CASE REPORT

Tuberculous Splenic Abscess: an Unusual Presentation

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ABSTRACT

Splenic abscess is an uncommon but life-threatening pathology. Splenic tuberculosis is even rarer and usually occurs in immunocompromised patients. However, it is a diagnostic challenge as there is substantial overlap in imaging features between different disease entities of the spleen. This report describes the unusual imaging features of splenic tuberculosis, which have not been previously reported.

Key Words: Abscess; Cysts; Splenic diseases; Tuberculosis

INTRODUCTION

Splenic abscess is an uncommon condition with severe clinical complications. Splenic abscess should be suspected in febrile patients with left upper quadrant tenderness and leukocytosis. Diagnosis is either confirmed by, or based on, imaging studies, microbiologic and pathologic evidence, or response to antibiotic treatment.1 Due to the non-specific clinical picture, splenic abscess remains a diagnostic challenge, both clinically and radiologically. Many splenic pathologies such as splenic infarct and metastatic cysts could mimic splenic abscess on imaging.2 This report is of an unusual imaging pattern of splenic tuberculosis, which has not been previously reported.

CASE REPORT

A 52-year-old woman first presented to the United Christian Hospital, Hong Kong, in May 2006 with a history of poor appetite, weight loss of more than 10 lb, and intermittent fever for the previous few months. The patient had been previously well except for hypertension for which she took medication.

Physical examination was unremarkable except for mild splenomegaly. Initial blood tests showed a haemoglobin level of 68 g/L (normal range, 120-150 g/L) and the haemoglobin pattern was not suggestive of thalassaemia. Erythrocyte sedimentation rate was elevated to 102 mm/hour (normal range, <20 mm/hour). Bedside ultrasound (US) showed splenomegaly with multiple hypoechoic lesions. Echocardiogram showed pericardial effusion of 0.8-cm thickness. Bone marrow examination showed atypical plasmacytosis so plasma cell dyscrasia was suspected. Blood test for paraprotein was positive for M band (immunoglobulin A). Computed tomography (CT) of the thorax and abdomen showed a moderate amount of pericardial effusion and splenomegaly (approximately 16 cm) with multiple hypodense and hypoenhancing areas (ranging from a few millimetres to 2 cm) [Figure 1]. Possible diagnoses included splenic infarct as a result of splenomegaly, abscess, or malignancy. There was no significant intra-abdominal lymphadenopathy. US-guided biopsy of the spleen showed mainly granulomatous inflammation containing epithelioid granulomas with focal necrosis (Figure 2), which was highly suggestive of tuberculous infection. No evidence of malignancy was detected. Mantoux test showed positive induration of 2 cm. The patient was diagnosed to have splenic tuberculosis with pericardial involvement. The increase in paraprotein M band was not significant and was likely to be due to monogammopathy of unknown origin.

Antituberculosis treatment was started and the patient’s clinical condition improved. Pericardiectomy was performed later, but the pathology and culture results were negative; possibly due to the anti-tuberculosis
treatment. Follow-up CT scans in August and October showed improvement signified by a decrease in the size of the spleen and the number of splenic hypodensities (Figure 3).

**DISCUSSION**

Splenic abscess due to tuberculosis is a rare condition and usually occurs in immunocompromised patients such as those with acquired immune deficiency syndrome or malignancy. Splenic abscess is a diagnostic challenge, as many splenic lesions such as splenic abscess, infarction, cysts, and metastases have similar imaging appearance.

Splenic abscess has 3 main categories, namely bacterial, fungal, and granulomatous. Pyogenic abscess usually appears on US as a poorly defined hypoechoic mass, depending on the degree of proteinaceous fluid within the lesions. Bacterial abscesses are frequently visualised on CT as a low-attenuation centre of fluid or necrotic tissue. There is minimal-peripheral contrast enhancement when a capsule develops. The presence of gas within the capsule is diagnostic of pyogenic abscess.

Fungal abscesses are usually multiple in number and occur in immunocompromised patients. Multiple hypoechoic areas with a ‘target’ appearance are typically seen at US. CT shows microabscesses to be multiple small lesions of relatively low attenuation, ranging from few millimetres to 2 cm in size.

Tuberculosis infection usually occurs in miliary form with haematogenous dissemination with multiple epithelioid granulomas. Therefore, tuberculous abscesses can have similar imaging features to fungal abscesses. Typical CT findings are multiple, round or ovoid, low-density lesions without calcification. Histopathological study of the spleen shows that there are different stages of granulomatous reaction from simple granulomas to granulomas with caseating necrosis. In this patient, the multiple irregular, hypodense and hypoenhancing areas were due to areas of extensive necrosis. By imaging alone, these areas of necrosis could be either ischaemic or infective in origin. However, the biopsy findings showed the presence of chronic inflammatory cells, epithelioid granulomas with focal

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**Figure 1.** (a) Coronal reconstructed and (b) axial images of post-contrast computed tomography scan showing splenomegaly with multiple hypoenhancing areas and pericardial effusion.

**Figure 2.** Ultrasound scan of the spleen showing numerous hypoechoic lesions.
necrosis, and polymorphic infiltrates. The pathological features strongly suggested underlying infection, in particular tuberculosis. Splenic tuberculosis with extensive caseating necrosis may produce an imaging appearance mimicking liquefactive necrosis of splenic infarction. Serial studies of splenic tuberculosis may demonstrate evolutional change culminating in calcium deposits, representing healed calcified granulomas.

Splenic infarction is another condition that can give rise to extensive areas of necrosis. Splenic infarction usually occurs with embolic disease of cardiovascular origin, arteritis, myeloproliferative disease, pancreatitis, pancreatic tumour, and sickle cell anaemia. On CT, these lesions classically appear as sharply marginated, wedge-shaped low-density regions with the base at the splenic capsule and the apex towards the hilum. Not uncommonly, however, splenic infarcts can appear as multiple, poorly marginated, hypodense lesions, indistinguishable from other splenic pathology. This appearance is secondary to infarction with liquefactive necrosis. The cystic appearance is due to areas of infarction that contain serosanguinous material. It is therefore impossible to confidently distinguish between splenic infarction and infection such as tuberculosis by imaging alone, as both conditions can present with extensive areas of splenic necrosis and have a similar imaging appearance.

Splenic cyst was unlikely to be the diagnosis for this patient because they are often asymptomatic and found incidentally at radiological examination, surgery, or autopsy. Splenic cysts can be either true cysts, which are commonly epidermoid or echinococcal in origin, or false cysts, which usually result from previous trauma, infarction, or infection. The typical CT findings are spherical, well-defined cystic lesions with a thin wall and no rim enhancement. Cyst wall calcifications may occur. The presence of high-attenuation contents may result from haemorrhage, increased protein content, or infection. The typical finding of an echinococcal cyst is the presence of daughter cysts within the cyst.

Splenic metastasis is another possible diagnosis and usually occurs from haematogenous spread in patients with widespread carcinoma. At CT, the metastases may appear as ill-defined low-attenuation foci or as well-delineated, unilocular or septated cystic lesions, with a similar appearance to that for this patient. However, the clinical history of persistent fever suggested a low priority for metastasis in the differential diagnosis for this patient. Pathological analysis would provide a definite diagnosis.

The imaging features of this patient showed multiple low-attenuation areas within the spleen. This is not the typical finding of splenic tuberculosis, which commonly presents as miliary infection with microabscess formation. However, it is difficult to make a specific diagnosis by means of radiological findings alone as there are substantial overlapping features between

Figure 3. Follow-up computed tomography scan in (a) August and (b) October showing interval decrease in splenic size and hypoenhancing lesions.
splenic abscess, infarction, and metastasis. Therefore, correlation of imaging findings with clinical and histologic findings is needed to confirm the diagnosis.

Splenic abscess is uncommon, but has become more frequent in recent years due to the increasing number of patients with immunosuppression and to the use of more sophisticated radiological diagnostic techniques. This case report highlights a rare imaging finding of splenic tuberculosis. Although uncommon at the present time, splenic tuberculosis should be included in the differential diagnosis of fever of unknown origin with splenomegaly and hypodensities. However, definite diagnosis is difficult to make by imaging alone as many disease entities have a similar appearance. If uncertainty exists, percutaneous biopsy is advised.

REFERENCES