

Intussusception duodenal in the adult. Clinical case

Intususcepción duodenal en el adulto. Caso clínico

Mario Alejandro Hernández[1]
Luis José Gómez Meléndez[2]
Giovanna Milena Álvarez Álvarez[3]
Lady Viviana Pardo Uriza[4]
Leandro Manuel Aconcha Suárez[4]
Paola Andrea Mora Vega[5]
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Summary

Introduction: Intussusception is defined as the telescopic extension of a proximal segment of the gastrointestinal tract within the lumen of the adjacent segment. This pathology is common in the pediatric population, being the most frequent cause of intestinal obstruction in children under 5 years of age; however it is uncommon in adults and represents only 1% of the causes of intestinal obstruction in this population. ***Case presentation:*** A 19-year-old male patient with a history of cognitive deficit, epilepsy under management and a gastrostomy user 6 months ago. He was admitted for approximately 4 days of emesis of food content which evolved to hematemesis. Upon admission, vital signs were in the normal range and blood work showed leukocytosis, neutrophilia, and no anemia. An esophagogastroduodenoscopy (EGD) and diagnostic imaging including abdominal radiography and abdominal computed tomography were performed, which showed duodenal intussusception requiring management with exploratory laparotomy and intestinal resection. ***Conclusion:*** Duodenal intussusception is an infrequent pathology of surgical abdomen in adults that can present with signs and symptoms of intestinal obstruction, hence the importance of differential diagnosis in patients presenting with obstructive symptoms, for an early diagnosis and rapid management of this entity. Diagnosis is made by imaging and the treatment of choice is always surgical resection.

Resumen

Introducción: La invaginación intestinal se define como la extensión telescópica de un segmento proximal del tracto gastrointestinal dentro de la luz del segmento adyacente. Esta patología es común en la población pediátrica, y es la causa más frecuente de obstrucción intestinal en niños menores de 5 años; sin embargo, es infrecuente en adultos y representa solo el 1% de las causas de obstrucción intestinal en esta población. ***Presentación de caso:*** Paciente masculino de 19 años de edad con antecedentes de déficit cognitivo, epilepsia en manejo y usuario de gastrostomía hace seis meses. Ingresó por cuadro clínico de cuatro días de evolución consistente en episodios eméticos de contenido alimentario que posteriormente evolucionaron a hematemesis. Al ingreso con signos vitales en el rango de la normalidad, paraclínicos con leucocitosis y neutrofilia, sin anemia. Se realizó una esofagogastroduodenoscopia e imágenes diagnósticas que incluyeron radiografía de abdomen y tomografía computarizada de abdomen, en las cuales se evidenció intususcepción duodenal que requirió manejo con laparotomía exploratoria y resección intestinal. ***Conclusión:*** La intususcepción duodenal es una patología de abdomen quirúrgica infrecuente en los adultos. Puede cursar con signos y síntomas de obstrucción intestinal. Por ello, la importancia del diagnóstico diferencial en pacientes que cursan con clínica obstructiva, para un diagnóstico precoz y manejo rápido de esta entidad. El diagnóstico se realiza por imágenes y el tratamiento de elección siempre es quirúrgico mediante la resección del intestino afectado.

Introduction

Intussusception is defined as the telescopic extension of a proximal segment of the gastrointestinal tract into the lumen of the adjacent segment (1). This condition is common in the pediatric population and is the most frequent cause of intestinal obstruction in children under 5 years of age (2); however, it is rare in adults and accounts for only 1% of the causes of intestinal obstruction in this population (3).

This pathology is associated with compromise of the intestinal wall due to inflammatory lesions, postoperative adhesions, Meckel's diverticulum, lipoma, adenomatous polyps, lymphomas, or even metastatic lesions. It can also have iatrogenic causes, for example, in patients with gastrostomy or a history of gastrojejunostomy. In any scenario, the alteration in peristalsis favors intussusception of the adjacent

[1]Physician. University of Boyacá, Hospital Universitario San Rafael. Tunja, Colombia.

[2]Physician, specialist in General Surgery and Thoracic Surgery, Hospital Universitario San Rafael. Tunja, Colombia.

[3]Physician, specialist in Radiology and Diagnostic Imaging, Head of Service, Hospital Universitario San Rafael. Tunja, Colombia.

[4]Physician, specialist in Radiology and Diagnostic Imaging, Hospital Universitario San Rafael. Tunja, Colombia.

[5]Intern, Fundación Universitaria Sanitas,, Hospital Universitario San Rafael. Tunja, Colombia.

Diagnostic Imaging Service, Hospital Universitario San Rafael de Tunja.

segment, generating an inflammatory process that alters the vascular bed and results in ischemia and necrosis (4).

The clinical picture may manifest as acute abdominal pain and, rarely, chronic or episodic pain (5). The aim of this manuscript is to review the case of an adult patient with small bowel intussusception in the duodenum.

Clinical case

A 19-year-old male patient with a history of cognitive impairment, epilepsy under treatment, and a gastrostomy for six months. He was admitted with clinical symptoms that had been developing for approximately four days, consisting of episodes of vomiting food, which progressed to hematemesis.

On physical examination, vital signs were normal, abdomen soft, with no signs of peritoneal irritation. The gastrostomy was in good condition and functioning, with biliary secretion secondary to emetic episodes. The blood count showed neutrophilia and leukocytosis. An abdominal X-ray was performed with findings suggestive of a mechanical obstruction. Esophagogastroduodenoscopy detected a clot in the gastric-duodenal chamber and suggested ruling out an underlying tumor.

Treatment with omeprazole was initiated and a double-contrast computed tomography (CT) scan of the abdomen was performed, which revealed the "target sign," indicative of complicated duodenal intussusception, as shown in Figures 1 to 3. The patient underwent exploratory laparotomy, which confirmed invagination of the small intestine into the duodenum, with marked gastric distension, intestinal necrosis approximately 30 cm from the third portion of the duodenum, and perforation at the site of intussusception. Desintussusception, intestinal resection (approximately 30 cm from the angle of Treitz), end-to-end duodeno-jejunal anastomosis, and a nasojejunal tube for enteral nutrition were performed.

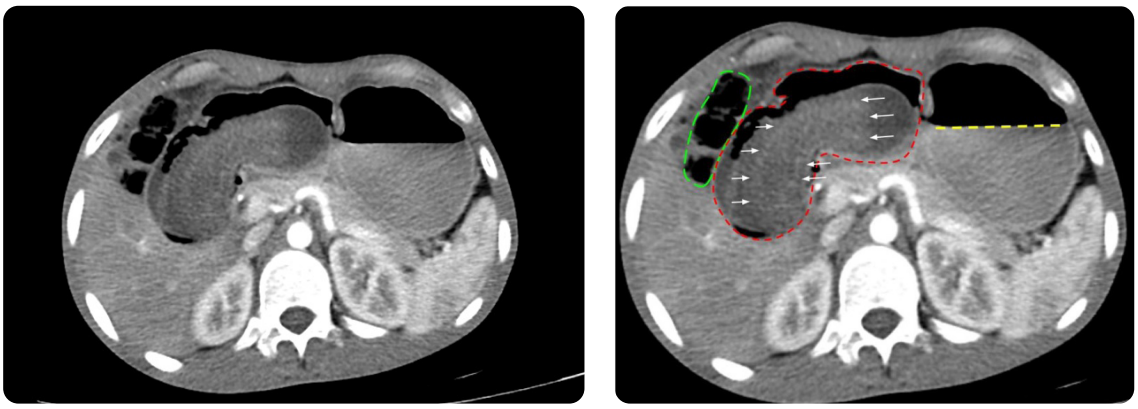


Figure 1. Abdominal CT scan with intravenous contrast medium, arterial phase, axial section: distension of the gastric chamber with air-fluid level inside (yellow dotted line). Proximal jejunal loops within the second portion of the duodenum, with wall edema and typical enhancement of the intestinal mucosa, forming a "sausage-like" appearance (white arrows) associated with distension of the antral lumen and the first portion of the duodenum (red dotted line). Less distension of the distal intestinal loops (green dotted line).

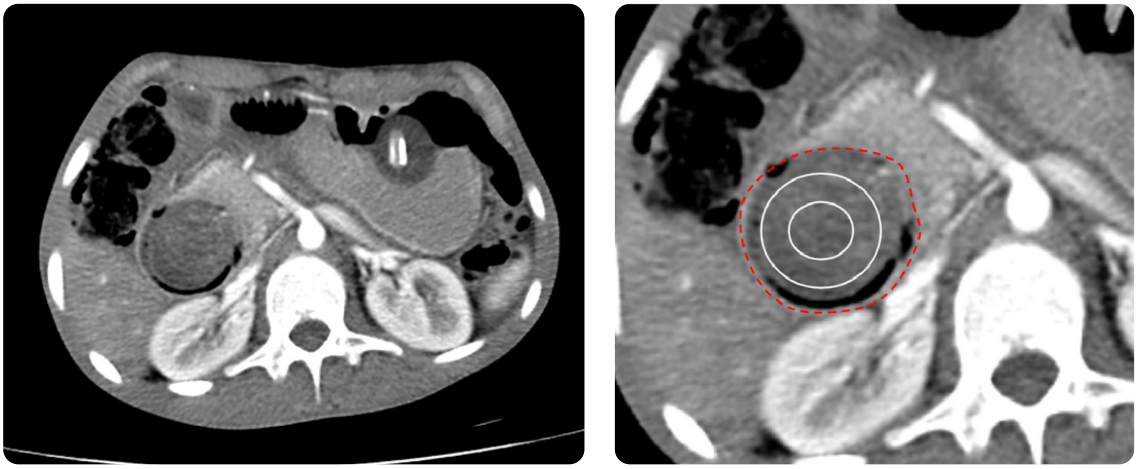


Figure 2. Abdominal CT scan with intravenous contrast medium, in the arterial phase, axial section: rounded "target" mass, in which the layers of the intestine are duplicated, forming concentric rings due to edema of the jejunal wall and enhancement of the intestinal mucosa (white lines). There is distension of the lumen of the second portion of the duodenum with air content (red dotted line).

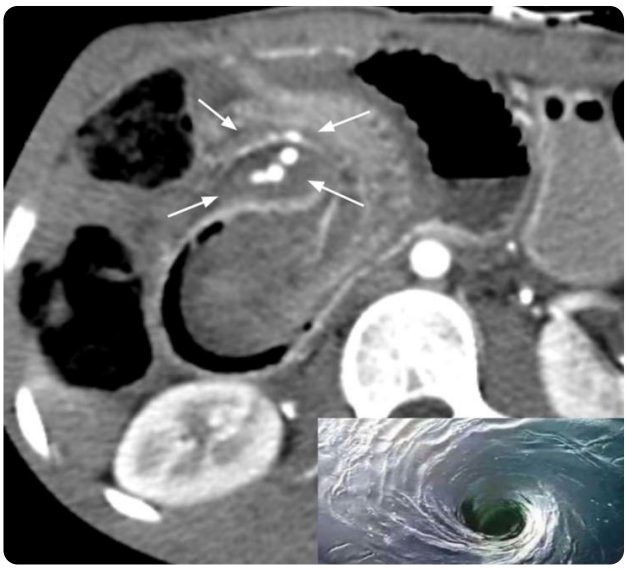


Figure 3. Abdominal CT scan with intravenous contrast medium, arterial phase, axial section: crescent-shaped "target" mass corresponding to the jejunal loops within the second portion of the duodenum (invagination). The mesenteric vessels have a swirling configuration forming the "whirlpool sign" (white arrows).

The patient had a favorable outcome over the next three days. The histopathological study concluded: neutrophilic infiltrate in the serosa with necrosis and vascular congestion secondary to transmural ischemic necrosis, acute peritonitis, and viable section margins. It was decided to discharge the patient.

Discussion

Intestinal intussusception is a condition that commonly occurs in the pediatric population; it is rare in adults (4), with an incidence of two to three cases per 1,000,000 inhabitants/year and accounts for between 0.003 and 0.02% of hospital admissions, of which 1% present with intestinal obstruction (6-7), as in the case presented here, which is uncommon.

This pathology is often related to underlying structural abnormalities in the intestinal wall, such as inflammatory lesions, Meckel's diverticulum, postoperative adhesions, lipoma, adenomatous polyps, lymphoma, metastasis, or iatrogenesis, which act as a "reference point" that favors intussusception (4). However, up to 20% of cases are considered to be of idiopathic origin (8), as concluded in the documented case report.

There are different subtypes of intestinal intussusception, which are classified according to the anatomical location and extent of the invagination: 1) entero-enteric, which involves the small intestine; 2) colo-colic, which affects the colon; 3) ileocecal, involving the junction of the ileum and cecum; and 4) duodeno-duodenal, which affects the duodenum (9). The latter corresponds to the case study in this article.

Duodenal intussusception specifically is an extremely rare condition due to the fixed position of the duodenum in the retroperitoneum. However, it can occur when there is excessive mobility of the duodenal wall secondary to intestinal malrotation or lesions such as lipomas, adenomas, diverticula, polyps, and duodenal ulcers (9-11).

Symptoms and clinical presentation may vary depending on the location of the intussusception, but most patients present with nonspecific symptoms, including abdominal pain (71-100%), nausea and vomiting (40-60%), and occasionally rectal bleeding (4-33%). Abdominal pain secondary to partial intestinal obstruction is characterized as periodic, intermittent, and colicky (12-14). The main symptom in the patient in this case was hematemesis, which is uncommon (15).

The diagnosis is made by exploratory laparotomy in 68% of cases (16), although advances in the field of radiology have optimized the timely diagnosis of this pathology. Abdominal radiography in conjunction with clinical findings is diagnostic, with a sensitivity of 69% and specificity of 57%. Its sensitivity increases if the obstruction is severe. Findings such as the "stacked coin sign," air-fluid levels, or the "ladder sign," which are pathognomonic of intestinal obstruction, can guide the diagnosis (17). Abdominal ultrasound is also very useful for diagnosis, and characteristic findings include the "target sign," with concentric rings (18) in the transverse view, and the "pseudokidney sign" in the longitudinal view; the diagnostic accuracy of these signs can be up to 78.5%. However, ultrasound is operator-dependent and may be limited in the presence of gas in the intestinal loops (19).

CT is considered the imaging modality of choice for diagnosing this condition, with a sensitivity of 58–100% (20). The main finding is the pathognomonic configuration of "intestine within intestine" with or without involvement of contained fat and mesenteric vessels (Figure 3). This sign is characterized by a sausage-shaped mass image when the CT beam is parallel to its longitudinal axis (Figure 1), and by a concentric ring-shaped mass when the beam is perpendicular to the longitudinal axis (Figure 2) (10). Possible associated findings include mesenteric fat alteration, changes in thickness, and enhancement of the compromised intestinal wall, secondary to edema, hypoperfusion, or ischemia, depending on the severity (20). In advanced cases, such as the one presented, there may also be intestinal perforation.

Finally, it should be noted that although treatment varies depending on the patient, imaging and intraoperative findings, and the etiology of the intussusception, most authors agree that surgical resection by laparotomy is the treatment of choice (8, 16, 19). Other authors recommend reduction, specifically in cases where resection of the invaginated small bowel loops could cause short bowel syndrome (21). In the present case, resection with duodenojejunal anastomosis was performed in two end-to-end planes, because the intestine was necrotic.

Conclusion

Duodenal intussusception is a rare surgical abdominal condition in adults, caused by retroperitoneal fixation of the duodenum and occurring when there is intestinal malrotation, lipomas, adenomas, diverticula, hamartomatous polyps, or duodenal ulcers. It can occasionally present with signs and symptoms of intestinal obstruction, hence the importance of differential diagnosis in patients with obstructive symptoms, for early diagnosis and rapid management of this condition. Diagnosis is made by imaging, mainly CT scan, and the treatment of choice is always surgical resection of the affected intestine.

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Correspondence

Paola Andrea Mora Vega
Calle 167 # 54D-48
Bogotá, Colombia
paomoravega33@gmail.com

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