

Unexpected Complication Due to *Shigella flexneri* in a Child: Acute Appendicitis

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Abstract: Acute bacillary dysentery (shigellosis) occurs due to infections with shigella sp. The spectrum of acute shigellosis ranges from mild watery diarrhea to severe dysentery. Surgical complications of shigellosis described in children have included appendicitis with or without perforation, colonic perforation, intestinal obstruction, and intraabdominal abscess.

Acute appendicitis and infective diarrheal illness can be difficult to differentiate, particularly in children. Thus, patients must be followed up closely until the differentiation between bacterial gastroenteritis and acute appendicitis can be made. We report herein a 10-year-old boy who had acute appendicitis due to *Shigella flexneri*.

Key Words: Acute appendicitis, *Shigella flexneri*, gastroenteritis, children

Bir Çocukta *Shigella Flexneri*'ye bağlı beklenmedik Komplikasyon: Akut Apandisit

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Özet: Akut basilli dizanteri (şigelloz) *Shigella* sp infeksiyonu tarafından meydana getirilir. Akut şigelloz hafif sulu diyareden şiddetli dizanteriye kadar değişen bir spektrum gösterir. Akut şigellozun çocuklarda perforasyonlu veya perforasyonsuz apandisit, kolonik perforasyon, intestinal obstruksiyon ve intraabdominal absesi içine alan komplikasyonları tanımlanmıştır. Akut apandisit ile infektif diyare hastalıklarının ayırt edilmesi özellikle çocuklarda güç olabilir. Bu nedenle bakteriyel gastroenterit ile akut apandisit ayırımı yapılabilmeye kadara hastaların yakın takibi gerekir. Biz burada *Shigella flexneri*den dolayı akut apandisiti olan 10 yaşında bir erkek çocuğu takdim ettik.

Anahtar Sözcükler: Akut apandisit, *Shigella flexneri*, gastroenterit, çocuklar

Introduction

Acute bacillary dysentery (shigellosis) occurs due to infections with shigella sp. (1). The spectrum of acute shigellosis ranges from mild watery diarrhea to severe dysentery characterized by crampy abdominal pain, tenesmus, fever, dehydration, acid-base disturbances, and signs of systemic toxicity (1,2). Infections with shigella sp. are usually self-limited and confined to the mucosa of the distal ileum and colon (1,3).

Acute appendicitis coexistent with shigellosis has only sporadically been reported in the literature (1). Surgical complications of shigellosis described in children have included appendicitis with or without perforation, colonic perforation, intestinal obstruction, and intraabdominal abscess. Shigellosis coincident with appendicitis is very rare, particularly in children (3), with only a few reported cases (2).

Case Report

A 10-year-old boy admitted to our pediatric emergency department with a three-day history of bloody mucoid diarrhea, mild diffuse abdominal pain, and tenesmus. On admission, his vital signs were normal. There were no signs of dehydration. Abdominal examination revealed generalized mild abdominal pain with hyperactive bowel sounds

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and no signs of peritoneal irritation. The remainder of the examination revealed no abnormalities. A stool specimen revealed abundant neutrophils and mild erythrocytes, and was cultured for pathogenic bacteria. An initial diagnosis of gastroenteritis was made and conservative management was instituted until stool culture results were obtained. After 24 hours, he returned with complaints of persistent vomiting, fever, increased abdominal pain, and fatigue. Physical examination revealed a drowsy child with signs of moderate dehydration. The rectal temperature was 39°C, heart rate was 140/min, and blood pressure was 90/50 mm Hg. At this point, the abdomen was rigid with signs of peritoneal irritation and rebound tenderness at McBurney's point. Rectal examination revealed no mass.

Laboratory studies included hemoglobin of 14.5 g/dl, hematocrit 39% and white blood cell count 18000/mm³, with 69% segmented neutrophils. Urinalysis, serum electrolytes and hepatic and renal function tests were within normal limits. Abdominal ultrasound examination revealed a swollen, edematous appendix. The surgical consultant agreed with our decision of acute appendicitis, and prompt surgical exploration revealed an acutely inflamed appendix with gangrenous changes. Postoperatively, the patient was treated with ampicillin, gentamicin and clindamycin. *Shigella flexneri* susceptible to ampicillin was isolated from the stool and appendix material. Thus, the treatment was completed in 10 days.

Discussion

Acute appendicitis and infective diarrheal illness can be difficult to differentiate, particularly in children (4). Acute gastroenteritis-like disease (presenting as diffuse abdominal pain, diarrhea and vomiting) may be one of the initial signs of acute appendicitis (3). The diagnosis of appendicitis is difficult and ultimately depends on the physical examination. Laboratory studies may be of little value (5).

Acute bacillary dysentery (shigellosis) can clinically mimic acute appendicitis (2,5). In the reported cases

(1,6), it is difficult to determine whether the shigella was causally related to appendicitis or coincidental (3). Gilmore et al. (7) did not find any correlation between appendicitis and shigellosis in 444 patients.

Appendicitis associated with *Shigella sonnei* dysentery has been reported in the literature (8-11). White et al. (10) reported their experience with the association of *Shigella sonnei* infections and appendicitis. Twelve of 160 patients with acute appendicitis had positive appendiceal cultures for *Shigella sonnei*. The precise relationship between *Shigella sonnei* infection and appendicitis is not clear (4). White et al, (10) considered that mucosal edema precipitated appendiceal obstruction. Our patient's abdominal disease most likely resulted from shigella infestation of the colon and appendix. Because *Shigella flexneri* was isolated from the stool obtained at admission and involved the appendix culture, *Shigella flexneri* was thought to be responsible for the acute appendicitis.

In most reported cases of shigella appendicitis, the tentative diagnosis of shigella colitis undoubtedly delayed surgery, although the signs of acute appendicitis were present (3). Delay in diagnosing the surgical condition under these circumstances can lead to serious complications. Sanders et al. (8) described a case in which a presumptive diagnosis of shigella resulted in delayed removal of a perforated appendix. Tovar et al. (9) presented a further case in which gangrene and perforation were found at laparotomy, and White et al. (10) reported that 6 of 12 cases had generalized peritonitis at the time of operation. Phillips (11) described one patient who developed an appendix abscess after an 8-day delay in diagnosis. Haltalin (6) reported two cases of *Shigella flexneri* involving chronic peritonitis and colonic perforation.

In conclusion, particularly in children, acute appendicitis and infective diarrheal illness can be difficult to differentiate. Pediatricians and pediatric surgeons should thus be aware of the possibility of appendicitis and follow up closely until the differentiation between bacterial gastroenteritis and acute appendicitis can be made.

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