

MANAGEMENT OF SPLENIC ABSCESS

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Abstract

Splenic abscess is a rare clinical entity with an incidence of 0.2 to 0.7% in autopsy based studies. untreated splenic abscess is associated with nearly 100% mortality. This study aimed to clarify the risk factors and management of splenic abscess. This is a retrospective and prospective study of patients with splenic abscess treated at Al-Sader Teaching Hospital over a six-year period. Ten patients were managed. they were six males and four females aged range 11 to 31 years, duration of symptoms ranged from 2 to 30 days. the main symptoms were fever, chills, left hypochondrial pain, anorexia and weight loss and the main physical signs were; Left upper abdominal tenderness, splenomegaly, hepatomegaly and distension. Six patients were treated by antibiotics and splenectomy. Three patients were treated by antibiotics and open drainage of the abscess and one patient was treated conservatively by antibiotics. It is concluded that prompt diagnosis and treatment based on high index of suspicion will reduce the high morbidity associated with this rare disease. it is hoped that as appropriate skills and imaging techniques become more available in our country more splenic abscess could be managed by percutaneous drainage specially when there is a solitary abscess cavity.

Introduction

Splenic abscess is an uncommon condition and requires early diagnosis to allow effective treatment. The reported incidence in autopsy series varies between 0.2–0.7%¹⁻⁷.

The disease is thought to be increasing in frequency because of the growing number of immunologically compromised patients^{1,3}. The first account of splenic abscess come from the writing of Hippocrates. Grand Morsel is credited with the first detailed description of the disease with case series of 57 patients published in 1885¹. Splenectomy is accepted standard treatment for splenic abscess. Various modalities for the treatment of splenic abscesses have been developed, including open drainage, laparoscopic splenectomy and percutaneous drainage^{1,3,5}.

Splenic abscesses occur most commonly in patients underlying disorders

such as infection, embolic disease, trauma, malignant haematologic conditions, Haemoglobinopathy or immunosuppression. Solitary abscesses usually represent localized disease. Overall, the clinicians will most often (70%) encounter patients with solitary abscesses¹.

Splenic abscess occur much more often in the tropics where they are frequently related to thrombosis of splenic vessels with infarction in a patient with sickle cell anemia^{8,9}. The mechanism of splenic infarction is attributed to crystallization of abnormal Hb during periods of hypoxia or acidosis⁸⁻¹⁰. Patients with sickle cell disease are at greater risk of developing splenic sepsis. Splenic abscess occurs secondary to splenic infarcts. The association of splenic abscess with sickle cell disease was first reported by Beet in 1949, Two predisposing factors were recognized: repeated splenic infarctions which are more likely to occur with splenomegaly

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and exposure to systemic bacterial infection to which sickle cell disease patients are susceptible as a result of hyposplenism⁸⁻¹¹. Pyogenic splenic abscess have been reported with increasing frequency in intravenous drug abusers⁹⁻¹². Also the increasing incidence of immunosuppression state in this decade due to the use of chemotherapy in oncology, transplantation and acquired immune deficiency syndrome, had led to increased reporting of splenic abscess whereby splenic fungal abscesses have developed, many of these patients have been on systemic antibiotics and intestinal colonization with candida developed⁹.

A 1997 review of splenic abscesses by Ooi and Leong calculated an incidence ranging from 0.07–0.14 % . More recent data from the Danish National Patient Registry showed an incidence of 0.0049 % per year of hospital deaths. A male predominance exists (67%), with male to female ratio being approximately 2:1. The average age is 41.1 years, ranging from 6 month to 92 years¹.

Several mechanisms for splenic abscess exist: Haematogenous seeding: an example from the beginning of the twentieth century is a salmonella abscess in patient with typhoid fever, other example with leukaemia who developed a fungemia during chemotherapy followed by fungal splenic abscess^{8,11}.

Contiguous spread: This include spread from gastric or colonic perforations, pancreatic pseudocyst and subphrenic abscesses^{1,6}.

An intravenous drug user can develop bacterial endocarditis, septic embolization or Segmental splenic infarction followed by splenic abscess¹.

Radiographic finding may include a left upper quadrant mass, extra intestinal gas in the abscess from gas-forming organisms; displacement of other organs, including: kidney, colon and stomach,

elevated left diaphragm, and left pleural effusion.

Ultrasound is low cost, non invasive, and readily repeatable the interval changes, and may demonstrate intrasplenic defects with abscesses > 2-3 cm³ . Computed tomography(CT) is the most reliable test, the typical CT finding is low-density mass lesion with peripheral enhancement following intravenous contrast injection. The CT is a diagnostic if the lesion contains collections of gas or a fluid level⁵.

Complications of untreated abscesses include hemorrhage into the abscess cavity or rupture into the peritoneal cavity, stomach, colon, bronchus, or pleural space. Traditionally, the management of bacterial splenic abscess includes the prompt administration of intravenous antibiotics and splenectomy. However, in recent decades, the role of the spleen in the host's immune system has been better understood, and the well documented fear of over whelming sepsis, as well as other harmful complications of splenectomy, has led to a more conservative approach towards splenic abscess. Spleen preservation is now well established in the management of splenic trauma, as well as for some other benign splenic lesion when the infecting microorganism has been identified and lesion are small ,prolonged anti microbial therapy and follow up sonography or computed tomography may be appropriate .

Recently, good results have been reported with sonographic or CT-guided percutaneous drainage of solitary bacterial splenic abscess^{3,13}.

Complications associated with percutaneous drainage of splenic abscesses include haemorrhage, pleural empyema, pneumothorax and fistula^{5,6,13}. Untreated splenic abscess is still fatal, this emphasizes the need for prompt diagnosis and treatment .

Patients and methods

This retrospective & prospective study was conducted in AL-Sader Teaching Hospital in Basrah during the period from 1999-2005. The study included ten patients with splenic abscess, four patients were females (40%) and six patients were males (60%), the age ranged from 11 to 41 years. All patients underwent investigations which include Hb% , WBC and differential count, ESR, haemoglobine electrophoresis and widal test, chest x-ray, ECG if indicated, abdominal ultrasound and abdominal CT scan in some.

The diagnosis of splenic abscess was based mainly on history, physical examination and abdominal ultrasound.

All patients covered with antibiotics which include cefataxem, ampiclox, ampicillin vials according to the availability plus metronidazol vials.

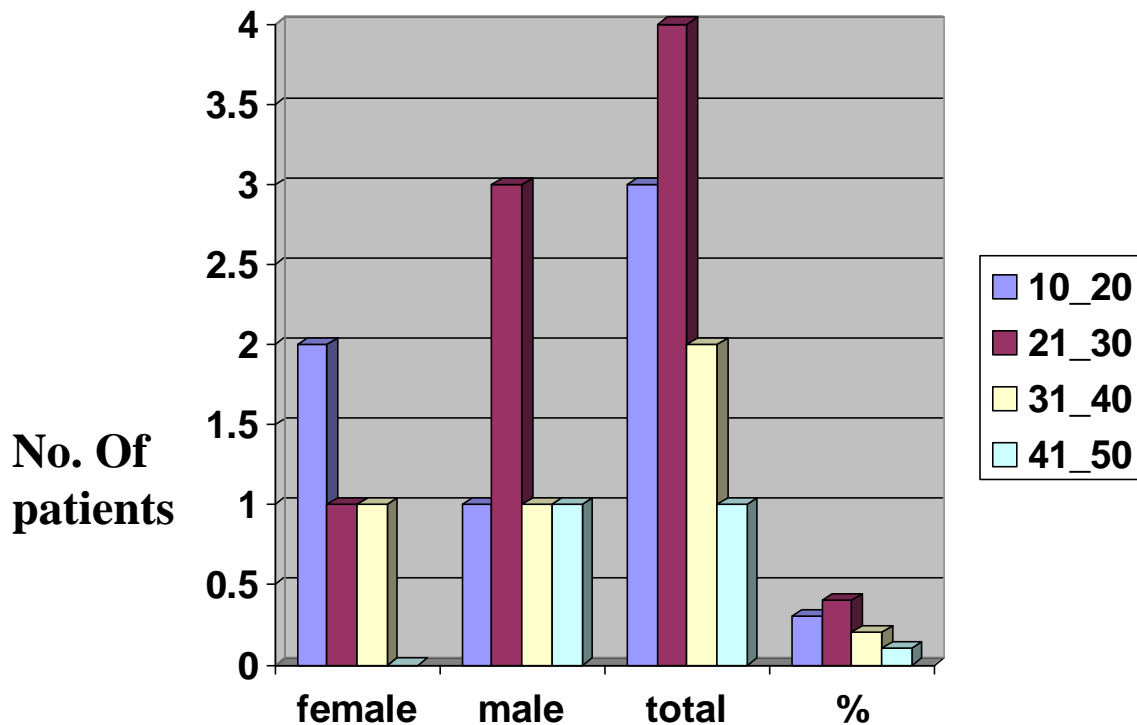
Six patients had splenectomy under general anesthesia through upper mid line incision or left subcostal incision, three patients had drainage of abscesses only and one patient managed conservatively by antibiotics only.

Information was also taken post-operatively about hospital stay and postoperative complications.

Results

The study included ten patients, four patients were females (40%) and six patients were males (60%). the age of the patients ranged from 11 to 41 years.

The distribution of abscess amongst both sexes in different age groups is shown in figure 1& table I.



Figure(1)

Table I: Age and Sex distribution

Age	female	male	total	%
10_20	2	1	3	30%
21_30	1	3	4	40%
31_40	1	1	2	20%
41_50	0	1	1	10%

Table I : shows that most patients with splenic abscess were found in age group between 21-30 years (40%) in comparison with other age groups. Males are affected more than females, 60% to 40% respectively. Three patients had sickle B-Thalassemia (30%) and three patients had positive widal test (30%), two patients had low Hb%, the first is a female with Hb% of 5.5g/L and the second is a male with Hb% of 5.6 g/L they had sickle B-Thalassemia, and they received multiple blood transfusion. One patient was pregnant, all patients had ultrasonic examination of the abdomen, three of them had splenomegaly and two had hepatosplenomegaly.

Culture of pus taken from the abscess cavity showed a growth of staphylococcus aureus in two patients, growth of streptococcus in two, growth of E.coli in one patient and in four patients the culture results were negative and one patients had no culture as in table 2.

Table II: Result of culture.

Risk factors	No. of patients	Sex		Type of growth	No. of patients	History of antibiotics	%
		M	F				
Sickle-thalasema	3	1	2	Streptococcus	2	No	30%
				No growth	1	Yes	
Typhoid fever	3	2	1	Staph.aureus	1	No	30%
				No growth	1	Yes	
Pregnant	1	–	1	Staph.aureus	1	No	10%
No risk factor	3	3	–	E. Coli	1	No	30%
				No growth	2	No	

Postoperative complications; one patient developed superficial wound infection (stitch abscess), the other one developed deep seated wound infection both of them were managed conservatively.

Discussion

Splenic abscess is an uncommon condition, during six years study only ten cases reported in our hospital.

In this study, the most affected age group were young patients (11-35) years, with peak incidence at 25 years. The male is slightly more affected than female, male is 60%, while female is 40%, more recent data by Danish National Patient Registry it shows average age group 41.1 years, and male predominance exists (67%)¹. This difference in the age group could be explained by that one third of our cases had sickle-thalassaemia and the other one third of patients had typhoid fever, while in the west society it could be due to increase the number of patients who are immunocompromised including patients with AIDS, drug abuser, those undergoing chemotherapy and patients with multi-system organ failure.

The most common presented symptoms were fever, left upper abdominal pain, nausea, vomiting, poor appetite and weight lost. The duration of symptom usually short ranged from 2 days to 2 weeks, it goes with other study done by Chun and colleagues (1980). The mean symptomatic period for patients with splenic abscess was 16 days. Signs and symptoms of splenic abscess are nonspecific¹. In patients with haemoglobinopathies usually these symptoms associated with crises, two patients in our study admitted at time of crises, they need multiple blood transfusions. The other four patient had no history of blood or chronic illness and the presenting symptoms were sudden attack of fever and left upper abdominal pain.

Ultrasonic examination of those patients with history of haemoglobinopathy and typhoid fever showed multiple hypoechoic lesions in the spleen, also two

patients with sickle-thalassaemia had feature of chronic cholecystitis and this could be the source of splenic abscess. Cholecystitis could be the cause of transient bacteraemia in a patient with sickle cell anemia who had multiple prior splenic infarction^{8,11}.

In our study the microbiologic samples obtained from abscess cavity showed Gram-positive aerobic organism in four patients and in the other four patients the culture results were negative and this could be explained by; that they could be anaerobes or fungal infection. Unusual pathogen and polymicrobial flora should be suspected in patients with AIDS and patient with prolong chemotherapy¹³.

Six of our patient were managed by splenectomy, three of them had haemoglobinopathy and the role of splenectomy in the management of patients with haemoglobinopathy is well established to reduce frequency of blood transfusions and interne help to prevent iron over load which is common in these patients⁸, and the other three patients had multiple abscess cavity, splenectomy is also indicated were splenic abscesses large or septated¹⁴.

Other three patients managed by abscess drainage only. One patient managed conservatively by antibiotic with frequent ultrasound checking, the abscess cavity reduce in size gradually and disappear and the patient get well and discharged, some splenic abscess when the abscess are small, prolonged antimicrobial therapy and follow-up sonography or computed tomography may be appropriate^{3,14,15}.

Postoperative complication are few: one patient develop superficial wound infection (stitch abscess) and the other develop deep seated wound infection, in comparison with study by Danny Odell the percentage of postoperative

complication are 20-40% including atelectasis, Left sided pleural effusion, subphrenic abscess, pancreatic injury, thrombocytosis and postsplenectomy sepsis¹.

Our study confirms the rare incidence of splenic abscess, zero mortality, prompt diagnosis and treatment. Splenectomy and drainage of abscess is the accepted standard treatment for splenic abscess associated

with haematological disorders, and drainage of abscess usually for those had solitary and localized disease with no other associated disorders.

We hope that splenic abscess patients could be managed by laparoscopic surgery and percutaneous drainage especially for solitary abscess cavity.

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