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A Case of Remitting and Relapsing Splenic Abscess in a Health 21-Year-Old Male

Dee H Wu*, Robert C Welliver*, Charles A Lawrence, Onain Zahid

1200 Children's Ave, Oklahoma City, USA

ABSTRACT

We present a unique case of remitting and relapsing splenic abscesses in an otherwise healthy young individual over a 13-year period. Because of the rare nature of this disease, unique challenges to the diagnosis and workup existed. Our case also raises concern that in rare cases, organisms can form a nidus leading to either a protracted or relapsing course.

Keywords: Splenic abscess; Neoplasia, Trauma; Immunodeficiency disorders; Abdominal pain

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***Corresponding author:** Dee H Wu, Robert C Welliver. 1200 Children's Ave, Oklahoma City, USA

INTRODUCTION

Splenic abscess is an uncommon entity, particularly in the western world.[1] The incidence in an autopsy series is reported to be between 0.14% and 0.7%.[2] Risk factors for this disease include neoplasia, trauma, immunodeficiency disorders, diabetes mellitus, infective endocarditis, and hemoglobinopathies.[3] Patients with splenic abscess may respond well to appropriate antibiotics based on culture sensitivity obtained via blood cultures and open surgery or percutaneous drainage of abscess.[3,4] In this report, we discuss a unique case of remitting and relapsing splenic abscesses in an otherwise healthy young individual.

CASE REPORT

This Caucasian male patient initially presented when he was 8 years old, with a 2-day history of abdominal pain. The pain was originally located in the periumbilical region but migrated to the suprapubic region. His previous medical history was remarkable only for a frequent problem with constipation. Physical examination at that time revealed abdominal tenderness in the left lower quadrant. Vital signs were normal without fever, tachycardia, or hypotension. Evaluation by Computed Tomography (CT) revealed a calcification in the right lower abdomen. The patient's symptoms were worrisome for appendicitis. The patient therefore underwent a laparoscopic appendectomy. He recovered appropriately and was subsequently discharged. However, ten days later his postoperative course was complicated by a recurrence of abdominal pain. A repeat CT scan of the abdomen and pelvis revealed a small

abscess in the region of the liver and a large abscess in the pouch of Douglas (Figure 1). Blood cultures were negative for bacterial species. However, cultures of the abscesses obtained by percutaneous drainage were positive for *Escherichia coli* and Bacteroides species. No splenic abscess was noted at this time (Figure 2). He was treated with vancomycin and claforan intravenously for approximately three weeks and had an uneventful postoperative course.

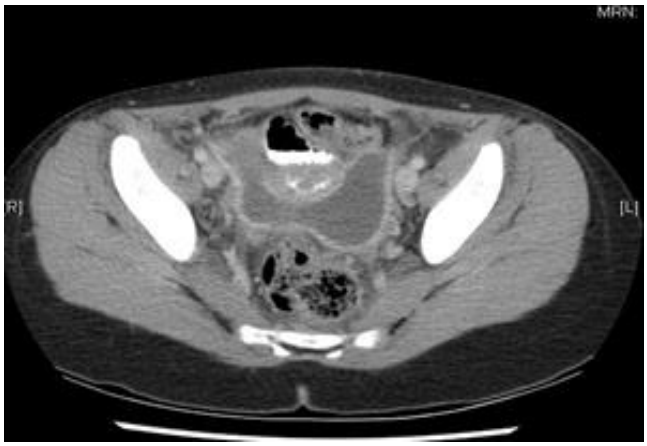

Figure 1: A computed tomography scan demonstrating abscesses in the pouch of Douglas.

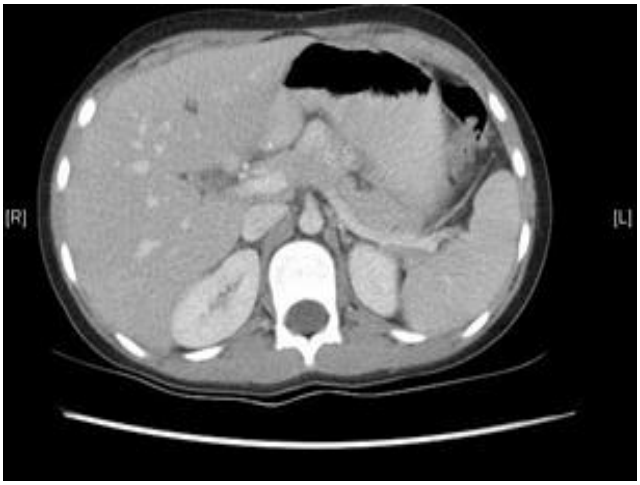

Figure 2: A computed tomography scan of the abdomen demonstrating no abscesses affecting the spleen.

When the patient was 13 years old, he presented again with a 3-day history of abdominal pain, fever, chills, loose non-bloody stools, and headache. Physical examination showed left upper quadrant abdominal tenderness. Vital signs were normal. His workup included a repeat CT scan that revealed a low-attenuation area in the spleen that was concerning for infarction or infection (Figure 3). An extensive workup that included blood cultures for infection and tests for hypercoagulability was negative. An echocardiogram for endocarditis was negative. The patient was then successfully treated with cephalexin for 6 days, after which he recovered.

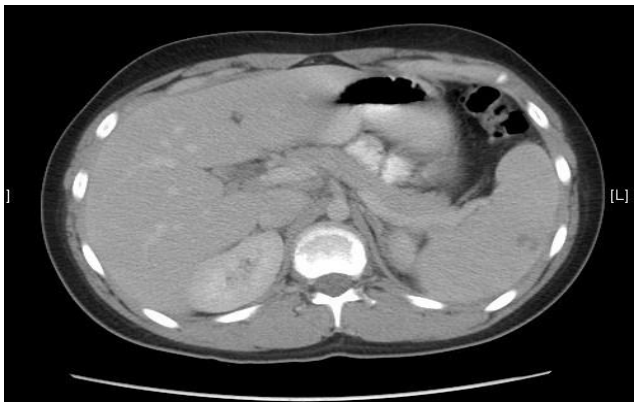

Figure 3: A computed tomography scan of the abdomen revealing a low-attenuation area in the spleen.

When he was 16 years old, the patient presented again with a 3-week history of intermittent fevers occurring after a recent trip to Colorado. In addition to intermittent fevers, the patient also reported chills, fatigue, back pain, and headache. During the trip, he had noticed a rash on his left thigh that resolved within 24 hours. Physical examination showed no signs of abdominal tenderness. Vital signs showed no evidence of any abnormalities. Blood cultures were negative. A CT scan of the chest, abdomen, and pelvis was performed, this revealed a non-specific splenic mass. Abdominal ultrasound (US) showed an indeterminate cystic lesion without internal flow. He was tentatively diagnosed with possible Colorado tick fever and treated with doxycycline in an outpatient setting for 16 days. He recovered to normal health.

At 21 years old, the patient presented a final time to our institution with a 2-week history of abdominal pain, nausea, vomiting, diarrhea, chills and fever. Two months prior to this visit, he was diagnosed with serologically confirmed mononucleosis at an outside hospital (VCA IgM = 154.0, VCA IgG = 119.0). Physical examination at our institution showed a critically ill-appearing patient with pallor and intense shaking chills lasting for 2-3 minutes, with chattering of his teeth and inability to speak because of muscle tightness generally and including his jaw. There was tenderness to palpation in the upper left quadrant. The spleen tip was not palpable. Blood cultures were eventually negative for growth. A transesophageal echocardiogram looking for endocarditis was also negative. At the patient's earlier visit to the outside hospital, a CT scan was performed. A second reading of that CT was done at our institution, concluding that a 5 cm splenic abscess was present (Figure 4). On the CT, multiple low-density areas in the perisplenic space were noticed. An US-guided drainage procedure was performed, and a culture of the abscess fluid confirmed the presence of *Escherichia coli*. He was initially put on a course of vancomycin and zosyn. His course was complicated by Deep Vein Thrombosis (DVT) and pulmonary embolism. Because of this, the PICC line was removed and the patient was anticoagulated with apixaban. At this stage, an infectious disease specialist recommended switching to Bactrim DS 800/160, with plans to continue this treatment for several months. He eventually achieved a full recovery to baseline health.

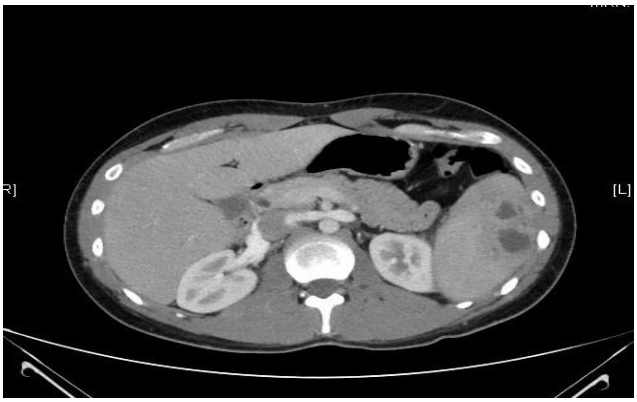

Figure 4: A computed tomography scan of the abdomen revealed a 5cm abscess affecting the spleen.

DISCUSSION

We present a unique case of splenic abscess that apparently followed an unusual course of remittance and relapse over a 13-year period in an otherwise healthy young individual. It seems, at first, unlikely that the appendiceal perforation with contamination of the abdomen and pelvis could have resulted in a lingering process in the abdomen and spleen which presented several years later. Nevertheless, at the time of his presentation with the abscess, this patient had no evidence for hematologic seeding of the spleen (such as endocarditis or a recent septic episode), splenic or systemic malignancy, trauma or a coagulopathy that could have accounted for the formation of an abscess. Because of the formation of a clot on his IV line and subsequent pulmonary emboli, we carried out an extensive evaluation for a clotting disorder at 6 months after his recovery from the abscess. This series of tests indicated no abnormality of coagulation was present. Finally, the serial CT scans over several years indicated the presence of a possible abscess which remained confined until the time of his EBV mononucleosis. We found two articles describing the appearance of a splenic abscess following EBV mononucleosis.[5,6] This patient's mononucleosis could have disposed him to the development of a splenic abscess at that time, but that would not explain the presence of the splenic lesion which first appeared after his perforated appendix episode and remained present for years thereafter. We believe the assembled facts are more consistent with the idea that an abscess formed in his spleen during the time of contamination of the abdomen following the appendiceal perforation, either from simultaneous bacteremia or else extension of infection into the spleen from a contiguous abdominal abscess. The occurrence of EBV mononucleosis may have disturbed the architecture of the spleen sufficiently to permit progression of the latent abscess years later.

Splenic abscess is an uncommon disease, especially in developed countries.[1] The incidence of this disease in autopsies ranges between 0.14% and 0.7%.[2] As of 2014, there were fewer than 800 splenic abscess cases reported in the literature.[2] Splenic abscess tends to be rare in immunocompetent patients.[4] Although they are relatively uncommon among the general populace, splenic abscess has been reported in young and previously healthy

individuals.[7] Risk factors for splenic abscess include neoplasia, trauma, immunodeficiency disorders, diabetes mellitus, infective endocarditis, immunosuppressive therapy, and hemoglobinopathies.[3] Hemoglobinopathies can lead to infarction within the spleen, which can lead to infection of those areas, producing splenic abscess.[8] Cases of contiguous formation of splenic abscess in relation to intra-abdominal infection have also been described.[7] The signs and symptoms of splenic abscess can include fever, left upper quadrant pain, chills, splenomegaly, and leukocytosis.[2,7,9,10,11]

However, due to the non-specific nature of the signs and symptoms, a clinical diagnosis of splenic abscess can be difficult even for experienced physicians.[7,9,12] For that reason, ultrasound or CT must be used for diagnosis of splenic abscess.[7,12] Ultrasound has a sensitivity of 76%.[13] However, while larger abscesses are easily detected, smaller ones may be missed.[7]Therefore, CT scan is considered the gold standard imaging modality for diagnosis, with a specificity of 90-95% and a sensitivity of 96%.[13] When a physician encounters an infectious disease of unknown origin with associated fever and pain or tenderness in the area of the spleen, splenic abscess should be considered, and imaging should be conducted.[7] Splenic infarct, hematoma, cysts, and neoplasm are possible differential diagnoses of splenic abscess in US or CT.[8]

Splenic abscess is caused by a diverse range of organisms. Although bacteria are the most common causative organism, the causative agent can also be either amoebic or fungal.[3,4,14] While Escherichia coli, Streptococci, and Staphylococcus are reported to be the most common causative agents of splenic abscess, the most common causative organism may vary based on geographic location.[2,3,9] For example, in an 11-patient series conducted in the United States, Thanos et al. reported gram-negative bacteria as the most common causative organisms.[15] However, in a 67-patient review conducted in Taiwan by Chang et al., gram-positive bacteria were found to be the most common organism identified.[1] Proper identification using blood cultures or image-guided percutaneous drainage of the abscess is crucial due to the wide range of possible causative organisms.

There is no gold standard treatment for splenic abscess. Splenic abscess can be a very serious problem without adequate treatment and has an overall mortality rate of 12.4%.[14] Current treatment includes antibiotics with splenectomy or open drainage.[3,9] However, several recent studies have shown that percutaneous drainage of abscess can be a conservative alternative to splenectomy.[3,16] Given the immunological role of the spleen, percutaneous drainage may be the preferred treatment for young adults and children.[7] Splenectomy should be considered for patients with multilocular abscesses, fungal abscesses, infected hematomas, abscesses with thick contents, and abscesses that do not respond to percutaneous drainage.[7] Complications of splenectomy include pneumonia, atelectasis, pleural effusion, and subphrenic abscess.[17] Injury to the pancreas and pancreatitis are reported complications of laparoscopic splenectomy.[17] Since percutaneous drainage is less invasive, there are fewer complications[7] Admittedly, there is no consensus on how long a course of antibiotics should be used in the treatment of splenic abscess. No guidelines are available to answer whether post treatment repeat ultrasound or CT

scan will provide an end goal to the treatment plan. Generally speaking, remittance of symptoms after 2-4 weeks of antibiotics is considered curative. However, our patient experienced a remittance of symptoms after each antibiotics course. It is possible that the nidus of this organism was able to survive in the spleen for a long period, only to reemerge after 4-5 years of dormancy. The fact that the organism and its sensitivity were similar is highly suggestive that the same organism was able to survive as nidus in the spleen for extensive periods.

CONCLUSION

Although splenic abscess is rare, physicians should keep a high index of suspicion and use appropriate radiology workup to establish diagnosis. With advancement in interventional procedures, most abscesses can be treated with percutaneous drainage and antibiotics based on culture and sensitivities. Our case also raises concern that in rare cases, organisms can form a nidus leading to either a protracted or relapsing course. Whether a prolonged course of antibiotics would help get rid of this nidus remains unestablished.

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