CASE REPORT

Splenic Abscess Due to Salmonella Infection

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Abstract:
A rare case of splenic abscess due to salmonella infection in a teen-age non-Qatari male was treated unsuccessfully by antibiotic therapy and percutaneous drainage. The patient recovered uneventfully after the spleen was removed laparoscopically.

Keywords: Splenic abscess, salmonella infection

Introduction:
The first account of splenic abscess comes from the writings of Hippocrates. Grand-Moursel is credited with the first detailed description of the disease with his case series of 57 patients published in 1885.

Relatively rare, splenic abscess is difficult to diagnosis and often fatal if left untreated. The disease is thought to be increasing in frequency because of the growing number of immunologically compromised persons in the community.

Salmonella infection of the spleen is a rare cause of splenic abscess and is usually associated with typhoid fever, sickle cell disease, immunodeficiency, or exposure to infected poultry or other livestock. Hematogenous seeding was the cause of Salmonella abscess in a patient with typhoid fever at the beginning of the 20th century.

Case Report:
A previously healthy 14-year-old American male with a history of eight days of pain in the left shoulder, fever, and left upper quadrant abdominal pain was transferred to our hospital. He had been born in the USA and had lived there except for the previous week when he went to Pakistan, the origin of his parents.

Three days before presenting at our hospital, he had been seen at another hospital where he was treated for pleurisy with oral amoxicillin/clavulanate potassium (Augmentin: GlaxoSmith Kline). As his pain increased he presented at the same hospital with complaints of fever, sharp left upper quadrant abdominal pain, nausea, and anorexia and was referred to A/E Department of our hospital.

Abdominal computed tomography (CT) showed a moderate amount of fluid in the pelvis and a 11 x 8 cm. splenic cyst with an intact cell wall. The appendix did not appear to be inflamed.

On physical examination, the patient appeared ill and severely uncomfortable, lying still in the bed. His abdomen was diffusely tender and did not localize. His rectal and pelvic examinations were unremarkable. The patient’s white blood cell count was 44,000. An Echinococcus antibody test was negative. Urinalysis was positive for white blood cells only. Serum amylase and lipase levels were within normal limits.

In view of the patient’s condition, CT-guided percutaneous aspiration of the splenic abscess was performed under local anesthesia with 2% lignocaine using a long 16 gauge needle. About 1100 cc of brownish pus was aspirated, so a pigtail catheter was inserted and kept in place inside the abscess cavity.

The pus sample was cultured for aerobic and anaerobic bacteria. Aerobic and anaerobic blood cultures were also made on the day of admission and on day five. The infectious disease team was consulted and a combination of cefotaxime and metronidazole were administered in appropriate dosages pending the availability of antibiotic susceptibility reports.

Non-lactose fermenting colonies were isolated from the aspirated pus and from the blood sample collected at admission and were identified as a species of Salmonella Group D sensitive to amikacin and septrin and resistant to ampicillin, cefotaxime, gentamicin, chloramphenicol and tetracycline. Consequently cefotaxime was discontinued and therapy continued with a combination of amikacin and intravenous septrin.
Laparotomy:

The condition of the patient continued to deteriorate and so an exploratory laparotomy was performed using two 5-mm ports and two 10-mm ports, including a periumbilical camera, a port in the left mid-clavicular line, a port in the right mid-clavicular line, and a port in the upper mid-abdomen. A moderate amount of purulent fluid was observed throughout the peritoneal cavity; the appendix appeared normal but was involved with the peritoneal fluid.

The entire surface of the spleen could be visualized and there were extensive adhesions around the spleen. Almost the whole of the spleen was involved with an abscess that contained a large amount of turbid fluid. Samples of peritoneal fluid were taken and sent for microbiological examination before the peritoneal cavity was irrigated with saline. Laparoscopic splenectomy was done, as the remaining splenic tissue was too small to permit segmental splenectomy. A 10-mm J-vac drain was placed in the left subphrenic space at the splenic bed.

Postoperative Course:

The J-vac drain was removed five days after operation and the patient was sent home with a normal white blood cell count and able to eat a normal diet.

The pathology of the cyst wall was notable for acute inflammatory changes consistent with an abscess. The cyst wall had no epithelial lining (infected true pseudocyst).

Discussion:

The spleen belongs to the reticuloendothelial system and serves as an efficient filter of certain blood-borne organisms. Despite this unique function, splenic abscess remains an infrequent finding when abnormalities in splenic architecture and immune function occur. Splenic abscess is a rare entity with an incidence ranging from 0.14 to 0.7 in autopsy studies. Clinically overt cases are much rarer. Cohen et al. referred to 227 reported cases from an extensive review of the world literature from the beginning of this century to 1988. Another review published by Faught et al. in 1989 increased this number to 375 cases. This implies that the diagnosis of splenic abscess is becoming more frequent with the advent of modern imaging techniques.

However, the syndrome still poses a diagnostic challenge to the emergency physician. In our cases, one of the four was misdiagnosed and the diagnoses in the other three were delayed for more than 48 hours in the ED. The diagnosis of splenic abscess often is not considered because of its rarity and its misleading clinical features, as well as the presence of predisposing conditions that obscure its clinical presentation. Untreated splenic abscess is fatal but with timely surgical and antibiotic therapy the mortality rate decreases from 100 to 10. The high mortality associated with a delayed diagnosis emphasizes the need for prompt detection and early therapy.

Cysts of the spleen, which are common, can be congenital or the result of trauma or an abscess. Salmonella infection is a rare but reported cause of splenic cysts, usually pseudocysts. The vast majority of these cases occur in patients with sickle cell disease, typhoid fever, or immuno-compromised status. Rarely, these cases occur in people who work closely with poultry or turtles.

Even after consultation with the infectious disease division at our institution, we were unable to determine a specific etiology for this child’s infection. It is possible that the patient was a chronic GI carrier of Salmonella. The absence of an epithelial lining of the cyst indicates that the cyst was either a superinfected pseudocyst or a primary abscess.

Salmonella infection of the spleen associated with generalized peritonitis is an exceptionally rare presentation of Salmonella infection. When the diagnosis of a splenic abscess infected with Salmonella has been made pre-operatively; the literature has advocated conservative treatment consisting of percutaneous drainage and intravenous antibiotics, with reasonable success. In our patient although the diagnosis was established pre-operatively, the patient did not improve on percutaneous aspiration and antibiotics.

Conclusion:

Cysts of the spleen, which are common, can be congenital or the result of trauma or an abscess. Salmonella infection is a rare but reported cause of splenic abscess. Percutaneous drainage together with antibiotics may treat the condition in most cases. If this approach fails laparoscopic splenectomy or segmental splenectomy is the right option.

It is possible, however, that if the cyst wall had contained an epithelial lining, thus representing an infection of a true cyst, the patient might not have responded to partial cystectomy and might have required complete excision of the cyst wall. We therefore recommend an initial operative approach in the management of these rare patients that can most likely be performed with minimally invasive techniques and without sacrificing the spleen.

We recommend initial partial cystectomy and drainage. Pathologic examination of the cyst wall is important to determine whether the lesion is a true cyst, a pseudocyst, or an abscess. If this approach fails, the clinician should infer that the splenic lesion represents an infection of a true cyst and requires re-excision.
References:

6. Kumar KHR; Kate V; Ananthakrishnan N; Sharma AK; Kanungo R; Badrinath S; K H Ravikumar; Reba Kanungo. Splenic abscess due to salmonella infection. Indian Journal of Medical Microbiology. 1996 Apr; 14(2): 109-11.