Intussusception of cecal appendix
Intussuscepção do apêndice cecal

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ABSTRACT
The authors report the case of a child with the diagnosis of appendiceal intussusception and describe the clinical, ultrasonographic, colonoscopic and surgical aspects. The authors discuss these aspects based on a review of recent literature.

Keywords: Appendix/ultrasonography; Colonoscopy; Intussusception; Appendectomy; Appendicitis; Case reports

RESUMO
Os autores relatam o caso de uma criança com diagnóstico de intussuscepção do apêndice cecal e descrevem os aspectos clínicos, a ultra-sonografia, colonoscopia e intra-operatório. Os autores discutem estes aspectos baseados na revisão da literatura recente.

Descritores: Apêndice/ultra-sonografia; Colonoscopia; Intussuscepção; Apendicectomia; Apendicite; Relatos de casos

INTRODUCTION
Appendiceal intussusception to the cecum is an uncommon type of intussusception, with an incidence of approximately 0.01% in patients undergoing appendectomy. It occurs more frequently in children than adults. The clinical manifestations vary mimicking many conditions and the preoperative diagnosis is rare¹⁻³.

The diagnosis of appendiceal intussusception may be demonstrated by suggestive but not pathognomonic imaging, barium enema, ultrasound, CT scan and colonoscopy¹.

CASE REPORT
A two-year-old male patient was seen in the emergency room of our institution and referred to the imaging department. The patient had a history of diffuse colic for two days, which was gradually becoming more intense. No significant past history. The physical exam demonstrated pain on abdominal palpation, more intense in the right iliac fossa. The laboratory screening was normal and included complete blood count. Ultrasound demonstrated pathologic changes resembling “onion skin-like image” of a short bowel segment in the right lower quadrant in the cross and longitudinal sections, suggesting intussusception. One of the extremities of the bowel loop, classified as intussuscptum, presented as a cul-de-sac. Doppler demonstrated increased parietal vasculature indicating hyperemia (Figure 1). A computed tomography scan was also performed without contrast to confirm the ultrasonic diagnosis and showed a slight thickening of the terminal ileum walls. Colonoscopy demonstrated the appendix with edema and totally inverted to the cecal lumen (Figure 2).
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of the appendix or of the bowel, appendiceal irritation secondary to the presence of fecalith, foreign body, polyps, parasites, lymphoid follicular hypertrophy, appendicular mucocele, appendicular adenocarcinoma, carcinoid tumor, and endometrial implantation. It may also be idiopathic, in which no pathological condition is identified (1-3,5).

The clinical features include a range of signs and symptoms, and in some cases, even asymptomatic patients were described in the literature. It may cause inflammatory acute abdomen in the right iliac fossa, which is easily mistaken for appendicitis, and it may present itself with unspecific pain in the lower right quadrant, symptoms of recurrent intussusception, enteric bleeding, among others (1-2,5).

Some radiological signs may suggest appendiceal intussusception, but they are rarely specific (2). Abdominal X-ray is usually normal, except when co-exists ileocecal intussusception (1). Absence of the filling of the appendix associated to failure of cecal filling may be suggestive of the diagnosis on barium enema (1-3). Ultrasound is the method of choice for children with suggestive signs and symptoms, the classic imaging of intussusception being of “onion skin-like lesion”. Along with that, if it is demonstrated that one of the extremities of the intussusceptum has a cul-de-sac, the hypothesis of appendiceal intussusception may be considered, as was the case of our patient, thus making the differential diagnosis with bowel intussusception (1-3,6). Colonoscopy is another method that can show signs suggestive of this condition, since it allows the direct view of a vegetating image inside the cecum, which must be differentiated from

DISCUSSION

Appendiceal intussusception is a rare condition of difficult clinical or radiological preoperative diagnosis, seen more often in the first decade and in males (2). It was first reported in 1858, by Mekidd, in a seven-year-old child and since then about 200 cases were reported in the literature until the year 2000 (2-3). In 1963, Collins concluded in a forty-year prospective study involving 71,000 cases of appendectomy, that the incidence of appendiceal intussusception was 0.01% (4). The real etiology is unknown, but many conditions were related with triggering appendiceal intussusception, including anatomical variations of the appendix, such as a wide proximal lumen, mobile mesoappendix, abnormal peristaltic movements

Figure 1. Bowel loop in RIF demonstrating “onion skin-like” image in longitudinal (A) and cross (B) sections suggesting intussusception, one of the extremities has the cul-de-sac, Increased parietal blood flow assessed by colored Doppler (C and D) and amplitude ultrasound (E and F)

Figure 2 (A and B). Colonoscopy showing appendix inverted into the cecal lumen

Figure 3. Surgical aspect: cecal orifice (A) characteristic of appendiceal intussusception (B and C) that proves to be inverted after cecostomy. Cecal suture and ileum-cecum-colon fixation (D)
a neoplastic process. Computed Tomography scan is better shown by virtual colonoscopy, and the bowel should be previously cleaned and the cecum distended by rectal air injection\(^{(2,3,7)}\).

After making diagnosis, the treatment should be appendectomy, since the definitive reduction of this type of intussusception using positive pressure through barium enema is difficult, those patients presenting a high recurrence rate and also for the intussusception itself functions as a mechanical factor in the etiology of some cases of ileocecal intussusception\(^{(1,3)}\).

**CONCLUSION**

Appendiceal intussusception is a rare condition and the clinical features include a range of signs and symptoms. The diagnosis is based on ultrasonography and colonoscopy. The treatment is surgical.

**REFERENCES**