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Case Report

Solitary splenic abscess caused by *Salmonella typhi* in an adult - A case report

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ABSTRACT

A 71-year-old male was admitted to our hospital with complaints of fever, weakness and abdominal pain for 15 days. PET CT showed findings suggestive of a solitary splenic abscess. CT guided aspiration of the abscess was done and sent to lab for testing along with routine investigations and blood culture. Aspirate culture grew *Salmonella typhi*. The patient was treated with intravenous Cefepime followed by oral Cefixime along with supportive care. On follow up, complete resolution of the abscess was noted.

1. Introduction

A rare extra-intestinal complication of salmonellosis, splenic abscess has an incidence ranging between 0.14 - 0.7%.[1] Bacteremia resulting in hematogenous spread is the most common cause, however it may also be due to spread from adjacent organs. Untreated splenic abscess has a mortality rate of 40%, but decreases significantly with timely diagnosis and adequate treatment.[2] Here we report a case of solitary *Salmonella typhi* splenic abscess with no prior history of enteric fever, that was managed conservatively with complete resolution.

2. Case Report

A 71-year old diabetic male presented to the emergency department of our hospital with complaints of fever, generalized weakness, left sided chest pain and left upper quadrant abdominal pain on and off since the last 17 days. There was no history of nausea, vomiting, cough or cold. His local practitioner had prescribed oral Cefixime and Azithromycin for 5 days. An abdominal scan done outside was suggestive of Splenic Abscess and left lower zone consolidation with mild pleural effusion. He was admitted for further evaluation and management.

On examination, he was afebrile, having pulse of 89 bpm, blood pressure of 120/70mmHg, respiratory rate of 18/minute with saturation of 99% on room air. On auscultation, chest was clear with bilateral air entry and heart sounds. Investigations were sent (Table 1) and patient was started on intravenous Cefepime 2gm BD and Vancomycin 1gm BD along with supportive therapy.

The left sided chest pain could be attributed to the splenic abscess. But considering the patient's age, ECG & 2D Echo were done, that were suggestive of ischaemic heart disease with resting RWMA and ejection fraction of 45%. Antiplatelets and statins were started, with further plan of CAG once stable. Considering age and high risk of malignancy, a PET CT was done that showed a well-defined collection measuring 4 x 5.3 x 5 cm in ventral and superior aspect of the spleen, suggestive of a Splenic abscess, minimal left pleural effusion with no other infective foci. CT guided aspiration of the abscess was done, around 15ml of pus was aspirated and sent to the lab for further testing.

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Table 1: Investigations

Investigation	Results
Covid rapid antigen test	Negative
CBC	Hb - 11.1 g/dl, WBC - 6250/μL, Platelet - 4, 97, 000/μL
Blood HGT	132mg/dl
HbA1C	7
PS for MP & Dengue ELISA	Negative
Blood culture	No growth after 5 days of incubation
Stool culture	No pathogenic organisms isolated
Urine routine microscopy	Normal
CRP	57.52 mg/L
Serum Electrolytes	Sodium - 129mEq/L, Potassium - 5.29mEq/L, Chloride - 94.3mEq/L
LFT & RFT	Within normal limits

Cytological examination of the aspirate demonstrated Acute inflammatory smears consistent with Abscess. Gram smear showed few pus cells, plenty of RBCs with no organisms, AFB smear was negative and GeneXpert TB/PCR was also negative. The bacteriological culture grew *Salmonella enterica subspecies enterica serotype Typhi*, susceptible to Azithromycin, Ceftriaxone (MIC <=0.25), Cefepime (MIC <=0.12), Trimethoprim-Sulfamethoxazole (MIC <=20), Amoxycillin/Calvulanic acid (MIC <=2), Piperacillin/Tazobactam (MIC <=4), Cefoperazone/Sulbactam (MIC <=8), Imipenem (MIC <=0.25) and Meropenem (MIC <=0.25), intermediate susceptibility to Ciprofloxacin (MIC = 0.5) and Levofloxacin (MIC = 0.5) and resistant to Nalidixic acid (automated ID & Susceptibility performed on Vitek 2 Compact System by Biomerieux, Marcy-l'Étoile, France; manual susceptibility by Kirby Bauer disc diffusion). Hence, IV Cefepime was continued twice a day (Vancomycin was stopped) with oral hypoglycaemics for sugar control. Once haemodynamically stable, the patient was discharged after 7 days on IV Cefepime. Based on the OPD follow ups, IV Cefepime was continued for a period of 4 weeks, till the CRP was normal, after which oral Cefixime (200mg BD) was given for 2 weeks. Follow up ultrasound at the end of 6 weeks of therapy showed complete resolution of the splenic abscess. As CAG was deferred initially, a follow up 2D ECHO was done which revealed cardiac findings similar to that on admission, in view of which the patient was referred to a cardiologist for further management.

3. Discussion

Extraintestinal abdominal infections by Salmonella usually involve the hepatobiliary system and spleen. The incidence of splenic abscess is low as it is a reticuloendothelial organ and has phagocytic activity.[3] Conditions such as immunocompromised state, sickle cell disease, infective endocarditis, osteomyelitis, infections at other sites, IV drug abuse, diabetes mellitus, trauma etc may predispose to the occurrence.[4] Causative agents may be bacteria, fungi and rarely even Mycobacteria, making it imperative to assess for past history of TB and perform diagnostic tests accordingly.

Salmonella typhi splenic abscess is infrequent with an incidence of <2%.[5] Upto 1976, such cases were not mentioned in the literature, until recent years where about 34 splenic abscess cases had been reported.[6] *S.typhi* splenic abscesses usually develop as a complication of typhoid fever, majority with concomitant liver abscesses whereas isolated splenic abscess occurs infrequently.[7] Splenic involvement occurs early in the course of the disease and presents by the beginning of the second week.[3,8] Our patient had presented with a history of fever for more than 2 weeks, with diabetes mellitus being the only predisposing factor and no past history of typhoid fever.

As most cases may lack classical findings, delayed diagnosis and treatment may cause rupture into the peritoneal or pleural cavity or into the bowel, worsening the prognosis and resulting in mortality in nearly $1/3^{rd}$ of patients , hence warranting a high degree of clinical suspicion. The diagnosis is usually based on radiological (CECT of abdomen) and microbiological evaluation (culture and sensitivity).[2] USG/CT guided percutaneous aspiration has minimal post procedural complications, is both diagnostic as well as therapeutic and forms a part of conservative management along with appropriate antibiotics. This preserves the splenic parenchyma and its functions, thus reducing susceptibility to infections by encapsulated bacteria and intraerythrocytic parasites.[4] Splenectomy along with antibiotics was initially considered the gold standard. Currently it is limited to cases where percutaneous drainage has failed or in case of multiple abscesses refractory to therapy.[2,9,10] Radcliffe et al. documented that most splenic abscesses were managed by a combination of percutaneous drainage plus appropriate antmicrobial therapy for a median duration of 6 weeks.[11] Divyashree S and Gupta N mention that a combination of aspiration and appropriate antibiotic therapy for the right duration, usually prolonged, is the mainstay of therapy.[9] Our patient was managed conservatively with percutaneous drainage and appropriate antibiotic therapy.

4. Conclusion

In the era of new emerging infections, newer presentations of already existing diseases also necessitate attention. *Salmonella typhi* splenic abscesses are rare in adults and many of them might have a predisposing factor. Percutaneous aspiration is safe and has diagnostic as well as therapeutic purpose. Thorough microbiological

evaluation in properly obtained samples forms the mainstay of diagnosis. Appropriate antibiotics for the right duration along with percutaneous drainage when required are the mainstay of therapy. Splenectomy is currently limited only for few cases. Hence, if diagnosed timely and treated appropriately, the mortality of this potentially lethal clinical entity can be significantly reduced.

5. Consent to Participate & Publish

Informed consent has been obtained from the patient and relatives for the submission of the case report in the journal.

6. Ethics Approval

Approval from the institute's ethics committee has been obtained (Letter No. BNH/0573/2023 dated, 18^{th} June, 2023).

7. Source of Funding

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8. Conflict of Interest

The authors have no competing interests to declare that are relevant to the content of this article.

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