PYOCELE OF THE SCROTUM: A CONSEQUENCE OF SPONTANEOUS BACTERIAL PERITONITIS

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ABSTRACT

To our knowledge pyocele of the scrotum after spontaneous bacterial peritonitis has not been reported previously. We describe this unusual condition, and discuss diagnosis, pathophysiology and treatment.

KEY WORDS: peritonitis, scrotum, suppuration, ascites, orchiectomy

Pyocele is a well recognized complication of perforated appendix, epididymo-orchitis and trauma. Pyocele occurs most often after epididymo-orchitis and least often after perforated appendix. Diagnosis can be difficult and the condition may be present for a long period before diagnosis. We describe clinical and pathological findings in a case of pyocele of the scrotum following spontaneous bacterial peritonitis. This unusual condition most likely arose due to contiguous spread of intraperitoneal bacteria to the scrotum via a patent processus vaginalis. Spontaneous bacterial peritonitis is an acute bacterial peritonitis that develops in cirrhotic patients with ascites and no obvious primary source of infection. Spontaneous bacterial peritonitis may occur with minimal peritoneal symptoms and sometimes only causes worsening jaundice or encephalopathy. To our knowledge it has not been reported previously in association with pyocele of the scrotum.

CASE REPORT

A 63-year-old white man had end stage liver disease secondary to hepatitis C. After a rapid clinical decline he presented elsewhere with obtundation, massive ascites and fever. He was started on 1,000 mg. cefotetan disodium intravenously every 12 hours for 10 days and then 500 mg. oral cefuroxime twice daily for another 3 days before transfer to our institution. Analysis of paracentesis fluid was consistent with peritonitis but cultures were negative, presumably due to early antimicrobial treatment. The patient improved clinically. We do not know if an asymptomatic hydrocele or indirect hernia was present at that time. Four days after paracentesis an enlarged inflamed right hemiscrotum was noted and presumptive diagnosis was right epididymitis. Urine cultures were negative. Gray scale with Doppler ultrasonography showed a paratesticular fluid collection and increased right testicular flow consistent with orchitis. After 13 days the patient was transferred to our institution for liver transplantation.

Physical examination revealed a tender enlarged right hemiscrotum with a tense mass that transmitted light, which is consistent with hydrocele. White blood count was 10,200 units per dl. (normal 4,300 to 10,000). The patient received 400 mg. ciprofloxacin intravenously every 12 hours. Repeat ultrasound showed a right hydrocele with increased internal echoes and a thickened wall (fig. 1). Presumptive diagnosis was pyocele and approximately 60 cc of frank pus were drained immediately. Right orchiectomy was performed with the patient under local anesthesia via an inguinal-scrotal approach with double ligation of the spermatic cord at the external ring. The wound was closed loosely over a Penrose drain. Histological examination showed marked peri-testicular granulation tissue and reactive changes of the tunica albuginea consistent with pyocele (fig. 2). Postoperatively 2 gm. ceftriaxone were accepted for publication July 8, 1994.
PYOCELE OF SCROTUM

To our knowledge our case represents a previously undescribed etiology for pyocele of the scrotum. Although well recognized clinically, only 10 cases of pyocele were reported since 1966. Causes included epididymo-orchitis, trauma and pelvic abscess secondary to appendicitis. Epididymo-orchitis reportedly caused pyocele by compromising the testicular blood supply, leading to infected testicular infarction that ruptured through the tunica albuginea to form the pyocele. Trauma caused pyocele when bacteria were introduced through breaks in the skin into a reactive hydrocele. However, after intra-abdominal infection the mechanism of pyocele formation is thought to be tracking of bacteria from the abdomen via a patent processus vaginalis into the scrotum. Evidence supporting the possible migration of intra-abdominal contents into the scrotum is provided by common cases of indirect hernia into the scrotum and rare cases of migration of intra-abdominal ventricle-peritoneal shunts into the scrotum.

Intra-abdominal infection is the least common cause of pyocele, comprising only 2 of the 10 reported cases. In our case the presence of a patent processus vaginalis was proved by continued ascites leakage at the spermatic cord stump. The only detectable infection was spontaneous bacterial peritonitis, consistent with the clinical picture and new onset of ascites. Declining clinical status led to administration of broad-spectrum antimicrobials before the peritoneal tap, which presumably sterilized the peritoneal fluid culture, making it impossible to compare the spontaneous bacterial peritonitis organisms and the pyocele organisms. Diagnosis of pyocele was suggested by scrotal ultrasonography, specifically the presence of internal echoes within the fluid collection. Pyoceles can have several sonographic features that distinguish them from simple hydroceles, including internal echoes representing cellular debris, septae or loculations, fluid/ fluid levels representing a hydrocele/pyocele interface and even gas in cases of gas-forming organisms.

The treatment of pyocele is prompt surgical drainage and orchieectomy accompanied by appropriate antimicrobials. The need for orchieectomy is suggested by the experience of Slavis et al, who treated 2 patients with pyocele by drainage alone only to perform subsequent orchiectomy after necrotic testicular tissue extruded from the wound. Pathological analysis of the excised testicle in our case and the later realization that the pyocele was caused by descending abdominal infection imply that orchiectomy may not be required for treatment of every pyocele. Since most pyoceles occur after epididymitis, the surgeon must exclude testicular infection in each case of pyocele before deciding not to elect orchiectomy.

Our experience suggests that a patent processus vaginalis should be ruled out intraoperatively in all cases of pyocele and that high ligation of the processus should be performed, if necessary. Experience with other patients who presented with pyocele after intra-abdominal infection indicates that the clinician must rule out occult intra-abdominal infection as a cause of pyocele. In the 2 previously described cases of pyocele after appendicitis, such infection was ruled out by computed tomography and a barium enema.

In summary, we describe clinical findings in a patient with pyocele of the scrotum. Pathophysiology appeared to be seeding from spontaneous bacterial peritonitis via a patent processus vaginalis. Scrotal ultrasonography proved helpful for diagnosis. Appropriate antimicrobials and orchiectomy are recommended although orchiectomy may not be required in all cases.

Dr. Larry True provided and analyzed the photomicrograph.

REFERENCES


given intravenously every 24 hours. Intraoperative cultures yielded Escherichia coli sensitive to cefotetan, ciprofloxacin and ceftriaxone.

Convalescence was remarkable for drainage of approximately 1 to 2 l. daily of ascites fluid from the cord stump. On examination leakage was noted from minuscule needle sized holes in the patent processus vaginalis. The wound was managed expectantly in an attempt to avoid repeat anesthesia. Because of protein losses via the ascitic leak, serum albumin decreased to 2.2 gm/dl (normal 3.5 to 5.2) despite maximal oral nutritional support, and total parenteral nutrition was instituted. On postoperative day 25 we performed reexploration, and closed the inguinal canal and scrotal wound with multiple layers to stop the leakage. Convalescence was uneventful and the patient received a successful liver transplant.

FIG. 2. Photomicrograph shows section of tunica vaginalis with prominent inflammatory cell infiltrate with edema, hemorrhage and proliferation of capillaries. Subjacent testicular stroma lacks significant inflammation. H & E, reduced from ×150.