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Splenic abscess: A single centre analysis

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Abstract---Splenic abscess is an unusual but potentially life-threatening illness, with a 0.7% incidence. The mortality rate for splenic abscess ranges from 15-20% in previously healthy patients with single unilocular lesions to 80% for multiple abscess in immunocompromised patients. An early diagnosis can be made by combining abdominal CT and/or US and clinical features. In this retrospective study of three years, there were a total 47 patients out of which 32 were males and 15 were females and the mean age was 38 years old. The most common symptoms at presentation were left upper quadrant or abdominal pain in all patients (100%), fever in 42 patients (89.36%) and nausea and vomiting in 26 patients (55.31%), breathlessness and tachypnea in 20 patients (42.5%) and 4 patients (8.5%) presented with palpable splenomegaly. A total of eight patients had pancreatitis, there were three patients with liver cirrhosis, two patients with history of splenic trauma, two patients with hiv , one patient with hbsag, two patients with tuberculosis and one patient

with gastric neoplasm i.e. GIST. The majority of 41 patients i.e. 87.23% in our study had leukocytosis while other 19 patients i.e. 40.42% had anemia and 5 patient had blood culture positive. Chest xray was abnormal in 23 patients (49%) and the most frequent finding was a left pleural effusion in 36%. All 47 patients underwent ultrasonography out of which most common finding was single unilocular splenic abscess in 33 patients (70%) while 14 patients (29.78%) had multiloculated abscess and no patient had ruptured abscess. Out of all 47 patients, 10 patients (21.27%) underwent CT scan. A total of 32 of 47 patients had received only intravenous antibiotics, seven patients underwent Percutaneous needle aspiration while four patients underwent percutaneous catheter drainage and four patients (8.51%) underwent splenectomy. In a total of 4 out of 47 patients i.e. 8.51%, mortality was seen in multilocular splenic abscess and none in unilocular splenic abscess. Thus, the treatment of the patient of all splenic abscesses should be individualised based on clinical condition of patient, laboratory investigations and imaging features. The triad of clinical examination, laboratory investigations and radiological reports should be used to finalise the treatment.

Keywords---spleen, abscess, infection.

Introduction

Splenic abscesses are either primary (tropical splenic abscess) or secondary. Those secondary to a focus of infection elsewhere in the body carry a high mortality and are rarely diagnosed ante mortem.

Splenic abscess is an unusual but potentially life-threatening illness, with a 0.7% incidence in autopsy series. The mortality rate for splenic abscess ranges from 15-20% in previously healthy patients with single unilocular lesions to 80% for multiple abscess in immunocompromised patients. Illness and other factors that predispose to splenic abscess include malignant neoplasms, polycythaemia vera, endocarditis's, prior trauma, haemoglobinopathies, urinary tract infections, iv drug use and AIDS.^[1]

A splenic abscess is very commonly seen in patients with predisposing factors such as bacterial endocarditis, septicaemia, immunologic deficiencies, intravenous drug abuse, splenic trauma and infarcts as they have an inefficient reticuloendothelial system and consequently is less likely seen in immunocompetent individuals ^[2]

Approximately 70% splenic abscess results from hematogenous spread of the infective organism from another location, as in endocarditis, osteomyelitis, and intravenous drug use. Gram positive cocci (*Staphylococci*, *Streptococci*, or *Enterococcus spp.*) and gram negative enteric organisms are typically involved. *Mycobacterium tuberculosis*, *Mycobacterium avium*, and *Actinomyces spp.* have also been found. Fungal abscess (e.g., *Candida spp.*) also occur.^[1]

An early diagnosis can be made by combining abdominal CT and/or US and clinical features. Treatment of a SA is based on antimicrobial therapy or percutaneous drainage (PD) or splenectomy with good-reported results.^[2] The purpose of this study is to review our experience of splenic abscess based on diagnosis, investigations, and treatment modalities and follow up of patients.

Materials and Methods

A total of 47 cases of splenic abscess were studied in patients of Dhiraj general Hospital, Vadodara. The study was done retrospectively in a time period of 3 years from march 2019 to march 2021. The following data were collected: demographic data, on admission signs and symptoms, risk factors, etiology, diagnostic modalities, lab findings, treatment plan opted, and treatment outcomes.

Inclusion Criteria: patients with splenic abscess only

Exclusion Criteria: patients having abscess in other organs other than spleen

All of these 47 cases were studied from medical history, surgical and/or autopsy findings, as well as plain abdominal x-ray and a chest x-ray.

The treatment plan was fixed based on clinical presentation of the patient, imaging findings and laboratory results. The treatments opted were conservative management (iv antibiotics only), percutaneous needle aspiration, percutaneous catheter drainage or splenectomy. After this, the patients were followed up.

Results:

Table 1: Sex wise distribution

	Number	Percentage
Male	32	68.08%
Female	15	31.91%
Total	47	100%

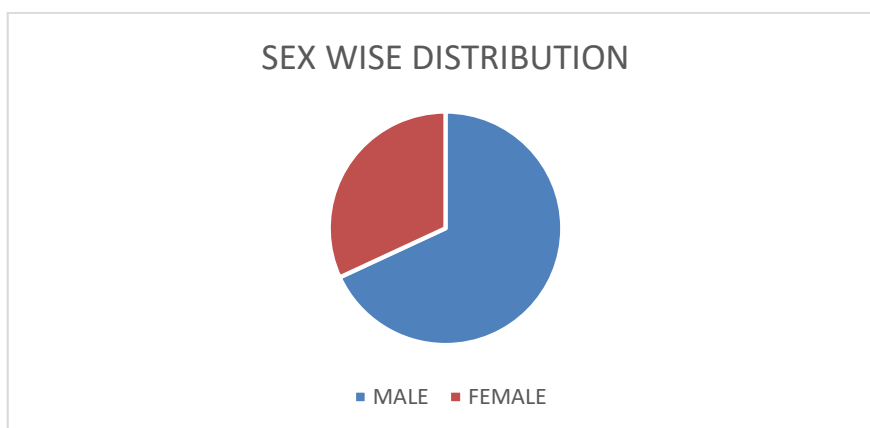


Table 2: Age wise distribution

Age(in years)	Number	Percentage
20-30	6	12.76%
30-40	22	46.80%
40-50	15	31.91%
>50	4	8.51%
TOTAL	47	100%

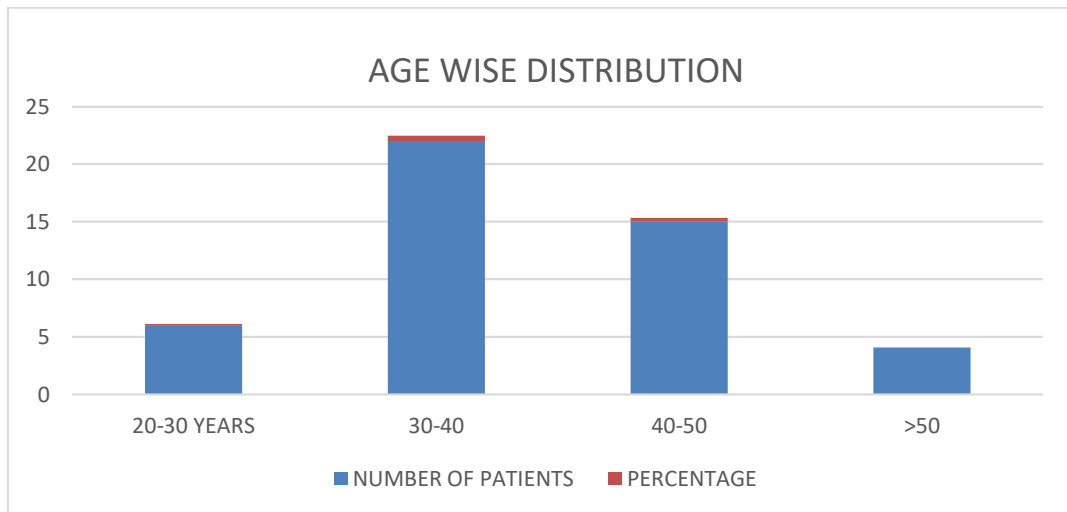


Table 3: clinical features

Sr. No	Signs and Symptoms	Number of Patients	Percentage
1	Abdominal pain/luq pain	47	100%
2	Fever	42	89.36%
3	Nausea Vomitting	26	55.31%
4	Breathlessness/Tachypnea	20	42.55%
5	Palpable Splenomegaly	4	8.51%

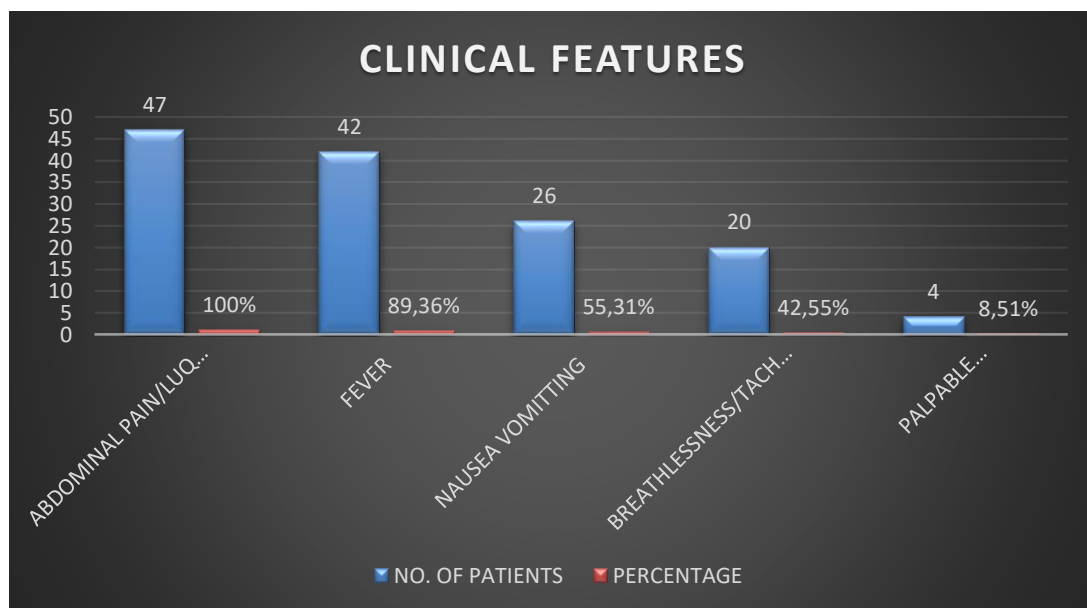


Table 4: associated co-morbidities

Sr. No	Co-morbidities	Number of patients
1	Pancreatitis	8
2	Liver cirrhosis	3
3	History of splenic trauma	2
4	Gastric gist	1
5	HIV	2
6	HBSAG	1
7	TB	2

Table 5: laboratory findings

Sr no	Lab findings	Number of patients	Percentage
1	Leucocytosis	41	87.23%
2	Anemia	19	40.42%
3	Blood culture positive	5	10.63%

Table 6: imaging findings

Sr no	Imaging findings	Number of patients	Percentage
1	Left pleural effusion	17	36.17%
2	Left elevated hemidiaphragm	6	12.76%
3	Single abscess	33	70.21%
4	Multiloculated abscess	14	29.78%
5	Ruptured abscess	0	0

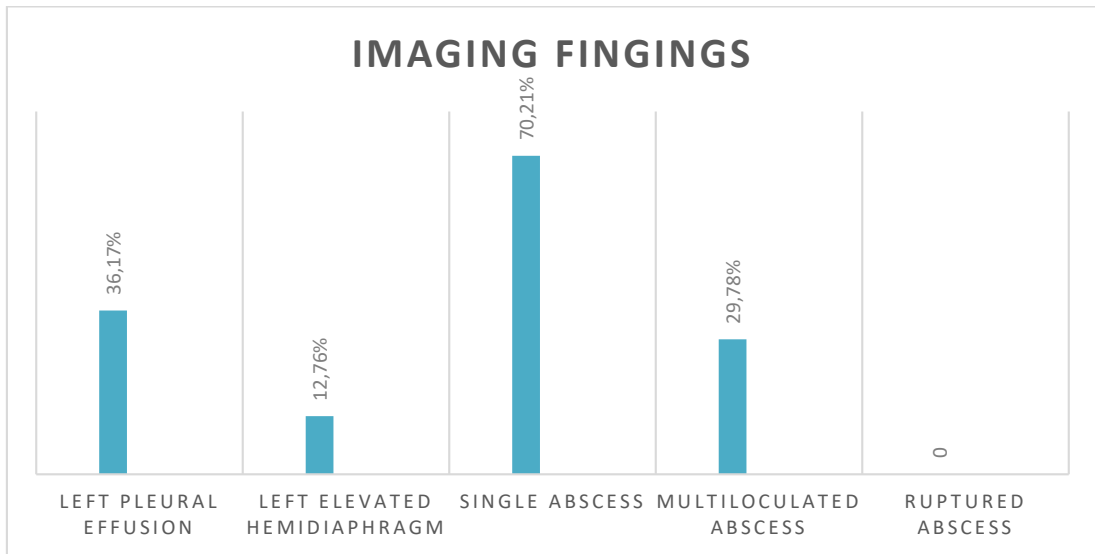
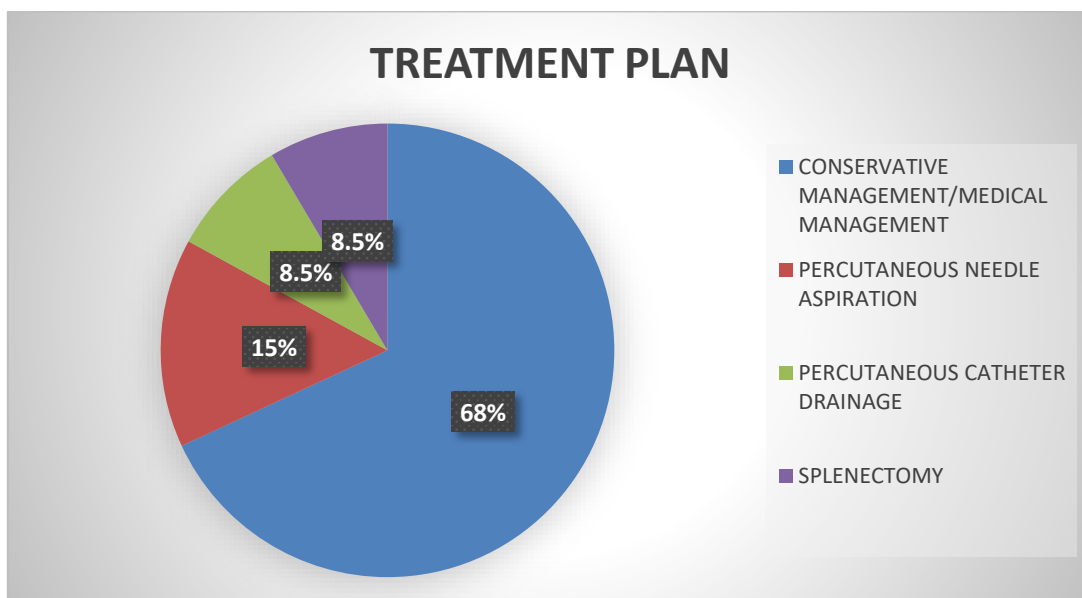


Table 7: Treatment plan

sr no	Treatment plan opted	Number of patients	Percentage
1	conservative management/medical management	32	68.08%
2	percutaneous needle aspiration	7	14.89%
3	percutaneous catheter drainage	4	8.51%
4	splenectomy	4	8.51%
	total	47	100%



There were a total 47 patients (32 males and 15 females) seen during the study period [TABLE 1]. The mean patient age was 38 years out of which 13% were of 20-30 years, 47% were of 30-40 years, 32% were of 40-50 years and 8% were of >50 years. [TABLE 2]

The most common symptoms at presentation were left upper quadrant or abdominal pain in all patients (100%), fever in 42 patients (89.36%) and nausea and vomiting in 26 patients (55.31%), breathlessness in 20 patients (42.5%) and 4 patients (8.5%) presented with palpable splenomegaly. [TABLE 3]

A total of eight patients had pancreatitis, there were three patients with liver cirrhosis, two patients with history of splenic trauma, two patients with hiv, one patient with hbsag, two patients with tuberculosis and one patient with gastric neoplasm i.e. GIST. [TABLE 4]

The majority of 41 patients i.e. 87.23% in our study had leukocytosis (a white blood cell count > 10,000 mm³), other 19 patients i.e. 40.42% had anemia (haemoglobin <7gm/dl) and 5 patients had blood culture positive. [TABLE 5]

Chest xray was abnormal in 23 patients (49%) and the most frequent finding was a left pleural effusion in 36%. All 47 patients underwent ultrasonography out of which most common finding was single unilocular splenic abscess in 33 patients (70%) while 14 patients (29.78%) had multiloculated abscess and no patient had ruptured abscess. Out of all 47 patients, 10 patients (21.27%) underwent CT scan. [TABLE 6]

A majority of 32 patients (68.08%) received intravenous antibiotics as the only treatment modality for splenic abscess. Seven patients (14.89%) underwent Percutaneous needle aspiration while four patients (8.51%) underwent percutaneous catheter drainage. However, four patients (8.51%) underwent splenectomy. [TABLE 7]

In a total of 4 out of 47 patients i.e. 8.51%, mortality was seen in multilocular splenic abscess and none in unilocular splenic abscess.

Discussion

In our study, mean age was 38 years old, whereas in Lee et al, the mean patient age was 47.2 years old.^[3] There were a total 47 patients (32 males and 15 females) seen in our study whereas in Zerem et al, Splenic abscess was diagnosed in 41 patients during the study period. Five of them, who died within 6 wk after percutaneous treatment because of underlying diseases, were excluded. Out of the remaining 36 patients with splenic abscess, 14 were females and 22 males.^[4] As noted in the study of Yousef et al, fever was the most common presenting symptom, followed by abdominal pain and in our study, abdominal pain was most common in all 100% patients followed by fever in 89% patients.^[2]

The most important risk factor in Tsurui et al was immunodeficient state such as chemotherapy, steroid use, hematologic malignancies or acquired immunodeficiency syndrome. Reportedly 15–34% of patients with splenic abscess were immunocompromised, whereas in our study 9 patients were immunocompromised state who had splenic abscess.^[5] Approximately two-thirds of splenic abscesses in Lotfollahzadeh S et al were solitary, and one-third were multiple. Whereas in our study, unilocular splenic abscess were seen in 33 patients (70%) and multilocular splenic abscess was seen in 14 patients (29%).^[6] In our study, 32 of 47 patients had received only intravenous antibiotics, seven patients underwent Percutaneous needle aspiration while four patients underwent percutaneous catheter drainage and four patients (8.51%) underwent splenectomy, whereas in study of Giovanna et al, Ten of 16 patients had bacterial abscesses (including one case of tubercular abscess), two had an amebic abscess, and four had fungal abscesses. Seven of ten patients with bacterial abscesses were successfully treated with fine needle aspiration alone, one patient was successfully treated with fine needle aspiration for one abscess and catheter drainage for another, and two patient required splenectomy.^[7]

Seven of nineteen (36.8%) Multiple splenic abscess patients, in contrast to 5 of 48 (10.4%) Solitary splenic abscess patients expired eventually total of 12 out of 67 patients (47.2%) was the mortality rate in Chang et al whereas in our study, 4 out of 47 patients i.e. 8.51% mortality was seen in multilocular splenic abscess and none in unilocular splenic abscess.^[8]

Conclusion

There are many points we have reviewed from this study. The incidence of splenic abscess is increased mainly in view of more number of immunocompromised patients who are particularly at risk for splenic abscess like diabetes, tuberculosis, HIV, HBSAG, also due to the widespread use of diagnostic imaging modalities such as computed tomography (CT) and ultrasonography (US) as used in this study.

Early diagnosis of splenic abscess requires a high degree of suspicion as all of our patients presented with abdominal pain. But, ultrasonography and CT scan were usually diagnostic. The conservative treatment by antibiotics is useful as seen in most of the patients of our study got a good prognosis especially in patients with small and multiple abscesses. The minimal invasive treatment like percutaneous

aspiration of splenic abscess can be used for patients with several comorbidities and can help in complete non-operative healing of splenic abscesses or can be used to reduce surgery. Thus, the treatment of the patient of all splenic abscesses should be individualised based on clinical condition of patient, laboratory investigations and imaging features. The triad of clinical examination, laboratory investigations and radiological reports should be used to finalise the treatment.

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