Original Article

Splenic Abscess: A Report On 10 Cases From Single Institution And Review Of Literature

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Abstract

AIMS AND OBJECTIVES: Splenic abscess is an uncommon entity with significant morbidity and mortality. The aim of this study was to review our experience with splenic abscesses, with respect to the relevant aspects of splenic abscesses, causes and management outcomes.

MATERIALS AND METHODS: We had reviewed 10 patients with splenic abscesses and who were treated at our hospital from May 2019 to June 2021.

RESULTS: The mean age of the patients was 48.12±6.76 years and majority of patients were males (70%). The most prevalent symptom was abdominal pain in 6 patients (60%) followed by sensation of chills in 4 patients (40%). Splenomegaly was seen in 70% of the patients. The median duration from symptom onset until establishment of a diagnosis was 22 days. Streptococcus viridians was the most common pathogen (40%), followed by Klebsiella pneumoniae (20%). The inpatient mortality rate and the previous 90 days was 20%. All the patients with Klebsiella pneumoniae showed a single abscess pocket. Two patients (20%) underwent percutaneous drainage, Five (50%) received antibiotic treatment only and 3(33.3%) underwent splenectomy.

CONCLUSION: In conclusion, the best therapeutic approach for splenic abscess is still a matter of debate. We agree with the traditional treatment of antibiotics with or without splenectomy. However, based on our experience and the current literature, percutaneous aspiration of splenic abscess can be used as a bridge to surgery for those patients who are critically ill or who have several comorbidities.

KEYWORDS: Splenic abscess, Streptococcus viridians, percutaneous drainage.

Introduction

Splenic abscess is an uncommon infection. The incidence of splenic abscess in autopsy studies is estimated to be 0.05–0.7% [1, 2]. Hematogenous spread is the most common cause of splenic abscess. It typically results from endocarditis or seeding from some contiguous sites of infection [3, 4]. Other risk groups include immunosuppressed patients, hemoglobinopathies, and diabetes mellitus [3, 5]. Early diagnosis can readily be made by the combination of computed

tomography (CT), abdominal ultrasonography (US), and clinical features [5]. The management of splenic abscesses includes medical therapy, CT-guided percutaneous aspiration, and splenectomy. Recent studies have stressed the changing clinical spectrum and indicated that intravenous antimicrobial therapy alone for patients with splenic abscess showed better outcome [2, 6, 7]. The purpose of this study was to review our experience with splenic abscesses. We specifically examined the relevant aspects of splenic abscesses and the treatment outcomes.

Materials and Methods

A retrospective review of the pathology database of Meenakshi Medical College identified 10 patients with splenic abscess from May 2019 to June 2021.The medical and pathologic records of each patient were reviewed. The data extracted for analysis included age, gender, signs and symptoms, predisposing conditions, bacteriologic profile, type of treatment and the treatment outcome. The diagnosis of splenic abscess was established with an abdominal sonogram or computed tomography (CT) of the abdomen. Solitary and multiple lesions were categorized using imaging studies (Fig. 1). The patients then underwent the necessary treatment such as surgery, antibiotics and/or PCD. The bacteriologic profile was obtained from either blood culture or drained abscess culture. In addition, for patients who underwent splenectomy, intraoperative cultures of the splenic abscess were performed.

Results

There was a total 10 patients (7 males and 3 females) seen during the study period. The mean age of the patient was 48.12±6.76 years. The common symptoms observed during presentation were was abdominal pain in 6 patients (60%) followed by sensation of chills in 4 patients (40%) Splenomegaly was found in 7 patients (70%). The median duration from symptom onset until establishment of a diagnosis was 22 days (median score). The majority of patients (70%) in our series had leukocytosis (a white blood cell count > 10,000 mm3).

Two patients (20%) had pancreatitis. We have reported 4 patients (30%) with associated malignancies, including two (50%) with acute myelocytic leukemia, 1 (25%) with stomach neoplasm and one patient with non-Hodgkin's lymphoma (25%). The abscess was secondary to endocarditis in 2 patients (20%), dental abscess in 1 patient (10%) and as a result of coexisting liver abscess in 3 patients (30%).

Four patients (40%) were diagnosed according to the CT scan alone. Single abscess was seen in 7 patients (70%) and 3 patients (30%) had multifocal abscess. Among the 10 patients, Streptococcus viridians were the most common pathogen (40%), followed by Klebsiella pneumoniae (20%). All the patients with Klebsiella pneumoniae showed a single abscess pocket. Mortality was observed in 2 patients (20%). The demographics and outcome of the patients were shown in table 1.

Two patients (20%) underwent percutaneous drainage, Five (50%) received antibiotic treatment only and 3(33.3%) underwent splenectomy (Table 2).

Discussion

Splenic abscess is an uncommon entity. The incidence of splenic absess in various autopsy series has been estimated to be between 0.2% and 0.7%.15 The rare occurrence of splenic abscess is further evidenced by the fact that no splenic abscess was reported in a review of 540 intraabdominal abscesses.5 However, this uncommon disease is recently being reported more frequently. Two main contributing factors to the apparent increase in the incidence of splenic abscess are advances in imaging studies and an increased number of immunocompromised, trauma and cancer patients.14,16 Splenic abscesses may often be misdiagnosed, because the signs and symptoms are nonspecific; nevertheless, modern imaging has improved the process of their diagnosis. The most common organisms in most reported series17 have been aerobic microbes, and particularly Streptococci and Escherichia coli. However, there are geographical variations and population differences, as Llenas-Garcia, et al.18 reported a higher percentage of M. Tuberculosis in splenic

absesses. A few cases with multiple splenic abscesses caused by Salmonella typhi have also been described in the literature. Allal et al reported 400 patients with S. typhi and found splenic abscesses in 8 (2%) patients; of these only one had multiple splenic abscess.19 Torres, et al.20 reported 10 cases of typhoidal solitary splenic abscesses.

Fever was the most common symptom seen in our series, followed by abdominal pain and chills. The triad of fever, left upper quadrant pain and a tender mass was suggested by Sarr and Zuidema21 However, we did not find that a tender mass was part of the common symptom triad.

In this series, treatment was carried out by antibiotics alone, PCD or splenectomy. The mortality rate did not differ between the three groups, and it appeared that mortality was more related to the patient's general underlying condition. All the mortality in this study was related to underlying solid tumors. The remaining patients recovered from their splenic abscess regardless of the treatment modality. Thus, based on these observations, the prognosis for these patients cannot be accurately predicted by the treatment methods.

Twenty-two percent of our patients had PCD as a first line treatment. Percutaneous treatment of splenic abscess is an effective alternative to surgery; furthermore, it offers the theoretical advantages of preserving immunologic function by avoiding splenectomy in young patients. The sucess rate of PCD for splenic abscess has been reported between 67% and 100%.13,22 The procedure is most likely to be successful when the abscess collection is unilocular and when its content is liquefied enough to be drained.8 We prefer to proceed to PCD only when the above indication is met.

In contrast with previous reports,4,13,14,18,23,24 we found that gram-negative K. pneumonia (22.2%) was one of the most frequently encountered microbacterial pathogens. A list of countries and their most common microbiological etiologies are presented in Table 3. Primary splenic abscess due to K. pneumonia has rarely been reported. In the present study, we found that coexisting liver abscesses were found in 16.7% of patients. K. pneumonia accounted for 100% of the coexisting liver abscesses. We believe that the higher percentage of K. pneumonia in our study is most likely due to a sequela of metastatic infection from the liver to the spleen, or a coinfection of both. Three out of four patients had a single abscess pocket. The remaining one patient had huge single abscess with multiple satellite abscess pockets. We preliminarily suggest that K. pneumonia may be related to creating a large single abscess rather than developing multiple splenic abscesses. These results indicate the significance of the role of gram negative bacterial infection in splenic abscesses.

There is no gold standard treatment for splenic abscess. Traditional treatment includes appropriate antimicrobial therapy with or without splenectomy.15 There are a number of studies in favor of spleen preservation and management using PCD.8,13 Percutaneous aspiration or drainage may be used as a bridge to surgery, allowing nonoperative healing for splenic abscess patients who are at risk for surgery, and helps avoid the risk of a fulminant and potentially life-threatening infection. The success rate for PCD in our series was 50%.

Conclusion

In conclusion, the best therapeutic approach for splenic abscess is still a matter of debate. We agree with the traditional treatment of antibiotics with or without splenectomy. However, based on our experience and the current literature, percutaneous aspiration of splenic abscess can be used as a bridge to surgery for those patients who are critically ill or who have several comorbidities. Early diagnosis of splenic abscess requires a high degree of suspicion. Most of our patients presented with unexplained fever, abdominal pain and radiologic evidence of pathology in the left chest or abdomen, and these signs and symptoms should lead to suspicion of splenic abscess. Abdominal CT and ultrasonography were usually diagnostic. We suggest that treatment should be tailored and applied to splenic abscess patients on an individual basis.

References

1. Lee MC, Lee CM. Splenic Abscess: An Uncommon Entity with Potentially Life-Threatening Evolution. Can J Infect Dis Med Microbiol. ;2018:8610657.
2. Sahu M, Kumar A, Nischal N, Bharath BG, Manchanda S, Wig N. Splenic abscess caused by salmonella typhi and co-infection with leptospira. J Assoc Physicians India. 2017 Dec 1;65(12):95-7.
3. Mansueto G, Cenzi D, D'Onofrio M, Salvia R, Gottin L, Gumbs AA, Mucelli RP. Endovascular treatment of arterial bleeding in patients with pancreatitis. Pancreatology. 2007 Sep 1;7(4):360-9.
4. Liu YH, Liu CP, Lee CM. Splenic abscesses at a tertiary medical center in Northern Taiwan. Journal of Microbiology, Immunology and Infection. 2014 Apr 1;47(2):104-8.
5. Carbonell AM, Kercher KW, Matthews BD, Joels CS, Sing RF, Heniford BT. Laparoscopic splenectomy for splenic abscess. Surg Laparosc Endosc Percutan Tech. 2004;14:289–291
6. Thanos L, Dailiana T, Papaioannou G, Nikita A, Koutrouvelis H, Kelekis DA. Percutaneous CT-guided drainage of splenic abscess. AJR Am J Roentgenol. 2002;179:629–632.
7. Paris S, Weiss SM, Ayers WH, Jr, Clarke LE. Splenic abscess. Am Surg. 1994;60:358–361.
8. de Bree E, Tsiftsis D, Christodoulakis M, Harocopos G, Schoret- sanitis G, Melissas J. Splenic abscess: a diagnostic and therapeutic challenge. Acta Chir Belg 1998;98:199-202.
9. Tung CC, Chen FC, Lo CJ. Splenic abscess: an easily overlooked disease? Am Surg 2006; 72:322-5.
10. Ooi LL, Leong SS. Splenic abscesses from 1987 to 1995. Am J Surg 1997;174:87-93.
11. Llenas-García J, Fernández-Ruiz M, Caurcel L, Enguita-Valls A, Vila-Santos J, Guerra-Vales JM. Splenic abscess: a review of 22 cases in a single institution. Eur J Intern Med 2009;20:537-9
12. Sarr MG, Zuidema GD. Splenic abscess--presentation, diagnosis, and treatment. Surgery 1982; 92:480-5.
13. Paris S, Weiss SM, Ayers WH Jr, Clarke LE. Splenic abscess. Am Surg 1994;60:358-61

Table 1. Demographic Data and Outcomes for Patients with Splenic Abscess

No	Gender / age	Predisposing factors	No of abscess	Size, cm	Microbiological etiology	Leukocyte count, mm^3	Treatment	Outcome
1	F / 70	AML	Single	4	E.coli	8,800	Antibiotics	Recovered
2	M / 65	Dental abscess	Single	3	Streptococcus viridians	28,200	PCD	Recovered
3	M / 34	Alcoholic	Multifocal	-	Negative	11,680	Antibiotics	Recovered
4	M / 61	AML	Multifocal	-	Streptococcus viridians	13,350	Splenectomy	Expired
5	M / 39	Pancreatitis	Single	4	Actinomycosis	20,490	Antibiotics	Recovered
6	M / 69	NHL	Single	5	Klebsiella pneumoniae	22,700	Splenectomy	Expired
7	F / 67	Infective endocarditis	Single	7	Streptococcus viridians	5,590	PCD	Recovered
8	M/ 47	Pancreatitis	Multifocal	5	Streptococcus viridians	10,630	Antibiotics	Recovered
9	F / 69	Infective endocarditis	Single	-	Klebsiella pneumoniae	8,548	Splenectomy	Recovered
10	M / 71	Stomach cancer	Single	10	Streptococcus viridians	13,200	Antibiotics	Recovered

NHL, non-Hodgkin's lymphoma; AML, acute myelocytic leukemia; thrombosis; PCD, percutaneous drainage.