

## Percutaneous Drainage of Splenic Abscess in Typhoid Fever —A case report—

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*Salmonella typhi splenic abscesses are a very rare complication of typhoid fever. Splenectomy is the standard surgical treatment for these lesions. But these days, with improvements in imaging techniques, percutaneous drainage of splenic abscesses has been demonstrated to be one of the alternative treatment in selected cases. We report the case of a 7 year-old male, who presented with Salmonella typhi in blood and urine cultures, and a 1 : 320 in O titer of Widal test. Ultrasound and computed tomography showed a single splenic abscess, 3 cm in diameter. He was treated with antibiotics, but the symptoms were not relieved. Thus we performed the percutaneous drainage of the splenic abscess under ultrasound guidance. A culture of the aspirated material was positive for Salmonella typhi, and the boy's condition improved. We think that percutaneous drainage of a single lesion was an excellent alternative to surgery, particularly because our patient was young and spleen conservation was desirable.*

**Key Words :** *Splenic abscess, Typhoid fever, Percutaneous drainage.*

### INTRODUCTION

*Salmonella typhi* splenic abscesses have been a very rare complication of typhoid fever since the use of specific antibiotics began. From 1940 to 1976, there was no report in the literatures (Altemeier et al., 1973; Chulay and Lankerani, 1976). *Salmonella* splenic abscess can probably be explained by septic microemboli in splenic blood vessels, concomitant with typhoid fever. When the diagnosis is made preoperatively and treated by antibiotics and splenectomy, there is 17% mortality (Lino et al., 1983). Postsplenectomy infections are well

documented in the literatures. Percutaneous drainage of splenic abscess in adults has been demonstrated to be a safe and effective method of treatment, without mortality or significant complications (Gerzof et al., 1981; Berkman et al., 1983).

We present a pediatric case of *Salmonella typhi* splenic abscess which was successfully treated by percutaneous drainage under ultrasound guidance.

### A CASE REPORT

A 7-year-old boy was admitted to the hospital because of sustained high fever, anorexia, and abdominal pain with mild distension which he had suffered for 10 days. His temperature was 39.8°C. There was tenderness in the left upper quadrant of abdomen, and the spleen was palpated two fingerbreadths below the left costal margin. The white

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blood cell count was  $8,100/\text{mm}^3$  with 61 per cent of polymorphonuclear leukocytes and 30 per cent of lymphocytes. Hematocrit value was 32.5 per cent, reticulocyte count 1.0 per cent, and platelet count  $119,000/\text{mm}^3$ . Widal test was positive, O titer 1 : 320, H titer 1 : 640. *Salmonella typhi* appeared in both urine and blood cultures. Stool cultures grew no enteric pathogens. A chest film obtained on the 6th hospital day showed elevation of the left hemidiaphragm, and pneumonic infiltration in the posterior basal segment of left lower lobe with subsegmental atelectasis. Ultrasound examination was performed on the 2nd hospital day and a distinct cystic lesion of 3 cm in diameter was noticed in the lower pole of the spleen. Some echogenic sediments were noted within the cystic collection. No other fluid collection was seen within the abdomen. On abdominal CT examination, there was a well demarcated low density lesion at the posterior inferior portion of the spleen, measuring about  $3 \times 2.3 \text{ cm}$ . The adjacent peritoneum and renal fascia were thickened. The liver and spleen were enlarged. Ill defined enlarged lymph nodes were seen at the porta hepatis (Fig. 1). A presumptive diagnosis of splenic abscess was made. He was treated with ampicillin and aminoglycoside, but he continued febrile and complained of left upper quadrant abdominal pain. Ceftriaxone was added. In spite of adequate coverage with antibiotics, the symptoms were not improved. On repeated ultrasonud examination, cystic lesion was increased slightly in size. On the 9th hospital day, after sedation with  $\text{IV}$  ketamin and local anesthesia with lidocaine and

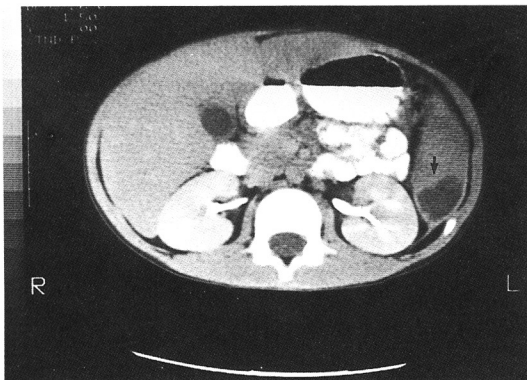


Fig. 1. Abdominal CT scan showing non-enhancing, low density collections within an enlarged spleen.

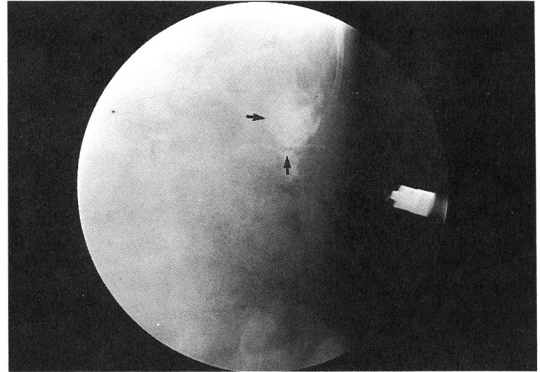


Fig. 2. Aspiration and drainage of intrasplenic abscess under ultrasound guidance.

under ultrasound guidance, a diagnostic needle aspiration of the splenic collection returned grossly purulent fluid. A 16 gauge Jelco needle connected to an  $\text{IV}$  line for drainage was introduced into the abscess cavity under ultrasound guidance, and 10 ml of pus was drained through the needle. The cavity was irrigated with sterile saline, and the needle was anchored to the skin and was left to drain into a bag (Fig. 2). The needle was irrigated with 5 ml of saline every day to maintain patency. A culture of the aspirated material was positive for *Salmonella typhi*. The child's temperature decreased promptly and his symptoms relieved. The needle drainage was continued for 1 week. When the drainage amount decreased and the fluid appeared clear, it was removed. He was discharged from the

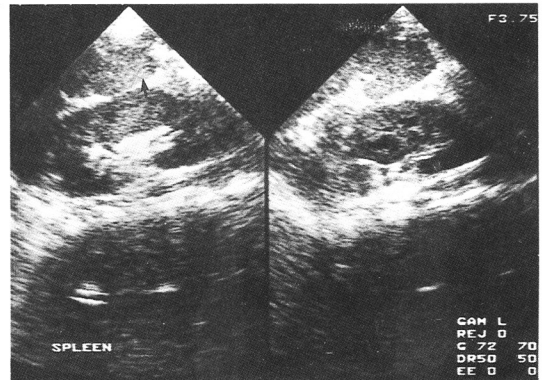


Fig. 3. The lesion of splenic abscess is not seen in the abdominal ultrasound examination, 1 month later.

hospital after 2 weeks. One month later, the abdominal ultrasound examination was performed at outpatient department, and the lesion of splenic abscess improved (Fig. 3).

## DISCUSSION

The low incidence of the splenic abscess is related to the phagocytic activity of the reticuloendothelial system and leukocytes (Lawhorne and Zuidema, 1976). The predisposing causes are (1) pyogenic infection (2) splenic trauma (3) hemoglobinopathy and (4) spread of a contiguous infectious process (Chun et al., 1980).

Several authors have commented on the low frequency of salmonella abscess (Martinez et al., 1977; Hertzanu et al., 1983). Rachid Allal's prospective study in an extensive series of patients was aimed at demonstrating that the incidence of splenic abscess was usually underestimated. Four hundred patients were systematically examined by abdominal ultrasound at the time of proven biological diagnosis of typhoid fever, which was the 2nd week of admission. Twenty patients with persistent or recurrent symptoms (despite of the adequate treatment) or with acute lower thoracic pain were followed by ultrasound and computed tomography. In eight patients both imaging modalities revealed anomalies compatible with splenic abscess (Allal et al., 1993). Salmonella abscess tend to be associated with hemoglobinopathy (Keidl and Chusid, 1989), but, this predisposing factor was not involved in our case.

A high degree of clinical awareness is essential for the early diagnosis of splenic abscess. Classic findings of fever, chills, tenderness in the left upper quadrant and splenomegaly occurred in only one half of the patients in one series (Chun et al., 1980) and in 32% of the cases in another series (Altemeier et al., 1973). Ultrasonography and CT scanning are the most useful imaging modalities in making a diagnosis of splenic abscess. Both techniques are quick, harmless, and sensitive. They are most reliable in defining the extent and internal structure of splenic abscess. Abscesses appear as a focal sonolucent defect in ultrasonography often with abundant echogenicity due to debris or septations. Computed tomography shows a homogeneous low density area with occasional rim enhancement (Debeuckelaere et al., 1991).

Splenectomy has been the preferred treatment for

most patients in the past and remains a standard means of safe and rapid management (George et al., 1991). However, splenectomy results in a variety of immunological defects, including a poor response to intravenous immunization with particulate antigens, a deficiency in phagocytosis-promoting peptide, decreased serum IgM, and decreased properdin (Schwartz, 1994). Postsplenectomy infections are well documented, and mortality after operation for splenic abscess varies from 13 to 30% (Altemeier et al., 1973; Pawar et al., 1982). Experience with percutaneous aspiration and drainage has been more encouraging (Ramakrishnan et al., 1987). The safety and effectiveness of percutaneous drainage of splenic abscess were reviewed (Gertzof et al., 1981; Lerner and Spataro, 1984). Percutaneous drainage is most likely to be successful if the abscess is unilocular and if the abscess contents are amenable to complete evacuation by an indwelling suction catheter (Gleich et al., 1988). In addition to the usual advantages of percutaneous drainage over surgical drainage, such as avoiding surgery, decreased morbidity, and shorter hospitalization, preservation of splenic tissue is of great value immunologically because there is an increasing concern regarding its susceptibility to infection and sepsis following splenectomy, especially in children (Schwartz, 1994). Preservation of the spleen is important in pediatric age group. The procedure can be performed safely under CT or ultrasound guidance with intravenous sedation and local anesthesia. Relative contraindications for the procedure may include multiloculated abscess of the spleen, bleeding diathesis, and presence of large ascites.

The survival rate with splenic abscess has increased from 55 to 80% since 1950, mainly because of the more aggressive and advanced investigative and treatment mortalities (Keidl and Chusid, 1989).

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