Multiple Splenic Abscesses in 2 Patients with Myelodysplastic Syndrome

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Abstract

Splenic abscess is a rare clinical condition with a high mortality rate. Multiple splenic abscesses, rather than a solitary abscess, are present in immunocompromised states including hematological malignancies. As symptoms of splenic abscesses, fever and abdominal pain, are non-specific, timely and adequate use of imaging studies is crucial for early diagnosis. We report the cases of 2 patients with myelodysplastic syndrome and multiple splenic abscesses. Notwithstanding the higher mortality rate of patients with multiple splenic abscesses as compared with those with a solitary splenic abscess, we successfully treated the 2 patients by using antibiotic therapy and fine needle aspiration.

Key words: multiple splenic abscess, myelodysplastic syndromes, antibiotics, fine needle aspiration

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Introduction

Aging societies are characterized by an increasing number of patients with immunocompromised states such as hematological malignancies. These patients are at great risk of life-threatening infections. Splenic abscess is a rare clinical condition with a reported frequency of 0.14-0.7% in an autopsy series in Europe (1, 2). However, it carries a high mortality rate because of late diagnosis (1-8). Moreover, the detection frequency is increasing because of the current sophisticated imaging techniques and the growing number of immunocompromised patients. Predisposing conditions other than immunodeficiency include splenic trauma (in which case the splenic abscess develops weeks or months later), metastatic hematogenous infections, and contiguous sites of infection (5, 6). Notably, immunocompromised patients often have multiple splenic abscesses rather than solitary (9).

Here, we report 2 cases of multiple splenic abscesses in patients with myelodysplastic syndromes (MDS) successfully treated with antibiotic therapy and fine needle aspiration.

Case Reports

Case 1

A 50-year-old woman was admitted to our hospital with complaints of fever, malaise and dyspnea on exertion. These symptoms occurred quite suddenly. On examination, the temperature was 37.9°C and the oxygen saturation was 98% in ambient air. There was no current nor past history of splenomegaly and no abdominal tenderness.

Her past medical history included MDS with refractory anemia and rheumatoid arthritis. When she was 41 years old, her annual medical check-up revealed mild anemia and leukocytopenia, and MDS with refractory anemia was diagnosed based on bone marrow examination. Rheumatoid arthritis was diagnosed when she was 48 years old, and her current treatment included 10 mg/day of prednisolone and 1,000 mg/day of salazosulfapyridine. Her recent blood counts showed mild pancytopenia (white blood cells 3,000/mm³ with 67% granulocytes and 23% lymphocytes; hemoglobin 7.6 g/dL; and platelet counts 92,000/μL), but she had not been prescribed any medication for MDS.

Although there were few abnormal physical findings, chest radiography showed the presence of left pleural effu-
Laboratory data revealed a left shift of white blood cells (7,560/mm³ with 93% of segmented forms), an elevated C-reactive protein level (11 mg/dL), and progressive anemia (hemoglobin 6.9 g/dL). Other data, including liver and renal functions, were normal. We suspected that these findings resulted from abdominal infection and performed imaging studies.

Contrast material-enhanced abdominal computed tomography showed left pleural effusion and multiple low attenuation areas in the spleen, kidneys, and gastric wall (Fig. 1a, b). Cardiac ultrasonography identified no vegetation. We also performed upper gastrointestinal endoscopy and found 2 swollen lesions at the gastric fundus. Yellow pus oozed out from these lesions after biopsies were performed (Fig. 1c). Collectively, these findings indicated that multiple abscesses were formed in the spleen, kidneys, and gastric wall. Cultures from blood and urine samples were negative, but samples obtained from the abscesses in the gastric wall revealed the presence of multiple types of bacteria, including α-streptococci, Neisseria species, Acinetobacter species and anaerobic gram-negative cocci.

After diagnosis, the patient was initially treated with intravenous imipenem-cilastatin, tobramycin, and fluconazole. Although fever and C-reactive protein levels fluctuated after treatment, they subsided gradually with the addition of vancomycin or teicoplanin (Fig. 2). Abscesses completely disappeared from computed tomography scans (performed on hospital day 49). She has remained asymptomatic ever since.

**Case 2**

A 52-year-old woman was admitted to our hospital with fever and left abdominal pain. She had been diagnosed with intestinal Behçet’s disease at the age of 26 years. After treatment with corticosteroids and immunosuppressive agents, she had achieved remission and had not received medication since 1991. Nine months before admission, she had a lung abscess that was successfully treated with antibiotic therapy elsewhere. Several months later, fever recurred, accompanied by erythema nodosum. As these symptoms were thought to be a relapse of Behçet’s disease, potassium iodide was administered orally. After administration, the erythema disappeared quickly, but fever persisted. A few days before admission, left abdominal pain developed and worsened. Thereafter, she was referred to our hospital for further evaluation.

On examination, her temperature was 39.1°C. There was tenderness in the left upper quadrant of the abdomen but no splenomegaly and no past history of splenomegaly. Laboratory data disclosed leukocytosis (white blood cells 13,600/mm³ with 88% granulocytes), elevated C-reactive protein
level (12.5 mg/dL), and macrocytic anemia (hemoglobin 8.9 g/dL with mean corpuscular volume of 106 fL). Levels of vitamin B12 and folate were normal. Abdominal computed tomography revealed 2 non-enhancing hypo-dense areas (44 and 6 mm) in the spleen (Fig. 3a, b). Cardiac ultrasonography identified no vegetation. Ultrasonography-guided fine needle aspiration was performed in the larger low echoic area of the spleen (Fig. 3c), and yellow pus was aspirated.
Splenic abscesses were finally diagnosed.

Cultures from blood and urine samples were negative, and samples obtained from the abscess developed no bacteria on culture, probably because of prior antibiotic treatment. After treatment, her temperature, abdominal pain, and C-reactive protein levels soon improved. Abscesses also decreased in size (Fig. 4). However, macrocytic anemia persisted even after inflammation subsided sufficiently. Bone marrow biopsy and aspiration performed on hospital day 16 showed dysplasia in neutrophils and megakaryocytes, which was quite specific and not always present simultaneously (4, 5). Indeed, the cases herein reported did not fulfill the triad, and the diagnosis of splenic abscess was not possible by physical examination alone. Therefore, splenic abscess should be considered in the differential diagnosis of patients with fever of unknown origin.

The most common pathogenic agents are enteric gram-negative rods, which include *Escherichia coli* and *Klebsiella pneumoniae*, followed by *Streptococci* and *Staphylococci* (5, 6, 9, 12). These agents are similar to the common pathogens of hepatic abscess (13), in part because both infections are frequently caused by hemogenous seeding in the setting of systemic infections.

Splenic abscesses can be classified into 2 types: solitary and multiple. Solitary splenic abscesses are often seen in patients with no underlying malignant disease. It typically tends to develop in patients with diabetes mellitus and infectious endocarditis. The causative agents are usually a single organism and the majority is reported to be *Escherichia coli* or *Streptococci* species (9). On the other hand, multiple splenic abscesses are often seen in patients with underlying malignancies, especially hematological malignancies. The major causative agents are gram-negative rods and fungal infection is increasing in frequency (9, 10, 12). Both of the present patients had multiple splenic abscesses. Case 1 had a history of MDS and cultures from abscesses contained gram-negative rods. Case 2 had no previously known history of malignancy but was diagnosed with MDS after further evaluation of persisting macrocytic anemia. Furthermore, both patients had additional immunosuppressive conditions, rheumatoid arthritis treated with steroids in case 1 and Behçet’s disease in case 2. These conditions alone were not reported to be a risk factor for multiple splenic abscesses, but we should mention that splenic abscesses might also be triggered by autoimmune diseases and the use of steroids.

Treatment of splenic abscesses involves antibiotic therapy—alone or in conjunction with splenectomy, percutaneous fine needle aspiration or catheter drainage. Splenectomy has long been considered the standard treatment, but recent evidence indicates that percutaneous drainage is also a reliable technique with a high therapeutic success rate (67-100%) (5, 9). Percutaneous drainage is advantageous in terms of maintaining proper immunological function, excepting critically ill patients from surgery, and avoiding overwhelming post-splenectomy infections (4, 5, 10, 14). Chang et al. (9) reported that poor prognostic factors include multiplicity, gram-negative rod infection, and a high Acute Physiology and Chronic Health Evaluation (APACHE) II score, which is designed to measure the severity of disease and risk of death. In the present cases, antibiotic treatment...
with fine needle aspiration of selected abscesses was initially started. Fortunately, and despite the initial poor prognosis, the patients could be successfully managed without additional drainage or splenectomy.

In conclusion, multiple splenic abscesses are unusual but often occur when patients are immunocompromised. Therefore, febrile patients with immunocompromised states, such as hematological malignancies, and the evidence of leukocytosis and/or left upper quadrant tenderness should undergo imaging studies to determine the presence of splenic abscesses. On the other hand, multiple splenic abscesses are often related to malignancies. If there is no history of underlying malignant disease, signs of malignancy should be investigated concurrently with the treatment of abscesses.

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References