Moreno, Eduardo Antonio; Cickman, Pablo; Azar, Ricardo; Feliu, Luis; Nari, Gustavo Adrián
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Intestinal intussusception in adults: Tomographic findings and report of two cases

Eduardo Antonio Moreno,1 Pablo Cickman,2 Ricardo Azar,1 Luis Feliu,1 Gustavo Adrián Nari 1

1 General Surgery Service, Clínica Sucre; 2 Diagnostic Imaging Service, Conci-Carpinella; Córdoba, Argentina.

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Summary
Intestinal intussusception is infrequent in adults. Unlike what happens in kids, it shows a demonstrable etiology in most cases: polyps, lipomas, hamartomas, malignancies, etc. Among diagnostic methods, CT scan is the study that yields the best results for the diagnosis, giving forth pathognomonic signs and favoring therapeutic decision-making.

Two cases of intestinal intussusception in adults secondary to benign pathology are analyzed, stressing mainly the tomographic findings and some considerations about therapeutic decision-making based on tomographic results.

Key words. Adult intestinal intussusception, CT findings, treatment.

The invagination of part of the intestine into another section of intestine is known as intestinal intussusception. Most cases happen in kids and about 90% have idiopathic origin. This is the most frequent cause of acute abdomen in this age group, after appendicitis.1 The appearance of intussusception in adults is rare: only 1% of intestinal obstructions are due to this cause and, unlike what occurs in childhood, about 90% of cases have a demonstrable etiology.1-3

Nevertheless, in most observations in adults, the symptoms tend to come in a chronic, overlapped manner, so that the diagnosis can be suspected in only few occasions. Abdominal pain, nausea and vomiting are usually the most frequent symptoms and, to a lesser extent, melena, anemia, gastro-intestinal bleeding, diarrhea, fever, weight loss and constipation. The causes of intussusception in adults vary according to the affected intestine section. In the colon, malignancies occur most frequently, whereas in the small intestine, benign tumors prevail (lipomas, hamartomas, leiomyomas, hemangiomas, neurofibromas, diverticula, lymphoid hyperplasia, mesenteric adenitis, trauma, celiac disease, intestinal duplication, Henoch Schönlein purpura). Melanoma metastases are the most frequent malignant cause for invagination of the small intestine. Furthermore, a high rate of patients with AIDS is reported due to the increased number of tumors such as Kaposi’s sarcoma and infections with lymphoid affection.2-6

Even though different diagnostic methods are used, including simple abdominal X-rays, ultrasound scan and contrast studies, CT scan (computed tomography) is the method with the best diagnosis accuracy and the best evidence of the pathognomonic signs typical of this pathology.4,6-14 The goal of this paper is to present two cases of ileo-ileal invagination secondary to benign polypoid lesions that were diagnosed by CT scan and to update the tomographic findings.

Case report
Case 1
A 29-year-old female seeks medical advice due to continuous epigastric pain irradiated to the back, set in in the last 24 hours. She refers a history of colic abdominal pain...
Intestinal intussusception in adults: Tomographic findings and report of two cases

Eduardo Antonio Moreno y col

During several weeks, diffuse, without a specific location, accompanied by abdominal distension, without changes in the intestinal habit. Upon physical examination, soft and depressible abdomen is found, without pain, defense, contracture or peritoneal reaction, slightly distended. Laboratory tests are normal. Simple X-rays of the abdomen and two abdominal ultrasound scans are carried out and described as normal. In view of the worsening of symptoms, an abdominal CT scan is performed and ileo-ileal intussusception over intestinal lipoma is reported (Figure 1). The patient undergoes surgery. A resection of a segment of the small intestine was carried out with termino-terminal anastomosis. Anatomic pathology reports a polypoid lipoma (Figure 2). The patient has good progress and is discharged from our hospital.

Figure 1. CT scan displaying a “blank” image showing contrast medium surrounding mass and lipoma.

Figure 2. Intestinal lipoma in the Surgical piece.

Case 2

A 47-year-old man seeks medical advice due to long-lasting anemia. High and low gastrointestinal endoscopies are carried out and the polypectomy of a colonic adenomatous polyp is done. Months after, due to the persistence of the anemia and the beginning of a diffuse colic abdominal pain, serial X-rays of the small intestine are performed and reported as normal (Figure 3). Then, an angiography is requested and also reported as normal (Figure 4). Considering that symptoms persist, a CT scan is requested, revealing ileo-ileal intussusception with a suspicious image of lipoma (Figures 5 and 6). The patient undergoes surgery and the diagnosis is confirmed (Figures 7 and 8). He progresses satisfactorily and is discharged. The anatomic pathology reports an intestinal invagination on an ulcerated hamartomatous polyp.

Figure 3. Normal intestinal transit.

Figure 4. Normal arteriography.

Figure 5. CT scan showing “blank” image displaying an injury compatible with a lipoma.
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Eduardo Antonio Moreno y col

Discussion

Intestinal intussusception is rare in adults. Dean et al classified them according to their location as colocolic, ileocecal and ileocolic. Enteric cases are the most frequent and the ileum is the principal location within them. The symptoms are not very specific and they generally appear chronically, being necessary a high rate of clinical suspicion and justifying why many cases are diagnosed in a casual manner or as findings such as happened in our cases. According to Constanzo et al, lipomas are the cause of 5% to 16% of all intussusceptions in adults. Hamartomas are also a cause of intussusception. Independently of the etiology, the mechanism by which a part of the intestine invaginates within another one does not change.

The atypical clinical symptomatology of these patients justifies the use of different diagnostic methods, being CT scan the one that offers the best results, indicating in many cases the content of the lesion, particularly in those with adipose tissue. On the other hand, it allows to do a therapeutic planning that would include the non-operative handling.

Merine et al probably first described the tomographic findings. In their study, they mention four stages: 1) “Blank” image, in which the beam falls perpendicularly on the longitudinal axis of the intussusceptions. This pattern shows initial or early stages of the illness. 2) “Layering” stage, with a disposition of layers as product of the alternation of high and low attenuation rings. 3) The layer aspect disappears and a parietal thickening and edema is observed. 4) General thickening of the intestinal wall and total loss of fascial planes and architecture, coinciding with marked irrigation disorder and possibility of gangrene. Gayer et al describe three typical presentation images: 1) “Blank” stage, when the beam falls perpendicular to the longitudinal axis. 2) “Sausage” image corresponding to the same early stage but with the beam falling parallel to the longitudinal axis of the intussusceptions. 3) “Kidney” image, with two poles corresponding to a more advanced stage with edema and thickening of the intestinal walls. In some occasions, the contrast medium given per os can be seen surrounding the mass. These three images are accepted as pathognomonic by most authors. In this sense, it is important to consider that the mesenteric fat involved in the process contains the mesenteric blood vessels. The absence of vessels within the fat density allows ruling out a lipoma. In our CT scans, the presence of a dark and well delimited area of fat density without vasculature evidenced a lipoma and a hamartoma with fat content, as described by Zissin et al. As we stated before, CT scan is not only useful for the diagnosis of intussusception but also for specifying its etiology. For instance, the presence of multiple masses in the mesentery associated to the invagination strongly suggests malign neoplastic origin. Warshauer and Leepoint out that intussusceptions of neoplastic origin are usually longer and wider than those of other origin. They also observe that proximal dilation is more frequent in malign etiology.

Horton et al and Dawes et al state that CT scan with multiplanar reconstruction allows the assessment
of ischemia, an important feature when the therapeutic approach is decided. Furthermore, CT scan is not only a diagnostic tool but also allows assuming an expectant behavior with medical management of the intussusception. For instance, an invagination shorter than 3.5 cm would not require surgical treatment and would most likely have a spontaneous resolution, particularly in an asymptomatic patient. In this sense, Catalano et al. and Rea et al. recommend to avoid a surgical procedure when a “blank” shape is detected in the CT scan, with not or slightly dilated proximal handles and without an apparent cause of invagination, in an asymptomatic patient. In this sense, considering that a demonstrable underlying cause of intussusception is found in around 90% of adult cases, these patients will require a surgical procedure anyway.

We conclude that intestine intussusceptions are rare in adult patients and generally the clinic picture is not typical, except when acute obstructive episodes are present. Currently, the CT scan is the best study for its diagnosis, contributing with typical and pathognomonic images, specifying the etiology and severity of the process, and being of critical importance when a therapeutic decision is required.

References