A 15-Year-Old Girl with Fever and Abdominal Pain

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Abstract

We present a case of a previously healthy 15-year-old girl with fever, right lower quadrant pain, and hip pain. Her history was notable for a recent laparoscopic appendectomy that was complicated by the development of intraabdominal abscesses. She reported normal bowel movements and good appetite on a regular diet, although she did endorse a recent 5-kg weight loss. Further investigation and examination revealed a diagnosis of Crohn’s disease with recurrent psoas muscle abscess as the etiology of her pain and fevers. Psoas abscess is a rare complication of Crohn’s disease, and vague presenting symptoms may complicate its diagnosis. This case demonstrates the importance of maintaining a broad differential diagnosis when treating a child presenting with abdominal pain and fever. [Pediatr Ann. 2015;44(3):e49-e52.]

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A 15-year-old girl was transferred from a referring institution with right lower quadrant pain, fever of 102°F, and mild hip pain. She denied diarrhea, vomiting, chest pain, nausea, rash, trauma, or travel. She was not taking any medications at the time. She reported being able to tolerate a regular diet, with good appetite, and having normal bowel movements. She had developed a 5-kg weight loss during previous hospitalizations, but gained weight appropriately while at home. Her history was significant for perforated appendicitis status postlaparoscopic appendectomy 5 months prior to presentation, complicated by intraabdominal abscesses on two occasions before this latest hospital admission. One abscess was drained during a repeat exploratory laparotomy, and the other was aspirated and treated with antimicrobials. She had been well for 2 weeks prior to onset of current symptoms. She was afebrile with the remainder of her vital signs stable on admission. Her examination was notable for healed surgical scars, right lower quadrant tenderness, and voluntary guarding.

A basic metabolic panel was notable for bicarbonate of 21 mEq/L, but was otherwise within normal limits. A complete blood count showed a white blood cell count of 5.3 k/uL and anemia with hemoglobin of 8.8 g/dL. Prothrombin time, international normalized ratio, and partial thromboplastin time were at upper limits of normal. Urine pregnancy test was negative. Erythrocyte sedimentation rate and C-reactive protein were elevated at 86 mm/h (normal 0-20 mm/h) and 73 mg/L (normal <5 mg/L), respectively.

A computed tomography scan (Figure 1 and Figure 2) showed a right psoas abscess measuring 2.8 cm × 5.9 cm, enlarged mesenteric lymph nodes, and thickening of the small bowel and colon with associated phlegmon. The patient was started on ceftriaxone and metronidazole overnight. On the subsequent day, the abscess was drained and sent for culture by the Interventional Radiology department. Pediatric Infectious Disease was consulted and antibiotics were changed to monotherapy with ampicillin-sulbactam. Laboratory results for cultures were positive for methicillin-susceptible Staphylococcus aureus (MSSA) and Clostridium perfringens, in addition to four strains of aerobic Gram-positive organisms. No Actinomyces, acid-fast bacilli, or fungi were seen on smear or cultures. Quantitative immunoglobulins were sent, which were within normal limits, and a tuberculin skin test was negative. Vaccine titers for rubeola immunoglobulin G (IgG) were positive, and hepatitis B surface antibody was reactive.

Hospital records from the patient’s previous institutions were obtained and reviewed. Three weeks prior to admission, the patient had an esophagogastroduodenoscopy (EGD) and colonoscopy. The EGD was normal. The colonoscopy showed normal rectum, sigmoid colon, and transverse colon. There was a small area of erythema/ulceration noted in the ascending colon, and friable, erythematous ulceration in the cecum. The terminal ileum could not be intubated. The biopsies showed large bowel mucosa with mild increase in chronic inflammatory cells in the cecum, ascending, transverse, descending, sigmoid colon, and rectum. Pathology from the removed appendix was consistent with acute inflammation.

The Pediatric Gastroenterology department was consulted at that time. The patient was made nil per os (nothing by mouth), placed on parenteral nutrition, and her care was transferred to the Gastroenterology service. The patient’s inflammatory markers improved, and she remained afebrile. Inflammatory bowel disease (IBD) serology was sent and returned highly positive for Saccharomyces cerevisiae immunoglobulin A antibody at more than 150 units and S. cerevisiae IgG antibody at 84.8 units. Neutrophil-specific antibodies were negative, and fecal calprotectin sent at that time was 730 mcg/g.

**DIAGNOSIS**  
**Crohn’s Disease**

The patient in this case was ultimately diagnosed with Crohn’s disease (CD). The diagnosis was based on imaging and endoscopic findings of small bowel and colonic inflammation with phlegmon, recurrent abdominal abscesses thought to be secondary to penetrating disease, and elevated anti-Saccharomyces cerevisiae antibody titers.

The Pediatric Surgery department was consulted, and the patient underwent an ileocecectomy because she was not a candidate for biologic therapies due to recurrent abscess.

The patient did well on total parenteral nutrition and intravenous antibiotics. She was discharged home in stable condition. Since discharge, she has been maintained on weekly methotrexate as well as remicade infusions.

**DISCUSSION**

CD is a form of IBD that typically presents with gastrointestinal inflam-
Inflammation with or without extraintestinal manifestations. The peak age of onset is between ages 15 and 30 years, and most affected individuals present with abdominal pain, diarrhea with or without blood, fever, weight loss, and fatigue. In CD, inflammation may be present anywhere along the alimentary tract, although the terminal ileum and colon are most commonly affected. Patients may also develop significant extraintestinal findings, including skin, liver, eye, and joint manifestations. Penetrating disease is also common, including fistulae and abscesses, leading to substantial complications. Perianal disease is also frequently seen in CD, with approximately 30% of patients having perianal tags, fissures, abscesses, or fistulæ.

Although 10% to 30% of individuals with CD may develop intraabdominal abscesses, the finding of psoas abscess in the setting of CD is exceedingly rare. In one retrospective study looking at the incidence of psoas abscess and CD across 9 years, three cases of psoas abscess were found amongst 312 patients with CD. The worldwide incidence of psoas abscess in the general population is 12 cases per year, although this is thought to be an underestimate given the vague presentation of the condition.

Psoas abscesses result from infection in the iliopsoas muscle compartment, and they may be primary or secondary in nature. A primary psoas abscess develops as a result of hematogenous spread, whereas a secondary psoas abscess results from direct spread from an adjacent structure. Anatomically, the psoas muscle is located in close proximity to the vertebral bodies, the abdominal aorta, the sigmoid colon, and the appendix—as well, an infection of any of these structures may spread to the iliopsoas compartment.
Typically, primary psoas abscesses are due to infection with a primary organism, whereas secondary abscesses are polymicrobial. The most common bacterial cause is MSSA; mycobacterium tuberculosis can also be a causative agent in regions where tuberculosis is common. Polymicrobial, enteric Gram-negative organisms and anaerobes are often found on culture. In this case, the patient’s culture grew multiple organisms, including MSSA, C. perfringens, and other aerobic organisms.

Patients with psoas abscess can present with pain, most commonly in the back, flank, or abdomen, with or without radiation to the hip. Fever and limp may also be seen, but the triad of fever, back pain, and limp is present in only 30% of patients ultimately found to have psoas abscess. Additional findings may include malaise, weight loss, and a palpable mass in the groin. The most optimal imaging study to diagnose psoas abscess is computed tomography; plain films and ultrasound have low sensitivity. Laboratory studies also play a role in the diagnosis of psoas abscess. The most common laboratory finding is leukocytosis.

**CONCLUSION**

Psoas abscess is an exceedingly uncommon occurrence, with a reported 12 new cases per year. Although intra-abdominal abscesses may be seen frequently in Crohn’s disease, psoas abscess in the absence of other gastrointestinal symptoms is a rare first presentation of the disease.

**REFERENCES**