CR

CASE REPORT

E.P.C.M.S.

Sigmoid Abscess, An Unusual Sequela of Football-Related Abdominal Surgery

Zsolt Fodor, D.O., PGY3
Susan Watts, Ph.D.
Texas Tech University Health Sciences Center

BACKGROUND INFORMATION

Intra-abdominal abscess (IAA) resulting from blunt abdominal trauma (BAT) is an unusual condition in the medical literature, particularly as a result of sports activity. High energy mechanism injuries, such as motor vehicle collisions, are responsible for most of the complications of BAT. Solid organs are more commonly injured than hollow organs, and of the latter, small bowel injuries are the most frequently implicated. A thorough literature search yielded only a handful of documented cases of sigmoid colon involvement due to BAT and no previous case report of a sports-related injury resulting in the formation of a frank sigmoid abscess. We report the case of a young adult male, who sustained BAT during his regular football practice, and as a result of his injury, he developed a large sigmoid abscess that necessitated hemicolectomy.

CASE PRESENTATION

A previously healthy 18-year-old male presented to the Emergency Department (ED) at Thomason Hospital complaining of abdominal pain, fever, vomiting and diarrhea. His abdominal pain began two weeks prior to arrival, and it was sharp, severe, non-radiating with localization to the left lower quadrant. The pain was intermittent at the onset and later became constant. His pain was exacerbated by micturition and movements and improved post voiding, post defecation, and at rest. He had history of fever on and off in past 10 days, and 4 episodes of diarrhea every day in the past 4 days. Just prior to his ED presentation, he vomited at home. In addition, he complained of frequent episodes of diaphoresis and dizziness, weight loss, poor appetite and urinary urgency. He recalled sustaining blunt trauma to his abdomen during a football practice two weeks prior to his presentation. At that time he did not seek medical attention. Since then his abdominal pain gradually worsened. Ten days prior to admission he went to the ED for an evaluation. At that time, his laboratory studies were normal, and after symptomatic treatment, he was discharged home with the diagnosis of abdominal muscle strain.

The physical examination revealed a well-developed, cooperative young male in no distress. He was 6'4" tall and weighed 167 kg. His vital signs were: T: 38.2°C, BP: 123/64 mmHg, HR: 116 bpm, RR: 24 bpm, SaO2: 96% on RA. The head and neck examination was normal, his mucosal membranes were moist and pink. Lungs were clear to auscultation bilaterally, and the cardiovascular exam was only significant for tachycardia. He had strong distal pulses bilaterally. His abdomen was soft and non-distended, but with decreased bowel sounds. He exhibited no rebound tenderness or rigidity, but was very tender in the left periumbilical and left lower quadrant areas. The left periumbilical area was also notably prominent on palpation. The right side of the abdomen was only minimally tender. There were no external signs of abdominal trauma, localized skin lesions or previous abdominal surgery. He was not tender on the rectal examination, and his stool was grossly heme negative. The genitourinary examination was normal. The musculoskeletal exam was unremarkable but his skin was hot and diaphoretic.

In the emergency department, his initial resuscitation began with intravenous (IV) normal saline (NS) hydration, pain and nausea management with IV administration of Morphine 4 mg and Phenergan 12.5 mg, respectively. His lab results were: WBC: 20,500/mm^3 (S:81%, B:10%), Hb: 13.5 mg/dL, Plt: 221,000/mm^3. CMP, lipase and UA studies were normal, and the stool guaiac was negative. CT scan of the abdomen and pelvis revealed a 12 cm walled off structure with gas-fluid collection and fat stranding just above the urinary bladder (Figure 1). General Surgery was consulted, and after additional fluid boluses and IV antibiotics treatment with Invanz and Flagyl, he was taken to the OR for sigmoid colectomy, colostomy, and I&D of abscess. Patient did have a 20 cm diameter intra-abdominal abscess extending from his gangrenous and perforated sigmoid colon to the mesentery and bladder wall. Culture of the abscess yielded Proteus mirabilis & Bacteroides fragilis species, that were sensitive to Flagyl and Ceftin. Patient improved and was discharged home on hospital day #7 on oral Flagyl and Levaquin.

DISCUSSION

Football-related injuries are often described in the medical literature and most frequently involve the musculoskeletal system in forms of strains, sprains, contusions and fractures[1]. More severe traumatic brain or cervical spine injuries affecting athletes are well-publicized but less prevalent. In the abdomen, the spleen is the most frequently injured organ followed by the liver and the intestines[2]. Immediate life threatening intra-abdominal vascular injuries are extremely rare during sports activities.

Less commonly, blunt traumatic forces may progress to abscess formation in the injured organ [3,4,5,6,7,8]. When blunt trauma is implicated in IAA formation, it is overwhelmingly due to high energy forces, such as motor vehicle or industrial accidents [2], and affect solid intra-abdominal organs more frequently than hollow organs [8,9,10]. The most often injured hollow organ is the small intestine [12,13,14,15,16], and resulting abscess formation has

Continued on page 13

also been previously described [3,8,11].

BAT may damage the intestines via compression or deceleration forces. During compression forces the intraluminal pressure of the bowel suddenly increases or the fluid-filled bowel gets crushed against solid structures, such as the spine. Injuries can range from stretching and crushing of the bowel wall to full-thickness perforation. Deceleration forces cause stretching and tearing of bowel loops at the points of fixation, such as the ligament of Treitz, ileocecal valve, and phrenocolic ligament. Injuries may also include shearing of the mesentery, or loss of vascular supply to segments of gut. Once the integrity of the bowel is compromised, abscess formation may ensue.

The proposed mechanism of colon injury is similar to that of small intestine but occurs less frequently. Our thorough literature search yielded only a handful of documented cases of sigmoid injury due to BAT [17,18,19,20,21,22] and no previous case report of a sports-related injury resulting in the formation of a frank sigmoid abscess. Our patient was not diagnosed during his initial ER visit four days after his abdominal trauma, probably due to the low index of suspicion based on the mechanism of injury. In addition, early bowel injury may present with an intermittent pattern of colicky pain, as opposed to solid organ injury, which typically presents with steady severe abdominal pain and rigidity[20]. Our patient initially presented with a relatively mild and intermittent pain pattern, which progressively worsened over the next ten days. As time progressed, the characteristics of his abdominal pain became consistent with a more serious intra-abdominal process. CT imaging, with its sensitivity, specificity and accuracy for bowel trauma[23] , was obtained to make the diagnosis.

REFERENCES

1. Comstock RD: Sports-related injuries among high school athletes - United States, 2005-06 school year CDC/MMWR 2006;55(38):1037-40.

2. Marx JA and Isenhour J: Abdominal trauma. In: Marx JA, Hockberger RS, et al. (eds.) Rosen's emergency medicine: concepts and clinical practice. 6th ed. Mosby-Elsevier; 2006:489-514.

3. Watts DD and Fakhry SM: Incidence of hollow viscus injury in blunt trauma: an analysis from 275,557 trauma admissions from the EAST Multi-Institutional Trial. J Trauma 2003;54:289-93.

4. Ursic CM, Shah SV, Kaviani A: Neck abscess after blunt cervical trauma. J Trauma 2001;51:146-8.

5. Selbst SM, Fein JA, Friday J, et al.: Retropharyngeal abscess after blunt trauma in an adolescent. Ped Em Care 1998;14(6):406-8.

6. Gregory MW and Jacobsen WM: Closed blunt chest trauma causing mediastinal abscess. J Trauma 1996;41(5):899-901.

7. Boszczyk BM, Krause P, Bolay H, et al.: Spinal epidural abscess following blunt pelvic trauma. Eur Spine J 2000;9(1):80-4.

8. Goins WA, Rodriguez A, Joshi M, Jacobs D: Intra-abdominal abscess after blunt abdominal trauma. Ann Surg 1990;212(1):60-5.

9. Sands M, Page D, Brown RB: Splenic abscess following nonoperative management of splenic rupture. J Pediatr Surg 1986;21(10):900-1.

10. Abdel-Haq NM, Chearskul P, Salimnia H, Asmar BI: Clostridial liver abscess following blunt abdominal trauma: case report and review of literature. Scand J Infect Dis 2007;39(8):734-7.

11. Schimpl G, Schmidt B, Sauer H: Isolated bowel injury in blunt abdominal trauma in childhood. Eur J Ped Surg 1992;2(6):341-4.

12. Rifat SF and Gilvydis RP: Blunt abdominal trauma in sports. Cur Sports Med Rep 2003;2(2):93-7.

13. Houshian S: Traumatic duodenal rupture in a soccer player. Br J Sports Med 2000;34:218-219.

14. Murphy CP and Drez D Jr.: Jejunal rupture in a football player. Am J Sports Med 1987;15(2):184-5.

15. Sandiford NA, Sutcliffe RP, Khawaja HT: Jejunal transection after blunt abdominal trauma: a report of two cases. Em Med J 2006;23:e55.

16. Munshi IA, DiRocco JD, Jhachi G: Isolated jejunal perforation after blunt thoracoabdominal trauma. J Emerg Med 2006;30(4):393-5.

17. William MD, Watts DD, Fakhry SM: Colon injury after blunt abdominal trauma: results of the EAST Multi-Institutional Hollow Viscus Injury Study. J Trauma 2003;55:906-12.

18. Andreya S, Kalicke T, Hopf KF, et al.: Sigmoid colon perforation with local peritonitis caused by indirect trauma - case report and review of literature. Unfallchirurg 2003;106(5)424-6.

19. Dutson SCM: Transverse colon rupture in a young footballer. Br J Sports Med 2006;40:e6.

20. Rood LK: Blunt colon injury sustained during a kickboxing match. J Emerg Med 2007;32(2):187-9.

21. Yin WY, Gueng M, Huang S, et al.: Acute colonic intramural hematoma due to blunt abdominal trauma. Int Surg 2000;85:51-4.

22. Ho YH and Pritchett CJ: Blunt abdominal trauma causing a "degloving injury" to the colon. Injury 1990;21:119-20.

23. Uppot RN and Wills JS. Bowel, Trauma. eMedicine; 2005.

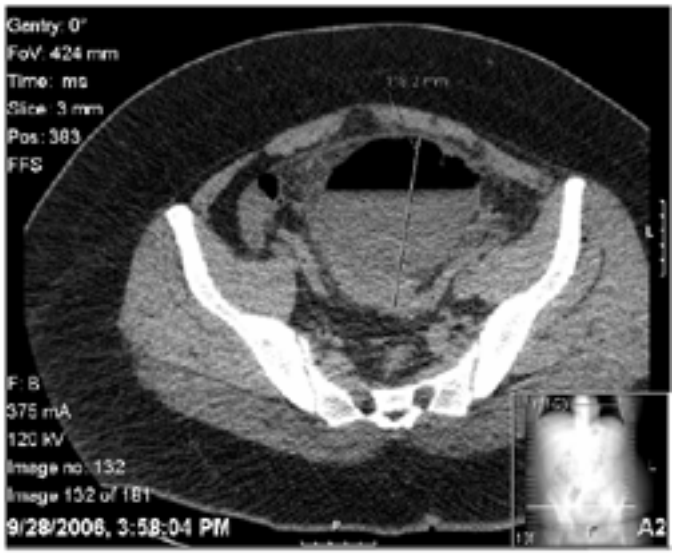

Figure 1. CT scan of the abdomen and pelvis at the level just above the urinary bladder shows a 11.8 cm walled off structure with gas-fluid collection and fat stranding.

Zsolt Fodor, D.O., PGY3, Department of Emergency Medicine, Texas Tech University Health Sciences Center, El Paso, Texas.

Susan Watts, Ph.D., Department of Emergency Medicine, Texas Tech University Health Sciences Center, El Paso, Texas.