Research Article

Splenic Abscess in Adult Patients with Sickle Cell Disease

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Abstract: In Sickle cell disease (SCD) patients, the spleen commonly enlarges during the first two decades of life but then undergoes auto-splenectomy due to repeated attacks of vaso-occlusion and infarction. This, however, is not the case in Saudi patients with SCD, where Splenomegaly sometimes persists into adult life. Sickle cell disease (SCD) is one of the commonly inherited diseases in the Eastern Province of Saudi Arabia where Splenomegaly with high frequency in the adolescent, predisposes the patient to have Splenic abscess. A 10-year (January 2000 - December 2010) retrospective review of twenty nine cases of sickle cell disease patients complicated with Splenic abscess records was performed. Information regarding demographics, clinical presentation, etiological agents and management was gathered and analyzed. Splenic abscess is a rare complication of sickle cell disease but is the most serious complication. Splenic infarction is one of the most predisposing causes for splenic abscess. There are different modalities for the management of splenic abscess as ultrasound or CT guided aspiration or splenectomy. In conclusion, patients with persistent Splenomegaly should be followed closely for development of complications which may necessitate splenectomy. Splenectomy remains the treatment of choice in sickle cell disease patient with splenic abscess.

Keywords: Abscess, Spleen, Sickle

INTRODUCTION

Sickle cell disease (SCD) is a common hemoglobinopathies in the Eastern part of Saudi Arabia [1]. It displays unique features where high level of fetal hemoglobin (HbF) and Splenomegaly with hypersplenism is noted in the adult patients [2].

The late persistent Splenomegaly in the SCD patients in this region, reveal the milder nature of the disease comparing to the classic African sickle cell disease.

The enlarged spleen in those patients causes additional morbidity by predisposes them to the splenic complication like splenic sequestration crisis, massive infarction and abscess formation.

The defective function of the enlarged spleen is altered or lost in SCD patients (functional hyposplenia), and these patients are at increased risk of fulminate bacterial infections which predisposes them to the development of splenic abscess.

The signs and symptoms of splenic abscess in adult SCD patients are generally non-specific leading to delay in diagnosis and treatment, and there are only few reports in this matter [3].

This is a review of our experience with 29 cases of splenic abscess in adult patients with sickle cell disease from the Eastern province of Saudi Arabia.

METHODOLOGY

This study was performed at King Fahd Hospital, Hofuf, Eastern Province of Saudi Arabia. The study included twenty nine sickle cell disease patients. These patients admitted from Emergence room, Surgical clinics and referred from Hematology Department, in the period from (January 2000 - December 2010). A splenic abscess was defined as an intrasplenic pus collection. Eighteen of them were males and eleven were females. Age range was from 12-32 years with mean age (±SD) was 21.3 years (±10.5).

All patients underwent history including history of vasoocclusive crises, physical examination and laboratory investigations including

- CBC: White blood cell count, hemoglobin and platelet count,
- Coagulation profile: Prothrombin time, partial thromboplastin time and international normalized ratio,
- Sickling test,
- Hemoglobin electrophoresis and
- Biochemistry (blood sugar, serum bilirubin,
Imaging evaluation included
• Chest X-ray,
• Abdominal ultrasonography and
• CT abdomen with IV contrast.

All patients were hydrated with intravenous fluid at 1.5 times of their maintenance rate. When necessary, blood transfusions of packed red cells were given to restore their Hb to 10 gm/dl and hematocrit between 30%-40%. Exchange blood transfusions were performed in patients with hemoglobin S (HbS) more than 70%.

The patients whom underwent splenectomy received polyvalent pneumovax from second week post operative. Patients with solitary big abscess were managed by Percutaneous CT guided aspiration and the aspirated pus was sent for culture and sensitivity with follow up by abdominal sonography or CT abdomen in some cases. Meanwhile, patients with small abscess were managed by intravenous antibiotics.

All patients received antibiotic therapy for 8–10 days, including a combination of second generation cephalosporin and metronidazole.

Clinical improvement of the patients was apparent from the first day after the intervention.

RESULTS

The study included twenty nine sickle cell disease patients. Eight patients have a history of laparoscopic Cholecystectomy (5 females and 3 males). Twenty one patients have history of recurrent of hospital admissions, due to sickle cell crisis.

Twenty five cases presented by a classical manifestation of splenic abscess (fever, leucocytosis and upper abdominal pain) and other 4 cases presented by sever crisis and jaundice.

The Hb mean was 7.8g/dL (ranged from 6.8g/dL – 9.1g/dL), the Hb S mean was 84.3% (ranged from 64.2% - 89.8%), and The Hb F mean level was 17.8% (range 12.8% - 25.6%). The WBC were ranged from 19.7×10^9 – 35.6×10^9

Abdominal ultrasonography findings were, 22 patients were diagnosed as a splenic abscess, and 7 cases were diagnosed as massive splenic infarction or splenic degenerative diseases, while all cases were diagnosed as splenic abscess (100%) by CT abdomen with IV contrast.

In the present study, 8 patients have multiple small splenic abscesses and treated by IV antibiotics (metronidazol-3rd generation cephalosporin - aminoglycosid); 4 of them underwent splenectomy due to failure of conservative treatment. Six patients have solitary splenic abscesses and were treated by CT guided aspiration with successful management in 5 cases and the 6th case underwent splenectomy due to failure of splenic abscess aspiration. The other 15 cases were diagnosed by CT as a massive or multiple big splenic abscesses and underwent splenectomy.

At operation all spleens had multiple infarctions, and dense adhesions between the spleen, diaphragm, splenic flexure of the colon, and greater omentum. The mean spleen weight was 1230 g (range 960 – 3150 g)

The result of pus cultures, the most common organisms detected were Streptococcus, Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli, Proteus mirabilis, Klebsiella pneumoniae, Salmonella enteric, Mycobacterium species, Bacteroids and other gram -ve bacilli , while in 11 cases (50%), the cultures showed polymicrobial results. There was no mortality in our study but nine patients developed postoperative complications.

DISCUSSION

SCD It is one of the commonly inherited hemoglobinopathies in the Eastern Province of Saudi Arabia, with a sickle cell trait frequency of nearly 20% in some areas. In this region SCD is reported to be more benign than in other parts of the world. This has been attributed to high levels of HbF and the frequently associated a-thalasemia [3].

The spleen commonly enlarges during the first decade of life but then undergoes progressive atrophy due to repeated attacks of vaso-occlusion and infarction leading to autosplenectomy; however, sometimes Splenomegaly persists beyond the first decade of life, and in some even into adult life [4].

Several mechanisms for splenic abscess exist like bacteremia and splenic infarction. Published studies suggested that preexisting splenic tissue injury and bacteremia are required to form a basis for an abscess [5].

Splenic abscess is a rare entity, with a reported frequency of 0.05-0.7%. It reported mortality rate is still high, up to 47% and can potentially reach 100% among patients who do not receive the proper treatment [6].

The history and physical examination are not sufficiently reliable to make the diagnosis of splenic abscess. However, information derived from the history and physical examination can suggest this diagnosis. Therefore, the clinician must maintain a high index of suspicion, particularly in the high risk patient groups.

The signs and symptoms of splenic abscess have been well described (The classical triad of fever, left upper quadrant pain, and Splenomegaly), but are not
very specific. Therefore, splenic abscess remains a substantial diagnostic challenge [7].

Abdominal pain (>60%) typically occurs suddenly, with a maximum in the left hypochondrium. General malaise and other constitutional and dyspeptic symptoms can be included, and Splenomegaly (50%) is less frequently observed [8].

A chest radiograph is typically the first step in the preoperative evaluation. Abdominal Ultrasonography of splenic abscess is variable and showed different sonography patterns. CT scanning is presently the criterion standard in helping to establish the diagnosis of splenic abscess.

Early supportive care and parenteral broad-spectrum antibiotics are importance while further diagnostic and therapeutic arrangements are made [9].

Percutaneous drainage is indicated for easily accessible uni-located or bi-located abscesses, and it is done under CT or Ultrasonography guidance and local anesthesia. Percutaneous drainage should be reserved for patients with disease that contraindicated surgery or in young patients to avoid splenectomy [10].

Multiple small splenic abscesses were treated conservatively by intravenous antibiotics. however, there was high rate failure of this conservative treatment in splenic infarction and infection within Splenomegaly in SCD patients and usually followed by splenectomy.

Splenic abscess is variable and showed different preoperative evaluation. Abdominal Ultrasonography of splenic abscess in sickle cell disease patients. Author opinion favors splenectomy for many reasons as most of the splenic abscesses are multiple, large, septated and non accessible to needle aspiration due to perisplenitis and fibrosis. In addition, it is difficult to eradicate the infection from the spleen, which is not well penetrated by systemic antibiotics because the abscesses occurred on top of splenic infarction [11].

So, the splenectomy is the gold standard of treatment for splenic abscess in sickle cell disease patients. Laparoscopic splenectomy for splenic abscess may be successful in some cases [12].

CONCLUSION
As SCD patients are at increased risk of splenic abscess, infarcted splenic parenchyma is highly susceptible to abscess formation. Fever, left upper abdominal pain and splenic enlargement are the most common clinical manifestations. CT scanning of abdomen has simplified the diagnostic dilemma.

Medical therapy is indicated in a few patients and percutaneous drainage could be selectively attempted. Splenectomy remains the treatment of choice of splenic abscess in sickle cell disease patients.

REFERENCES