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Isolated splenic abscess due to salmonella enteritidis: One case report and a review of the literature

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Abstract

Splenic Abscess (SA) is a rare infectious disease with atypical clinical manifestations, which easily delays diagnosis and treatment. In recent years, the incidence of SA has increased due to the increase in the number of immunocompromised patients, such as the increase in organ transplantation patients, the increase in the incidence of AIDS and the massive use of immunosuppressive agents and hormones. Salmonella, a Gram-negative enteric bacillus, is a well-known common cause of enteritis, but extraintestinal manifestations are very rare. In this paper, we report a case of solitary splenic abscess caused by Salmonella enterica.

Keywords

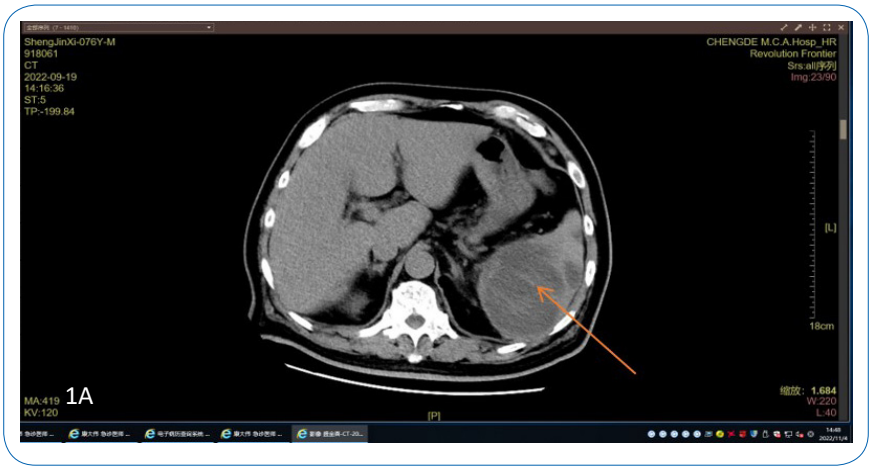
Abscess; Salmonella infection; Spleen disease.

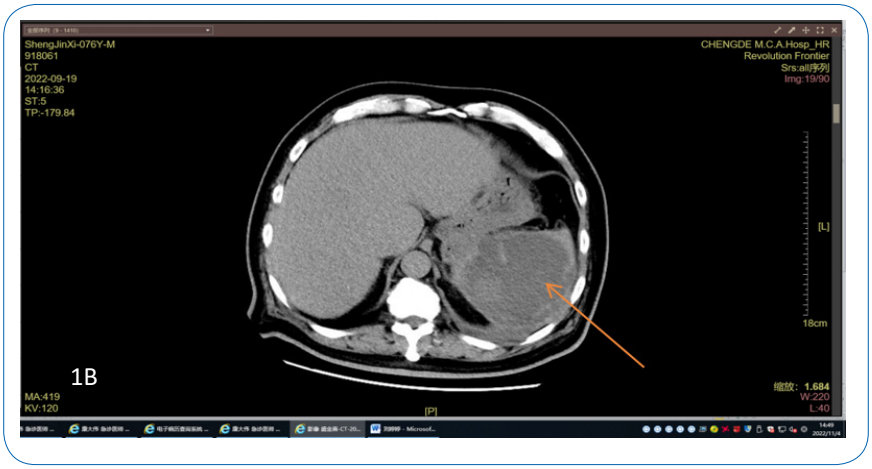
Case Presentation

A 76-year-old male presented with epigastric pain that worsened with chills and fever. Twenty days ago, the patient had left upper abdominal pain without obvious inducement, showing intermittent dull pain, radiating to the back, which was tolerable, without nausea, vomiting, fever, cough, expectoration, chest tightness, shortness of breath or dyspnea, and was not diagnosed and treated. Four days ago, he developed left upper abdominal pain again, which worsened than before, with chills and fever, body temperature up to 38.5°C, accompanied by nausea and vomiting, vomitus as gastric contents, no abdominal distension, no hematochezia, diarrhea, melena, with frequent urination, no urgency, dysuria and dysuria, cough, sputum, shortness of breath, chest pain, and chest tightness, and he visited the Sixth Hospital of Chengde City and was diagnosed with «fever of unknown cause and abnormal spleen of unknown cause.» He was referred to the Affiliated Hospital of Chengde Medical College to further identify the cause. The patient had a past medical history of coronary atherosclerotic heart disease, heart failure, cardiac function grade III, valvular heart disease, hypertension. Cardiac ultrasound showed no vegetation formation, without bacterial endo-

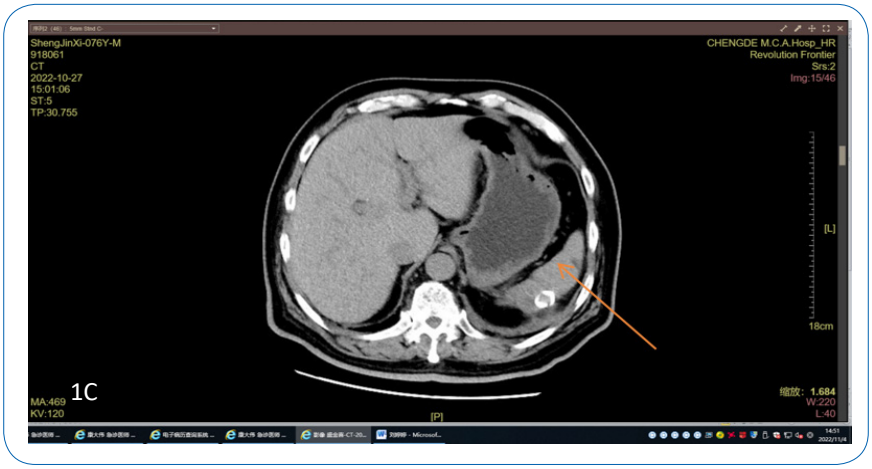
carditis. Physical examination: T: 36.4℃, P: 52 times/min, R: 16 times/min, BP: 126/77 mmHg, clear mind, spirited, reasonable questions and answers, cooperative physical examination, no pale conjunctiva, no cyanosis of lips, soft neck without resistance, clear breath sounds in both lungs, no rales; regular rhythm, no murmur. Abdomen was flat, respiratory movement was normal, no umbilical hernia, abdominal wall varicose veins, no rash, pigmentation, no gastrointestinal type or peristaltic waves. Abdominal wall was soft, left upper quadrant tenderness, no rebound tenderness, muscle tension, and no palpable mass. Liver and spleen were not palpable. There was no tenderness in the gallbladder area and Murphy 's sign was negative. The kidneys were not palpable, and there was no tenderness in the renal area or ureteral point. Vibrating water sounds were negative. The border of hepatic dullness was normal, there was no percussion pain in the hepatic and renal areas, and shifting dullness was negative. Bowel sounds were normal. Auxiliary examination: 2022-9-16, 2022-9-17, 2022-9-18 Chengde Sixth Hospital novel coronavirus nucleic acid detection: negative. Echocardiography (September 19, 2022-19, our hospital, examination number US22252943): consistent with rheumatic heart disease changes, mitral stenosis (moderate) with regurgitation (mild), tricuspid regurgitation (mild +), aortic valve calcification with regurgitation (mild), rapid aortic valve velocity, left atrial enlargement, pulmonary hypertension, widened ascending aorta, widened main pulmonary artery. Abdomen + pelvic CT plain scan and enhancement (September 19, 2022-19, our hospital, examination number 918061): spleen lesions, possible abscess (Figure 1A,1B), combined with clinical and laboratory tests; prostate enlargement and calcification. Emergency laboratory tests (September 19, 2020, our hospital) showed: blood routine (emergency): white blood cell count 14.65 x 10^9/L, neutrophil ratio 77.80%, lymphocyte percentage 11.10%, absolute neutrophil count 11.39 x 10^9/L, liver function (emergency department of this department): albumin 32.11 g/L, total bilirubin 44.23 umol/L, unconjugated bilirubin 21.59 umol/L, alanine aminotransferase 111.00 U/L, aspartate aminotransferase 121.38 U/L, gamma glutamyl transferase 442.92 U/L, alkaline phosphatase 582.07 U/L, cholinesterase 2022.82 U/L, serum total bile acid 18.40 umol/L, and the remaining biochemical tests were normal. Diagnosis of splenic abscess. After admission, splenic abscess puncture and catheterization were performed under emergency local anesthesia, and the bacteria were diagnosed as enterogenous Salmonella after drainage fluid thick juice culture. He was hospitalized for 10 days and discharged with improvement.

Pretherapy (September 19, 2020)





Post-treatment (October 27, 2020)



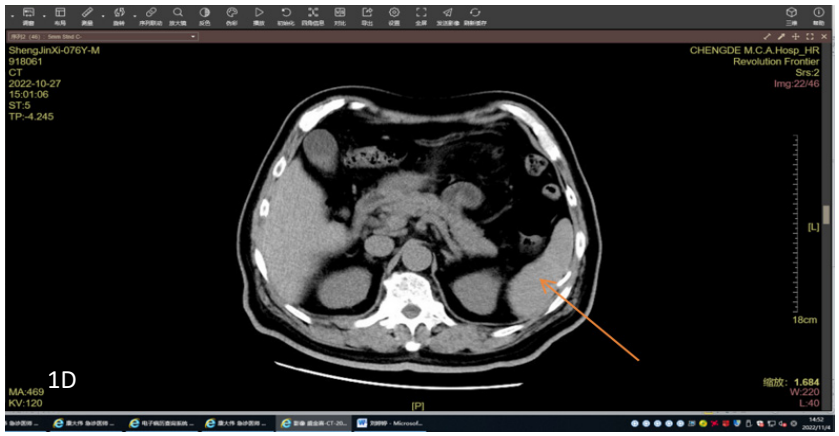


Figure 1C,D: Abdomen + pelvic CT plain scan and enhancement results of the reviewed patient after discharge.(October 27, 2020)

Discussion

The first case of splenic abscess was reported by Grand and Mousel in 1885. The spleen is the center of the body's phagocytic activity against microorganisms and has a strong resistance to local infections, which are generally less likely to occur. Since the use of antibiotics, splenic abscesses have become more rare. Splenic abscesses have a low morbidity and a high mortality rate [1,2]. Because its symptoms and signs are nonspecific, diagnosis and treatment are easily delayed. The common clinical causes of splenic

abscesses are: (1) metastatic abscesses, which mostly occur in chronic diseases, immunodeficiency, localized splenic lesions or incoming sepsis or septicemia, which can reduce the intrinsic defenses of the spleen and cause abscesses, or they can occur as a secondary infection on the basis of splenic cysts; (2) blunt or penetrating injuries to the spleen (with secondary infection of splenic hematomas), mild infarction of the spleen (various hemoglobinopathies, such as sickle cell anemia, etc.), or other diseases (malaria, echinococcosis); (3) direct invasion of the spleen by septic infection of adjacent organs. Also splenic abscesses can complicate or penetrate the diaphragm to form subdiaphragmatic abscesses and abscess thorax; rupture into the peritoneal cavity to form peritonitis, intestinal abscess and gastric colon adhesion [2-8].

In the present case, the patient presented with fever of unknown origin and was found to have pressure pain in the left upper abdomen on examination, and a splenic abscess was suspected by complete abdominal ultrasound, and the diagnosis was later confirmed by complete abdominal CT. After detailed examination, no other foci of infection other than the spleen were found, so the diagnosis of isolated splenic abscess was met. Bacteriological examination revealed that Salmonella was a Gram-negative enteric bacillus, and was discharged after percutaneous drainage and antibiotic treatment.

In the abdominal anatomical relationship, the spleen is adjacent to the colonic spleen area, and Salmonella of intestinal origin can spread to the spleen by direct dissemination or reach the spleen through blood circulation, causing spleen infection. Further analysis of the causes may be twofold: one, the patient was older, weaker and less responsive. Second, drug abuse, including the abuse of antipyretics and hormones leading to the patient's altered febrile pattern and irregular application of antibiotics.

Conclusion

Splenic abscesses are mostly caused by bacteremia and toxemia from foci of infection in other parts of the body, and some can be seen as a result of trauma or direct spread of inflammatory lesions in neighboring organs. In this case, fever and pain in the left upper abdomen were diagnosed by examination as splenic abscess. No other foci of infection other than the spleen were found on detailed examination, so it was consistent with isolated splenic abscess. This disease is clinically rare. Because of its non-specific presentation, it is difficult to diagnose and has a high rate of misdiagnosis. We believe that any clinically unexplained fever with left upper abdominal pain and spleen enlargement and percussion should be considered as a possible disease, and timely improvement of ultrasound and abdominal CT examination should assist in the diagnosis. At the same time, through this case also remind doctors that strengthening health education in general and timely surgical treatment of splenic abscess will reduce mortality.

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