after surgical interventions or trauma [1]. Internal hernia in the pediatric age group is a relatively rare but known entity. An internal herniation with small bowel strangulation due to a mesenteric defect is a rare cause of intestinal obstruction, especially in children. The incidence of internal hernia as a cause of acute intestinal obstruction was 0.9–1.78% [2]. An internal herniation is a rare cause of intestinal obstruction, especially in the emergency department. It has been demonstrated that they often remain undiagnosed before emergency laparotomy since the symptoms of internal hernia may be nonspecific. Ranging from mild abdominal pain to sudden onset intestinal obstruction.

Furthermore, it occasionally leads to gangrene, necessitating bowel resection of varying extents which may contribute to high mortality. Early diagnosis and prompt treatment in the pediatric emergency department (PED) are essential [3]. Herein we report a case of internal hernia presenting with life-threatening extensive small bowel strangulation.

Case report

A five years old boy, previously healthy, was presented to our emergency department, King Saud Medical City (KSMC), Riyadh, KSA) with an 18 hours history of abdominal pain and vomiting.

The pain was sudden and diffuse, with repeated vomiting. No history of fever, no history of diarrhea, bleeding per rectum. The patient had on/off abdominal pain over the last three months, treated as constipation and gastroenteritis. He sought medical advice on the same day of his presentation to our ER. Intravenous fluid was given, and the patient was discharged home.

The vomiting did not improve; the patient got hypoactive with time, so they brought him to our ER. Upon arrival at the emergency patient was lethargic, had decreased Glasgow Coma Scale (GCS), delayed capillary refill, had cold extremities, was hypotensive, and was severely dehydrated.

The abdomen was tense, with tenderness all over the abdomen.

Immediate resuscitation was initiated by securing the airway and normal saline boluses. Blood samples were obtained for Complete blood count, and chemistry and blood culture were successfully done. Venous blood gases have done, which showed PH 7.0. PCO2 37 mmHg PO2 38 mmHg HCO3 8 mEq/L. Laboratory data included hemoglobin 4.1g/dl, leukocyte count 13.47 10^9/L with 59.5% neutrophil.

The blood chemistry values were as follows: glucose 11.88 mmol/L, urea 6.7mmol/L, creatinine 63 umol/L, sodium 144 mmol/L, potassium 3.39 mmol, chloride 111 mmol/L, AST

165.3 U/L, ALT 65.9 U/L, Bilirubin 1.2 umol/L and lactic acid 18. Abdominal radiography revealed gaseous distension of the stomach and small bowel loops with absent air in the rectum (Figure 1). After stabilization, the patient shifted to the operating room, and Surgical exploration was performed immediately.

Internal herniation of the small bowel was found to cause gangrene of about 180 cm of the small bowel (Figure 2). Resection and anastomosis were done. The patient discharged home after a few days in good condition.

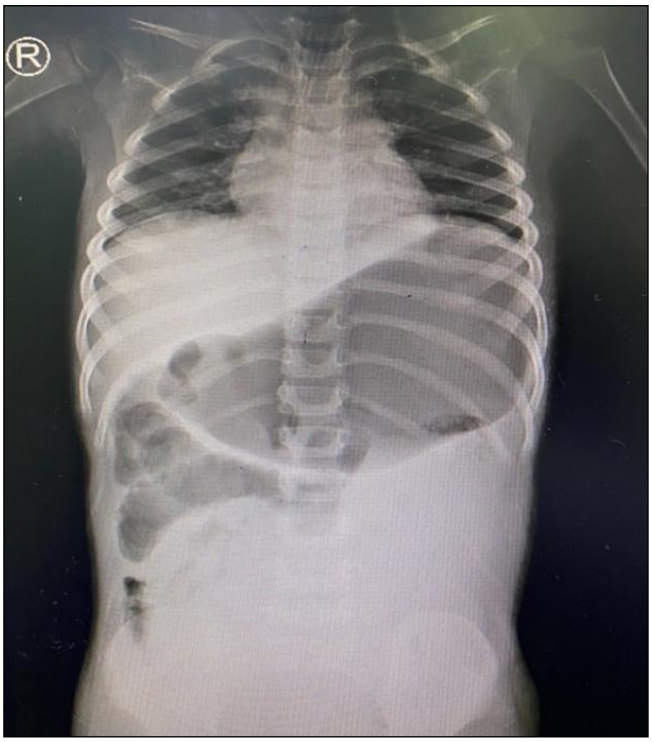

Fig 1

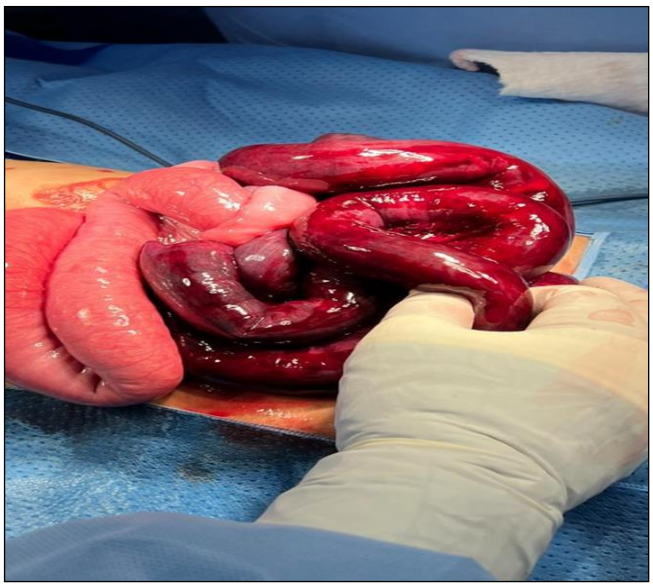

Fig 2

Discussion

IHs are a rare cause of acute intestinal obstruction caused by hernias, accounting for only a tiny percentage of all instances of intestinal obstruction. The autopsy incidence of IH is 0.2-2%, and most of them were asymptomatic [4]. In children with diagnosed IH, 85% of the neonates and infants had congenital transmesenteric hernias, and 82% of the reported congenital paraduodenal hernias were presented in older children [4]. However, the other literature review showed that transmesenteric hernia was the most common type in older children and neonates. In the adult, the most frequent IH is paraduodenal, resulting from incomplete closure of surgically created mesenteric defects, and usually acquired resulting from previous abdominal surgery, especially Roux-en-Y anastomosis [4]. Our case is one of the rare cases of internal herniation. Preoperative diagnosis of internal hernia is difficult because symptoms may range from intermittent and mild digestive complaints to symptoms of acute-onset intestinal obstruction. IHs are silent if they are easily reducible but most often cause epigastric pain, periumbilical pain, and recurrent episodes of intestinal obstruction [1]. IHs are clinically apparent only when incarcerated; internal hernias result from small bowel obstruction; therefore, a delay in diagnosis may lead to strangulation and an increased risk of serious complications [1]. Keeping in mind the risk of CT radiation, especially in children. CT scan is the key for internal hernia management and diagnosis as it provides information about the presence of small bowel obstruction, strangulation, and ischemia. It aids in preoperative planning and when to urgently surgically intervene [1]. To our information, our case is one of the cases reported with life-threatening small bowel strangulation secondary to intestinal herniation. The case reported by Lee *et al*. exhibited a 6-year-old boy who experienced life-threatening shock due to internal herniation [4]. Also, the case reported by Hu *et al*. exhibited An 8-year-old boy who presented to the PED with a 6-hour history of cramping abdominal pain with epigastric tenderness. The patient was diagnosed with a mesenteric defect with internal herniation [3].

Treatment of an internal hernia with signs of bowel obstruction includes volume resuscitation, correction of electrolyte imbalances, and surgery. Laparotomy has generally been the preferred approach for the presence of small bowel obstruction. Technical difficulties and potential complications, such as having no workspace from distended small bowel loops and the inability to visualize the transition point, make laparotomy more preferred over laparoscopy [1]. We have reported a rare life-threatening small bowel strangulation secondary to intestinal herniation. Only a few cases reported small bowel obstruction secondary to intestinal herniation.

Conclusion

The internal hernia in a pediatric patient is rare but should be included in the differential diagnosis of small bowel obstruction. A high index of clinical suspicion and early intervention saves the patient from extensive bowel resection and other serious complications.

Abbreviations

IHs: Internal Herniations
KSMC: King Saud Medical City
KSA: Kingdom of Saudi Arabia
PED: Pediatric Emergency Department
GCS: Glasgow Coma Scale

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Conflict of interest: None declared

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