



Intussusception due to appendicitis Akut appendisitine bağı invaginasyon

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Abstract

Intussusception is an important childhood disease. It is usually accompanied by abdominal pain and throwing up complaints caused by a lead-point in the intestines and intestinal obstruction symptoms and requires emergency surgical operation. Acute appendicitis is a serious condition that most frequently requires emergency surgical operations during childhood. The condition is usually accompanied with abdominal pain, abdominal sensitivity along with vomiting, abdominal muscular defense and rebound symptoms. Frequently the pathogen is fecalith in the appendicitis.

In the present study, a intussusception case caused by the lead-point role of a sudden acute appendicitis induced by fecalith in an 8 years old young female with abdominal pain and vomiting symptoms is presented. A literature review was conducted and the fact that appendicitis could cause intussusception as well as intussusception could cause appendicitis is identified and discussed.

Keywords: Acute Appendicitis; Intussusception; Childhood.

Öz

İnvaginasyon çocukluk döneminde karşılaşılabilen önemli bir rahatsızlıktır. Genellikle barsaklardan kaynaklanan bir "lead-point" in sebep olduğu, abdominal ağrı ve kusma şikâyetine, intestinal obstruksiyon bulgularının eşlik ettiği acil cerrahi müdahale gerektiren bir durumdur.

Akut appendisit çocukluk çağında en sık acil cerrahi müdahale gerektiren önemli bir durumdur. Bu rahatsızlıkta abdominal ağrı, kusma şikayetiyle birlikte abdominal hassasiyet, abdominal müsküler defans ve rebound bulguları olur. Sıklıkla neden appendiks içerisinde bulunan fecalittir.

Bu çalışmada karın ağrısı ve kusma şikayeti bulunan 8 yaşındaki bir kız çocuğunda, içinde bulunan fekalite bağı olarak ani gelişen bir akut appendisit "lead-point" rolü oynayarak sebep olduğu invaginasyon olgusu sunulmuştur. Literatür araştırması yapılarak, appendisit invaginasyon neden olabileceği gibi invaginasyonda appendisite neden olabileceği tespit edilip tartışılmıştır.

Anahtar Kelimeler: Akut Appendisit; İnvaginasyon; Çocukluk Çağı.

Received/Başvuru: 20.10.2015
Accepted/Kabul: 23.12.2015

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For citing/Atıf için

Gurunluoglu K, Kaya Z, Gurunluoglu
SC. Intussusception due to
appendicitis. J Turgut Ozal Med
Cent 2016;23(3):309-12.

INTRODUCTION

Appendicitis is inflammation of the appendix vermiformis due to blockage of the appendicular lumen for various reasons (1). In some cases, the contents of the distended lumen perforate the inflamed wall and spread into the surrounding mesenteric tissue, resulting in peritonitis. In other cases, the inflammation is enclosed by the surrounding tissues, resulting in the formation of a pelvic plastron (2).

In intussusception, part of the intestine folds into another section of intestine, similar to the way the parts of a collapsible telescope slide into one another (3). Etiological factors include Meckel's diverticulum, polyps, duplication, appendicitis, and hyperplasia of Peyer's patches; intussusception may also be idiopathic (3).

We here present a case involving patient with an inflamed appendix that resulted in an ileocolic intussusception by acting as a leading point.

CASE REPORT

An 8-year-old girl is presented to the emergency service with a 12-hour history of abdominal pain. Initially, the pain was periumbilical and persistent. Six hours later, it became colic pain, occurring every 10 to 15 minutes. She had vomited without any bile and had no appetite. Her temperature was 39°C. Abdominal examination revealed widespread tenderness and muscle defense during the pain attacks, and a mobile mass was palpable in the left upper quadrant. A left-sided mobile mass was palpated during rectal digital examination. There was no blood in the feces. An upright direct abdominal X-ray showed a mass within the intestinal lumen surrounded by patchy air shadows, but no air-fluid levels (Figure 1).



Figure 1. Standing direct abdominal X-ray of the patient shows the invaginated segment.

The patient's total blood count was as follows: white blood cells, 14.5/ μ L; hemoglobin, 11.9 g/dL; hematocrit, 38.1%; and platelets, 437,000/ μ L. The biochemical results were normal.

Abdominal ultrasonography could not be performed because the patient arrived in the evening and the only radiology specialist could not be reached. The patient's clinical condition was so severe that we had to act urgently based only on the abdominal X-ray findings.

We made a midline longitudinal incision and entered the abdominal cavity. The mass, which originated from the left descending colon, was confirmed to be an invaginated intestinal segment. Manual reduction was performed from distal to proximal. When the reduced part of the intestine was inspected, an inflamed, distended, edematous, nonperforated appendix was recognized. Palpation indicated a fecalith in the appendix. The blood circulation of the invaginated segment was normal, so no resection was performed. Appendicitis was the leading point, and an appendectomy was performed. The intestines were replaced into the abdominal cavity and the operation was completed.

Histopathological examination showed acute appendicitis, and the appendiceal lumen was filled with a fecaloma (Figure 2). There was neutrophil accumulation within the mucosal crypts (Figure 3), neutrophils within the muscularis propria, congestion of the subserosal vessels, and an increase in perivascular neutrophils (Figure 4).



Figure 2. Macroscopic appearance of the section of appendix.

The patient was started on antibiotics. The nasogastric tube was removed on the first postoperative day. Oral feeding was resumed after the passage of stool and gas. The patient was discharged from the hospital on the fifth postoperative day. The patient has had no signs or symptoms of intussusception at the 2-year follow-up.

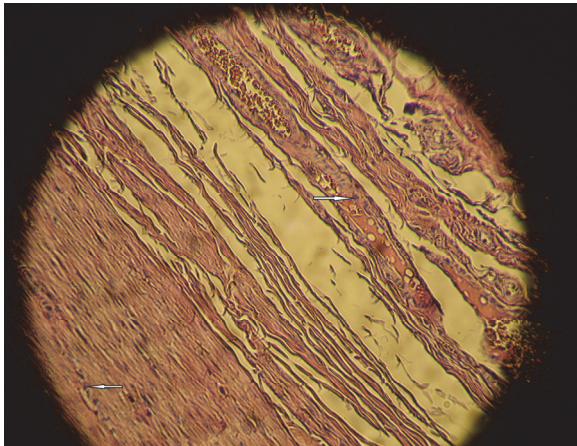


Figure 3. The appendix with neutrophil accumulation in the muscularis propria.

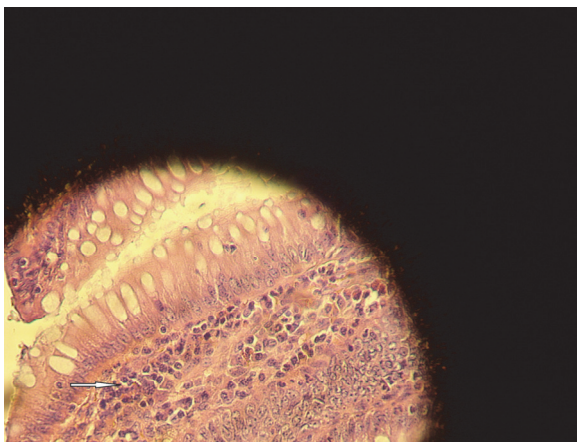


Figure 4. The appendix with neutrophil accumulation within the mucosa.

DISCUSSION

Intussusception can be suspected from the medical history and physical examination findings, including observation of Dance's sign (4). A rectal examination is helpful in children because the intussusceptum may be felt by the finger (4). The diagnosis often requires confirmation using diagnostic imaging, ultrasound is the imaging modality of choice for diagnosing or excluding intussusception because of its accuracy and lack of radiation (4). A target-like mass, usually around 3 cm in diameter, confirms the diagnosis; this doughnut shape is created by the hyperechoic central core of bowel and mesentery surrounded by the hypoechoic outer edematous bowel seen on transverse sonography or computed tomography (4). On longitudinal images, an intussusception resembles a sandwich (4).

An X-ray of the abdomen may show signs of intestinal obstruction or free intraperitoneal gas (4). The latter implies that the bowel has perforated. Some institutions use an air enema for diagnosis because this procedure can also be used to treat intussusception (4).

Intussusception is frequent in 3- to 24-month-old children with 80% of the cases occurring during the first 12 months of life (4, 5). The most common form is idiopathic (3). In older patients, there is usually a leading point such as Meckel's diverticulum, a polyp, Henoch-Schönlein vasculitis, or an ectopic pancreas (6). Intussusception is more common in well-nourished boys, with a 3-to-2 ratio of boys to girls (7).

Intussusception occurs most often in the spring, summer, and middle of winter (8). It needs to be diagnosed and treated urgently. Any delay in diagnosis can lead to intestinal necrosis. Typically, the patient is restless and cries intermittently, followed by restful periods. There is also abdominal colic, nausea, vomiting, and strawberry jelly-like feces (9). Abdominal colic is the most common finding (4).

Appendicitis is the most common reason for emergency abdominal surgery in children. Appendicitis occurs in about 1% of the population younger than 15 years of age (8). Pathophysiologically, fecal particles, infections, tumors, and indigestible foreign material can cause appendicitis (10). Obstruction of the appendiceal lumen occurs mostly due to lymphoid hyperplasia related to infections in young patients, whereas in older patients it is more commonly due to a fecalith (9). Less commonly, appendicitis can emerge due to parasites, foreign material, and neoplasia (11). Whatever the cause, patients with appendicitis have a similar clinical appearance, which starts with periumbilical pain localized to the right lower quadrant (8). Physical examination reveals pain on palpation, abdominal rigidity, and rebound tenderness (8).

Cases of invagination due to acute appendicitis are rare in the literature. In 1911, two cases of invagination that started with acute appendicitis were reported (12). A 21-year-old man with intussusception due to acute appendicitis was described in a study published in 1948 (13). Another case of a 22-month-old boy with perforated acute appendicitis due to intussusception was reported in 1954 (14). A 5-year-old girl with intussusception due to acute appendicitis was described in 1955 (15). Another 5-year-old patient with appendicitis, intussusception, and urethritis after Henoch-Schönlein purpura was identified (16).

In a study, six patients with co-occurring intussusception and appendicitis were reported: four were males aged 2 to 10 years; the other two were 18- and 65-year-old women (17). In another study, a 73-year-old woman with intussusception due to appendicitis was reported (18).

Our patient's age suggested the etiology of intussusception. During the operation, inspection and palpation of the ileum and cecum detected no pathology other than an inflamed, distended, edematous appendix.

Appendicitis can rarely lead to intussusception. When it occurs, the symptoms and signs are mainly those of intussusception. In such cases, a midline longitudinal

incision of the abdomen will enable visualization of most abdominal pathology.

Conversely, intussusception can rarely lead to appendicitis. In a study, a case of intussusception due to a Meckel's diverticulum was reported (19). Postoperatively, the patient had appendicitis, which subsequently perforated.

Researchers detected intussusception in a patient who was admitted with abdominal pain (20). At surgery, they recognized existing appendicitis during the reduction and performed an appendectomy. Histopathological examination revealed early-stage appendicitis.

In a study, an 18-year-old patient with cystic fibrosis who had repeated attacks of abdominal pain was identified (21). Authors performed a colonoscopy, detected an intussusception, and operated on the patient. Histopathological examination revealed appendicitis with chronic inflammation.

A patient with a history of Henoch-Schönlein purpura who presented with rapidly emerging signs and symptoms of acute appendicitis was described (22). Ultrasonography was performed, an intussusception was detected, and a laparotomy was performed. When the intussusception was reduced, a gangrenous acute appendicitis with no fecalith was observed.

Appendicitis can cause intussusception, while intussusception itself can lead to appendicitis. Therefore, in patients who undergo surgery for intussusception, the appendix should be evaluated carefully and an appendectomy performed if appendicitis is suspected. Furthermore, if the complaints persist in patients who have been treated for intussusception, an emergency appendectomy should be considered.

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