The Management of Splenic Abscess

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SUMMARY

We report three patients with splenic abscess whom we attempted to treat without recourse to open surgery. Medical treatment alone was successful in one case, and medical treatment combined with percutaneous drainage was successful in the second. Splenectomy was required in the third case after failure of medical treatment and complications of percutaneous drainage. The difficulties in diagnosing splenic abscess are reviewed and the indications for splenectomy or percutaneous drainage, as opposed to medical treatment are considered.

INTRODUCTION

Mortality from untreated splenic abscesses is nearly 100 per cent (1, 2). Early recognition is important as prompt treatment is often curative, but diagnosis can be difficult since they present in a non-specific manner and are uncommon. Splenectomy combined with appropriate antibiotics is considered the treatment of choice (2, 3), although three cases of successful medical treatment have recently been reported (4—6). This prompted us to attempt to manage three patients with splenic abscess without recourse to open surgery.

CASE REPORTS

Case 1

A 73-year-old man presented with a history of malaise, anorexia and left hypochondrial ache followed by two rigors on the day of admission. On examination he was apyrexial with a blood pressure of 88/40 mmHg. Crepitations were heard at the left lung base, but abdominal examination was normal as was the remainder of the physical examination. White cell count (WCC) was elevated at 31.2 x 10⁹/l (96 per cent neutrophils), ESR was 78 mm in the first hour, C-reactive protein (CRP) was 175 mg/l, alkaline phosphatase was 592 iu/l, and the γ-glutamyl transferase was 135 iu/l. The transaminases and bilirubin were normal. Chest radiography was normal. Biliary tract sepsis was suspected and he was started on intravenous gentamicin, ampicillin and metronidazole. Abdominal ultrasound revealed gall-stones and, unexpectedly, multiple anechoic areas in the spleen, the largest being 5.2 cm in diameter, compatible with
abscesses. Blood cultures grew *Salmonella typhimurium*, while stool and urine cultures were negative. An echocardiogram revealed no evidence of valvular disease or vegetations.

As the patient had only recently recovered from a myocardial infarct, conservative management was continued with ampicillin 2 g six-hourly, and gentamicin 80 mg eight-hourly with monitoring of serum levels. Repeat ultrasound scans showed gradual disappearance of the splenic abscesses and WCC, ESR and CRP returned to normal. After four weeks parenteral treatment, oral amoxycillin 500 mg, six-hourly was introduced. Two weeks later he underwent elective cholecystectomy. At laparotomy, adhesions were noted around a normal-sized spleen. Splenectomy was not performed. Cultures of bile and gallstones were negative. He made a good recovery and was well when reviewed three months later.

Case 2

A 69-year-old man had become increasingly breathless and confused over three weeks and had suffered rigors. On admission he was confused but afebrile, and in congestive cardiac failure. There was a systolic murmur, but no other signs of subacute bacterial endocarditis and no localising neurological signs. White cell count was raised at $49.3 \times 10^9$ (94 per cent neutrophils). Chest radiograph showed cardiomegaly and left ventricular failure. A CT scan showed a recent left occipitoparietal infarct. Blood cultures grew *Streptococcus mitior*. Treatment for presumed subacute bacterial endocarditis with cerebral embolus was started with intravenous benzyl penicillin, 4 megaunits six-hourly and gentamicin 80 mg eight-hourly with monitoring of serum levels. His confusion settled and the heart failure responded to diuretics but he continued to run a low-grade fever, an elevated ESR at 78 mm/h and CRP of 80 mg/l. An isotope liver/spleen scan was carried out after more than two weeks antibiotic treatment and revealed a 6 cm filling defect in the middle of the spleen. This was anechoic on ultrasound scan and compatible with a splenic abscess. Antibiotic treatment was continued but further ultrasound scans over the next two weeks showed an increase in the size of the filling defect and the spleen became palpable. Percutaneous drainage of the abscess was carried out under ultrasound guidance and 200 ml of serosanguinous fluid was withdrawn. This contained numerous neutrophils and scanty Gram-positive cocci in chains, but yielded no growth on culture. An angiocatheter was inserted over a guide wire into the abscess cavity which was aspirated and irrigated daily with saline. Oral penicillin was continued for four weeks. Little fluid could be aspirated after the first week and the catheter was removed after 17 days. The tract healed rapidly. Ultrasound scan showed complete ablation of the cavity, and at review three months after stopping antibiotics he was well.

Case 3

A 60-year-old man with diverticular disease had a paracolic abscess drained surgically and was then treated for seven days with cefotaxime and metronidazole. Three days after stopping antibiotics he developed a recurrent fever, left-side pleuritic chest pain and was noted to have new murmurs consistent with mixed aortic valve disease. Blood cultures grew an enterococcus species. Treatment for presumed subacute bacterial endocarditis was started with intravenous benzylpenicillin, 4 megaunits six-hourly and gentamicin 80 mg eight-hourly with monitoring of serum levels. Fever and pain initially resolved, but recurred after two weeks of antibiotic treatment. Abdominal ultrasound revealed a 7 cm splenic abscess, from which 15 ml of pus was aspirated percutaneously. The procedure was complicated by severe pain which persisted, so that emergency splenectomy was performed. At operation no peritoneal soiling or significant
haemorrhage was found. Examination of the spleen showed an abscess within an area of infarction. Gram-positive cocci were found on microscopy of the contents although culture revealed no growth. Recovery was uneventful and antibiotics were continued for six weeks. He eventually required an aortic valve replacement. Inactive vegetations were found on the excised valve which were sterile on culture.

DISCUSSION

Most of the early reports of splenic abscess originated from the tropics and sub-tropics, with typhoid fever and malaria being cited as the principal causes (7). Other less common causes include amoebiasis and relapsing fever (8, 9). Splenic infarction was thought to be the predisposing event in both relapsing fever (9) and malaria (10). In malaria the increased incidence of splenic abscess in the tropics possibly reflects its association with the sickle cell gene (11).

In more temperate climates splenic abscess is a well-recognised complication of both infective endocarditis and bacteraemic salmonella infections (1, 2). Our cases illustrate the lack of specific presenting features emphasised in previous reviews (1, 2, 12). Fever is invariably present, but is often of low grade. Laboratory investigations usually reveal high values for WCC, ESR and CRP. Blood cultures are positive in up to 60 per cent of cases. These are all non-specific indicators of infections and do not help to localise the site. Tenderness over the spleen is present in only 70 per cent of cases and the spleen is palpable in less than 50 per cent (1).

Chest radiography may reveal a raised left hemidiaphragm or left pleural effusion suggestive of a sub-diaphragmatic process, but is normal in approximately 25 per cent of cases (2). Plain abdominal radiographs are occasionally helpful, but confirmation of the diagnosis usually depends on isotope, ultrasound or CT scanning. Before these investigations became widely available a long interval between the onset of symptoms and the establishment of a firm diagnosis was common and even now the unimpressive nature of the presenting symptoms can cause delays which may have serious consequences. In our first case the diagnosis had not been considered and was made fortuitously during upper abdominal ultrasound examination for liver disease. In our second case the splenic abscess was possibly present at the time of the patient's presentation, as marked leucocytosis and rigors are unusual in S. viridans endocarditis. However, the splenic abscess was not diagnosed until the patient failed to respond to antibiotic treatment and a further focus of infection was sought by isotope scanning of the liver and spleen. Similarly in our third case the splenic abscess was not diagnosed until a search for a further infective focus was instituted following the patient's failure to respond to antibiotic treatment.

Previous reports stress that the correct management of splenic abscess is early splenectomy in addition to antibiotics (1—3). Simson (3) in a review of 34 cases of solitary abscess reported a 100 per cent survival of patients who had splenectomy before abscess rupture and only a 43 per cent survival in those who were found to have a ruptured abscess at surgery. Without splenectomy, the condition was uniformly fatal. We believe that the availability of ultrasound scanning to define and closely follow changes in the size of the abscess allows a more conservative approach to be taken. Parallels can be drawn with the management of liver abscess. Rubin et al. (13) stated in 1974 that 'prolonged antibiotic administration and aggressive surgical drainage are the corner-stones of effective management'. Since then it has become apparent that many pyogenic liver abscesses can be successfully treated either by appropriate antibiotics alone (14) or by aspiration in addition to antibiotics (15). For prolonged drainage and irrigation following aspiration a catheter can be placed within the abscess cavity. Successful drainage was achieved in more than 80 per cent of cases in two series employing this technique for intra-
abdominal abscesses at a variety of sites (16, 17). In view of the rarity of splenic abscess, reported experience with medical treatment will accumulate very slowly. Our first patient is the first reported case of successful medical treatment of splenic abscess caused by salmonella infection. However, splenic abscess was a common complication of typhoid fever in the pre-antibiotic era and it is probable that unrecognised subclinical splenic abscesses may have formerly been successfully treated with antibiotics alone.

It seems reasonable to institute medical treatment with antibiotics in those patients with small, multiple splenic abscesses in whom a causal organism has been identified and attempt a diagnostic percutaneous aspiration when the organism(s) are unknown. While similar indications apply to larger, single abscesses, cure without drainage is less likely and the duration of antibiotic treatment required may be longer. Aspiration with or without catheter insertion could be attempted when technically possible. Clearly if an abscess progresses despite optimal antibiotic treatment a drainage procedure or splenectomy is essential. In our second case it seems likely that an abscess was present when the patient presented; hence when the initial ultrasound scan was performed it was unclear whether the abscess was regressing or evolving on treatment. Subsequent progression of the abscess was a clear indication for aspiration. Similarly, in our third case the splenic abscess had apparently progressed on optimal antibiotic treatment and percutaneous aspiration was therefore attempted immediately. Although unsuccessful there were no serious complications.

The risk of aspiration compared with that from open surgery will be determined by a number of factors, in particular fitness for anaesthesia and the need to exclude other intra-abdominal disease. However, the importance of the spleen in combating a range of infections, especially those due to encapsulated bacteria (18), recommends an approach which avoids splenectomy whenever possible (19).

REFERENCES


