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A Case of Occult Splenic Abscess Following Percutaneous Transluminal Coronary Angioplasty (PTCA): An Unrecognized Complication of PTCA

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Despite the increased recognition of surgical problems related to cardiac catheterization, splenic abscess has not been perceived as a common complication. The authors encountered a case of splenic abscess following PTCA in a 61-year old male patient. The major symptom was insidious general malaise. Fever and tenderness in the left upper quadrant of the abdomen were the only positive physical findings. Gram positive anaerobic Streptococci intermedius was indentified as the pathogen in cultures of the ultrasonography-guided aspirate from the splenic abscess. Ultrasonography and abdominal CT scan were diagnostic of the splenic abscess. The patient recovered following a splenectomy.

Key Words: Splenic abscess, percutaneous transluminal coronary angioplasty (PTCA)

The incidence of splenic abscess is rare (Altermeier 1973). Because of the difficulty in the localization of abdominal abscess and the low incidence of splenic absccess, until recently diagnosis was possible only in the late stage of the disease. Sometimes detection was possible only after severe complications had occured or as an incidental finding at autopsy.

A recent review by Chulay and Lankerani (1976), reported a 60% mortality rate in patients with splenic abscess. In about half of these patients, the abscess contributed directly to the fatal outcome. In their series only 40% of the cases were diagnosed prior to surgery or autopsy. No fatalities occured in the group of patients where definitivie surgical treatment followed an early correct diagnosis.

CASE REPORT

A 61-year old male smoker (50 packs a year) was admitted to Severance Hospital, Yonsei University Medical Center, for evaluation of general malaise, fever and chills of three days duration. He had been relatively well until two months earlier when an acute myocardial infarction occured. He was treated with percutaneous transluminal coronary angiopasty and conservative management. He was readmitted to this hospital two weeks later for the evaluation of fever and diarrhea with left upper quadrant abdominal pain and recovered with conservative management under the impression of colitis in ten days.

His medical hisotry was unremarkable with the exception of hypertension for the past 20 years.

On physical examination, he was mentally alert with the following vital signs: blood pressure 100/60mmHg, pulse rate 84/min, respiration rate 11/min, and temperature 38.2C.

There was direct tenderness on the left upper quandrant of the abdomen wihout palpable mass or hepatosplenomegaly. On auscultatory inspection, breath sounds were slightly decreased on both lower lung fields, heart sounds were normal and bowel sounds were slightly decreased.

The chest X-ray revealed mild cardiomegaly and questionable pneumonitic infiltration in the right lower lung field. Q wave in leads III and aVF with frequent uniform premature ventricular contractions were noted on the twelve lead electrocardiogram. The hemoglobin was 12.6 gm/dl, hematocrit 35.8%, WBC 25,000/mm^3 with 65% segs. The platelet count was

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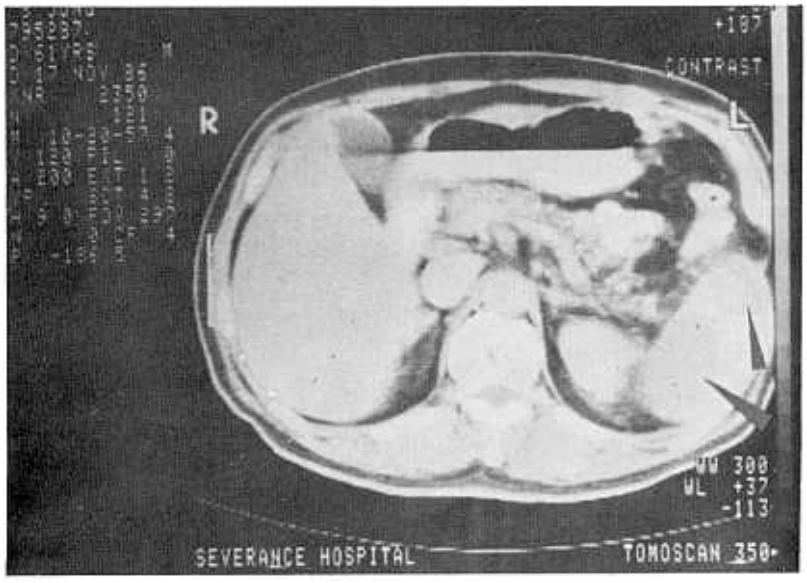

Fig. 1. Abdominal C-T scan demonstrated two discrete splenic abscess shadows.

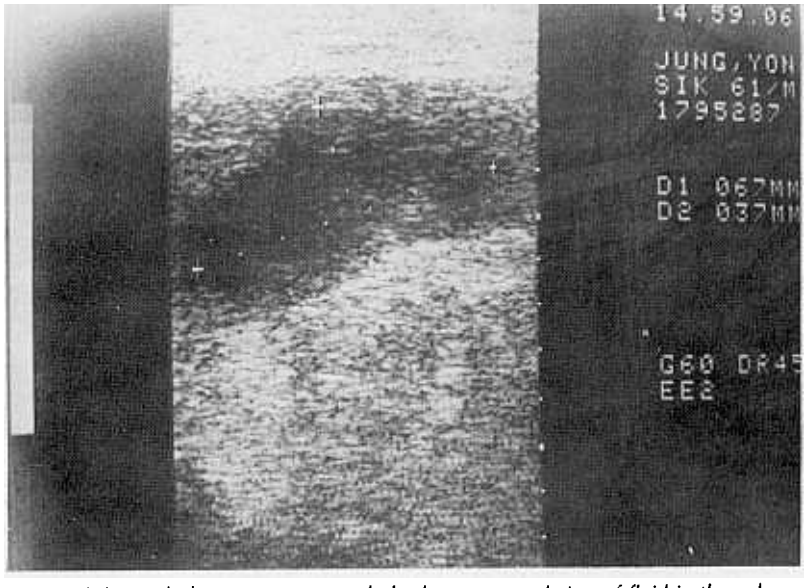

Fig. 2. Abdominal ultrasonogram revealed a large accumulation of fluid in the spleen.

380,000/mm³. Total bilirubin was 1.2mg/dl, SGOT 31 IU/L, SGPT 55/L and other laboratory findings were within normal limits.

On the third hospital day, an abdominal CT scan (Fig. 1) was performed, which revealed two large discrete cavitary lesions in the spleen. On the fourth hospital day, the patient exhibited signs of meningeal irritation. A spinal tap and ultrasonography-guided percutaneous splenic aspiration (Fig. 2, 3) were performed. About 50 ml of amber-coloured pus was obtained from the spleenic abscess which on gram stain showed many gram positive cocci in chains and clusters. The following results were obtained from the cerebrospinal fluid, protein 670 mg/dl, glucose 3

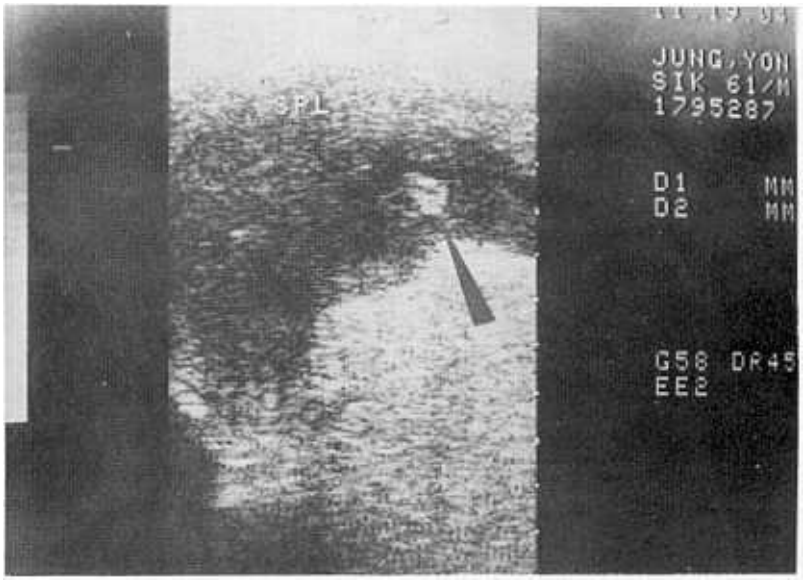

Fig. 3. The shadow of the percutaneous aspiration needle arrow was observed within the abscess of the cavity.

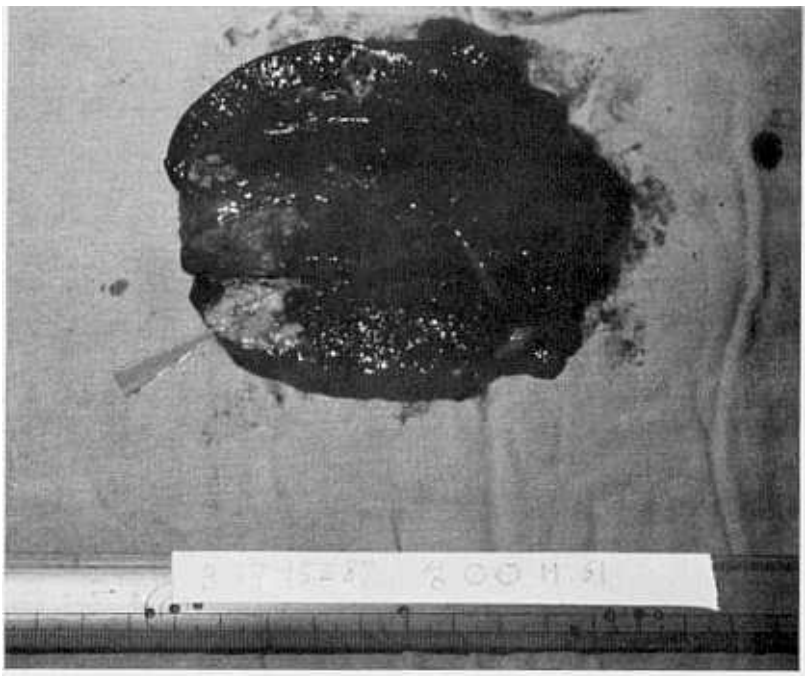

Fig. 4. The dimensions of the spleen were 10.0 × 7.7 cm, and it weighed 155 grams. Multiple healing abscesses are present.

mg/dl, and WBC 8100/ml (poly segmented neutrophils 100%). A gram stain of the spinal fluid revealed many pus cells.

Under the impression of bacterial septicemia, antimicrobial therapy was administered including crystal penicilline (20,000,000 units, IV), chloramphenical (2.0

gm, IV), tobramycin (160 mg, IM) and metronidazole (2.0 gm, IV). Gram positive anaerobic Streptococci intermedius were cultured from the splenic aspiration fluid, but there was no growth in the blood or the spinal fluid.

On the 14th hospital day, the patients condition was markedly improved, however, a follow-up ultrasonography still revealed a splenic abscess, although somewhat smaller than before. A second ultrasonoguided splenic aspiration extracted 50 ml of pus.

On the 25th hospital day, a curative splenectomy was performed and the post operative course was uneventful. The spleen (Fig. 4) weight 155 grams and multiple healing abscesses were seen.

DISCUSSION

Since splenic abscesses were first reported in the surgical literature in 1954 (Reid and Lang 1954), the difficulty of clinical diagnosis has been emphasized in many papers. Because of the nonspecificity of the clinical findings and a very low incidence of splenic abscess, until recently diagnosis was possible only in the later stages of the disease. Today, diagnosis is much easier with the use of ultrasonography, splenic scan, selective angiography, and abdominal CT scan. The challenge now is to have clinicians become sufficiently aware of the signs and symptoms of splenic abscess in order to recognize the circumstances under which these procedures should be ordered.

In general, the underlying causes of splenic abscess are evident in 80% of the cases, wiht the majority due to infections elsewhere in the body or depressed immune status. The other 15% of the cases are traumatic in origin (Elting 1915; Inlow 1927) with direct extension from a neighboring process (Elting 1915). Sporadic cases of bacteremia were reported after medical procedures, such as cardiac catheterization and angiography (Swan 1968), but we found no case of specifie splenic abscess following cardiac catheterization or PTCA.

Certain infections are complicated by splenic abscess with an unusual frequency. A three-fold increase in the incidence of splenic abscess was found among patients dying of typhoid fever (Berg 1926; Curschman 1915) and malaria (Anderson 1906), and in the pre-antibiotic era 10% of the patients who died of bacterial endocarditis had suppurative lesions in their spleen (Blurner 1923).

In more recent years splenic absccess has occasionally been responsible for persistent bacteremia despite appropriate antibiotic therapy for endocarditis, in which case a splenectomy is often curative (Lingerman *et al.* 1956). Splenic abscess has also been reported as a complication of relapsing fever (Nasr 1948) and amebic dysentery (Frank 1944) as well as otitis media (Cutler 1920), mastoiditis (Davidson *et al.* 1960), peritonsillar abscess (Eliason 1933), suppurative parotiditis (McSherry and Dineen 1962), cutaneous infections of various types (Bassier 1945), lung abscess and pneumonia (Krumbharr 1927), empyema (Bassier 1945), appendicitis (Chaffee *et al.* 1958), diverticulitis (Pickleman 1970), cholecystitis and pelvic infections (Billings 1928), osteomyelitis (Golodenberg 1955), and intravenous drug abuse (Gadacz *et al.* 1974).

Hemoglobinopathies also appear to predispose the development of splenic abscess (Kolawole 1973; Anand 1965). In this case, we suggested that the cause of the splenic abscess was linked to the coronary angiography and PTCA procedures, because there were no definite predisposing condition such as an abdominal inflamatory disease or an immune depressed illness or hematopoietic disorders. The causative organism, gram positive anaerobic Streptcoci intermedius, is occasionally found in purulent abscesses of soft tissue and major viscera (Ikemoto *et al.* 1989; Braude 1986).

Experimentally, splenic infarction or ischemia predisposes to splenic abscess. Caldarera (1938) produced splenic abscess in rabbits by dearterialization or trauma to be spleen prior to an intravenous injection of Staphylococcal organisms. Those animals without trauma or infarction failed to develop splenic abscess. Thus, it is not surprising that illnesses associated with splenic abscess are often those in which there is a high incidence of splenic infarction in addition to the opportunistic state for bacteremia.

Treatment of splenic abscess consists of surgical drainage followed by the appropriate antibiotic therapy. Although the older literature suggests a lower mortality with splenotomy than without splenectomy (Reid and lang 1954), current surgical opinion favors splenectomy when feasible (Parrish and Sherman 1964).

The prognosis is dependent primarily on an early accurate diagnosis and the primary infection site in the body. Without surgical drainage, or in patients with multiple disseminated abscesses, the mortality rate approaches 100%. However, with the appropriate surgical and antibiotic therapy of isolated splenic abscess, the mortality rate during the past 25 years has been less than 10% (Chulary and lankerani 1976).

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