

Management of Splenic Abscess at Tertiary Care CenterParita H Dobariya¹, Deepak J Vora², Shashikant V Umraniya³, Devang P Gramani⁴¹3rd Year Surgical Resident, SCL Hospital, Ahemdabad²Associate Professor, SCL Hospital, Ahemdabad³Assistant Professor, SCL Hospital, Ahemdabad⁴2nd Year Surgical Resident, SCL Hospital, Ahemdabad

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Abstract:

Absolutely, advancements in imaging techniques have significantly improved the early diagnosis and treatment of splenic abscess. In the past, these abscesses were indeed considered rare and life-threatening due to challenges in diagnosis and subsequent high mortality rates if untreated. However, diagnosis of this abscess were difficult but with better diagnostic tools like CT scans and ultrasound, we can now detect splenic abscesses earlier. Hence with timely intervention and appropriate treatment strategies such as antibiotics and sometimes drainage, the mortality rate has drastically decreased. This underscores the importance of early recognition and aggressive management of splenic abscesses in improving patient outcomes. Given its rarity, prompt diagnosis and treatment are crucial to prevent complications such as rupture of the abscess or spread of infection.

Aim and Objective: The main aim of this study focus on Management of Splenic abscess at Tertiary care center. Though Splenic abscess is rare, but due to advancement in diagnostic technique, it has helped in early diagnosis and better treatment of cases of Splenic abscess.

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Introduction

A splenic abscess is indeed a rare but serious condition where a collection of pus forms within the spleen. [1]

A splenic abscess can involve pus-filled areas either within the spleen tissue itself (parenchyma) or in the space just beneath the capsule of spleen (sub-capsular space). [2]

These abscesses are typically caused by bacterial infections that reach the spleen through the bloodstream, often as a complication of infections elsewhere in the body or through infected emboli.

Splenic abscesses typically occur as solitary lesions. Multiple abscesses in the spleen are more commonly associated with hematogenous spread of infection, where bacteria or other pathogens travel through the blood stream and infect multiple areas of the spleen. [3]

They contribute to the development of splenic abscesses by compromising the spleen's immune function or providing pathways for bacterial entry and proliferation. [4]

Etiological factors also include HIV/AIDS, chronic liver disease, diabetes and IV drug abuser. Patients typically present with fever, left-sided upper abdominal pain and leukocytosis often in the context of generalized sepsis.

Historically, diagnosing splenic abscess before 1970 was challenging and often delayed, relying on exclusion methods. However, advancements in medical imaging such as splenic scintiscans, ultrasonography, and CT scans have greatly improved early detection by providing objective evidence of splenic involvement thereby leading to better outcomes for affected individuals. [5]

Treatment typically involves a combination of antibiotics and either USG/CT Guided percutaneous drainage or surgery (Splenectomy). [6]

Method and Material

The study consists of 10 patients (Age Range: 16yrs-70yrs) who were diagnosed as Splenic abscess on ultrasound and were investigated further and managed accordingly.

This study is observational study and is done prospectively at NHL medical College and Research Center in Department of General Surgery and data were gathered of 10 patients (6 Females and 4 Male)

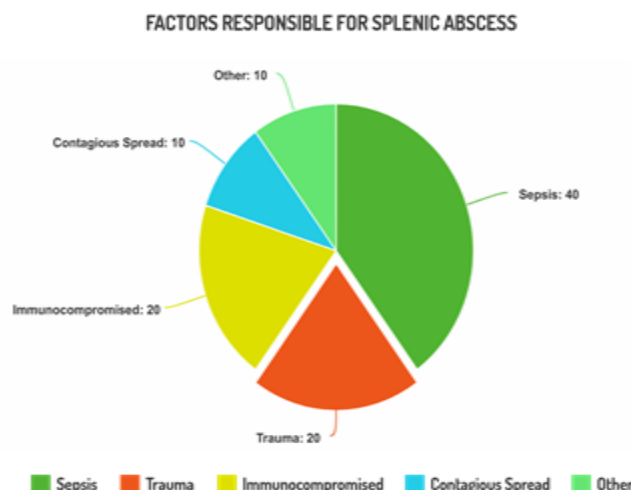
Patients clinical features at the day of admission and throughout the course of stay were recorded and observed. Data was collected and segregated on basis of:

→ Age

- Sex
- Demographic detail
- Predisposing factor
- Size of abscess cavity
- No. Of Cavity

- Diagnostic tool
- Treatment modalities

Below depicted chart shows visual presentation of factors responsible for the cause of splenic abscess among the cases observed.



Discussion

Splenic abscess are quite fatal and difficult to detect.

Among the 10 cases observed, majority of the cases presented with complain of Fever and Left side

Abdominal Pain. (7out of 10). Only 1 case among 10 presented with complain of mass in Left Upper Abdomen. Out of 10,1

presented with atypical symptom like Generalized weakness and vomiting.

Symptoms	% of Patient
Fever	70%
Left side Upper Abdominal Pain	70%
Mass in left upper Abdomen	10%

On further investigation,7 out of 10 cases were detected as splenic Abscess on the basis of Ultrasound and other 3 with the help of CT scan. [7]

After diagnosis most common Etiology was found to be Sepsis (4Out10) which accounts 40% among all.

20% cases were found to have history of trauma over Left Hypochondriac region after which they started developing complain. Penetrating trauma or splenic infarction can lead to compromised blood flow in the spleen. This compromised blood flow can create an environment where bacteria can invade and cause abscess formation. [8]

20% cases were found in Immuno compromised state (of which 10% were drug abuser) in whom the condition weaken the immune system's ability to fight infections.

10% of the cases developed abscess from contagious spread of infection from nearby sources in the abdomen, such as pancreatic abscesses or diverticulitis.

10% of the patient showed other cause like Endocarditis in which Inflammation of the heart's inner lining (endocardium) can lead to the formation of septic emboli that may travel to the spleen. Other cause also includes Hemoglobinopathies like sickle cell disease which can impair spleen function and increase infection risk. [9]

Out of 10, 7 had single abscess Cavity (Size varies from 2-5cm) while rest 3 had Multiple Abscess cavity (Max. size of 4 cm) and among the 3, 1 was multiloculated with Septations.

Chest Xrays of 8 out 10 cases did not show any significant finding while 2 of them showed elevated left hemidiaphragm and left-sided pleural effusion.

On the other hand, Many more modalities like scintigraphic studies such as technetium-99m scans, Splenic arteriography, have been developed for early detection. These imaging techniques play a crucial role in guiding healthcare providers towards an accurate diagnosis. They help determine the size,

location, and characteristics of splenic abscesses, which can be beneficial for deciding appropriate treatment strategies such as antibiotic therapy or surgical intervention but due to limited resources at few Institutes these techniques are not possible and the diagnosis depends on Ultrasound and CT Scan.

Blood cultures and other laboratory tests are also essential to identify the causative organism and guide appropriate antibiotic therapy. Blood work typically shows leucocytosis and positive blood cultures may indicate infection.

Case No.	Factor Responsible for cause	Presenting symptom
1	Sepsis	Fever and Abdominal Pain
2	Sepsis	Abdominal Pain
3	Trauma	Abdominal pain
4	Sepsis	Fever, Abdominal pain and swelling over left side upper abdomen
5	Contiguous Spread (Ruptured Liver Abscess)	Fever and Abdominal Pain
6	Immuno compromised	Fever
7	Sepsis	Fever and Abdominal Pain
8	Immuno compromised	Fever, Generalized weakness and vomiting
9	Endocarditis	Fever
10	Trauma	Abdominal Pain

On Blood Culture of 10 cases it was found that 5 out of 10 cases showed Bacterial growth of which staphylococcus Aureus to be the most common. 1 out of 10 showed fungal growth (Candida) whereas rest showed no growth on pus culture.

1 out of 10 also showed Mycobacterium tuberculosis on Blood Culture and was investigated further and was diagnosed with tuberculosis

The treatment of choice for splenic abscess typically involves a combination of antibiotics and, in some cases, drainage procedures and in some Splenectomy.

All 10 patients were given Antibiotics according to their Culture and sensitivity reports. Initially empirical therapy was give which covered for both aerobic and anaerobic bacteria.

Out of 10,1 whom fungi was identified as the causative organism, Amphotericin B was started immediately and was advised to be continued for 6-24 weeks.

Out of 10, 6 patients showed good results after giving antibiotic, of which 1 who showed

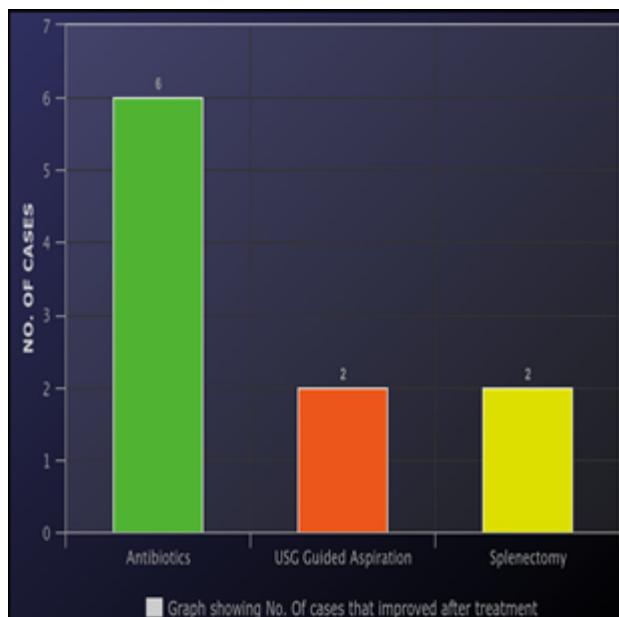
Mycobacterium tuberculosis was started AKT, was relieved from symptoms and on repeat Ultrasound showed decrease in size of abscess cavity compared to previous Ultrasound

1 out of 10 was not improving after giving antibiotics and had other complications (peritonitis and Subphrenic Abscess collection), splenectomy is considered.

For patients who are critically ill and unable to tolerate surgery image-guided drainage of the abscess may be attempted.

In 3 Patients, USG guided Splenic abscess aspiration was done and out of them 2 showed improvement and 1 who showed no improvement and with multiloculated abscess cavity and dense inflammatory adhesions was not hence later on splenectomy was done.

This approach of aspiration is particularly suitable when the abscess is discrete, unilocular (single cavity), and contains thin fluid that can be effectively drained.



Case No.	Pus Culture	Blood Culture	Etiology
1	Salmonella	Salmonella	Bacterial
2	Staphylococcus Aureus	Staphylococcus Aureus	Bacterial
3	E.Coli	No Growth	Bacterial
4	Salmonella	No Growth	Bacterial
5	No Growth	No Growth	Amoebic
6	Mycobacterium tuberculosis	Mycobacterium tuberculosis	Bacterial
7	Staphylococcus Aureus	Staphylococcus Aureus	Bacterial
8	Candida	Candida	Fungal
9	Streptococcus	Streptococcus	Bacterial
10	E.Coli	No Growth	--

In summary, the approach to treating splenic abscesses involves a tailored combination of antibiotics and, when necessary, drainage procedures. The choice between surgical and non-surgical management depends on the patient's clinical condition, the characteristics of the abscess, Sonographic findings and the response to initial therapy.

Later on Pus culture and Blood Culture it was evaluated that 6 out of 10 had Bacterial etiology, 1 had Amoebic, 1 had fungal and rest 2 showed no growth in both pus and Blood Culture.

Association of Infections from splenic abscess

- S. aureus, Streptococcus group were associated with endocarditis and Drug Addicts
- Salmonella was associated with Sepsis
- E. coli was associated with abdominal infections and was seen in patients with Abdominal Trauma.

C. albicans was associated with immuno compromised patients.

Hence, Antibiotics were later started according to their culture reports and showed better results.

If not diagnosed early and not promptly treated

splenic abscess may complicate. Out of 10 only 1 patient presented with Peritonitis and Subphrenic collection rest patient were stable as such without any complications.

Few other complications that can occur in patients of splenic abscess are mentioned below:

- Rupture
- Sepsis, Portal Pyemia
- Septic emboli
- Pleural effusion
- Pneumonia.

Conclusion

From the above study it can be concluded that splenic abscess being a rare but serious condition that can be challenging to diagnose due to its non-specific symptoms but due to advances in medical imaging techniques such as ultrasonography and computed tomography (CT), significant

enhancement have been seen in the ability to promptly and accurately diagnose splenic abscesses.

Typical clinical features include fever, left upper quadrant abdominal pain or tenderness, Mass in left Upper Quadrant or leukocytosis.

Splenic abscess can be single or multiple of which Multiple splenic abscesses are even more uncommon and often associated with higher mortality rates, particularly when diagnosis and treatment are delayed.

Hence early diagnosis allows for timely initiation of appropriate antibiotic therapy and sometimes even minimally invasive procedures like percutaneous drainage.

Surgical intervention, such as splenectomy, may be necessary in cases where there is extensive involvement of the spleen or if there is no response to antibiotics or percutaneous drainage.

Study year	Mortality Rate
1964-1974	60%
2022-2024	10%

According to a study which was done by Jeffrey D. Chulay M.D. among 10 patient (year 1964-1974), it was seen that mortality among the cases diagnosed with splenic abscess was 60% and failure to diagnose the case caused almost 30% of the death among patients earlier but now due to advancement in newer diagnostic techniques, mortality has been decreased upto 10%.

As a result, the prognosis for patients with splenic abscesses has improved over time due to these advancements in diagnosis and treatment.

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