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Case Report

Microbiology Section

# *Salmonella typhi* Splenic Abscess Following Blunt Abdominal Injury: A Case Report

PRIYADARSHINI SHARAVANAN[1], DHIVYALAKSHMI SHANMUGAM[2], KENNEDY KUMAR PALRAJ[3], TESSA ANTONY[4], PREMAMALINI THAYANIDHI[5]

## ABSTRACT

Splenic abscess as a complication of enteric fever due to *Salmonella typhi* is a rare entity. Here, we are presenting a case of splenic abscess caused by *Salmonella typhi* with a blunt injury to the abdomen as the predisposing factor. The patient underwent total splenectomy due to failure of conservative management. Splenic abscess is a potential life threatening disease if left untreated. In spite of its rarity, *Salmonella typhi* has to be considered as a possible pathogen causing the disease.

**Keywords:** Blunt trauma, Enteric fever, Splenectomy

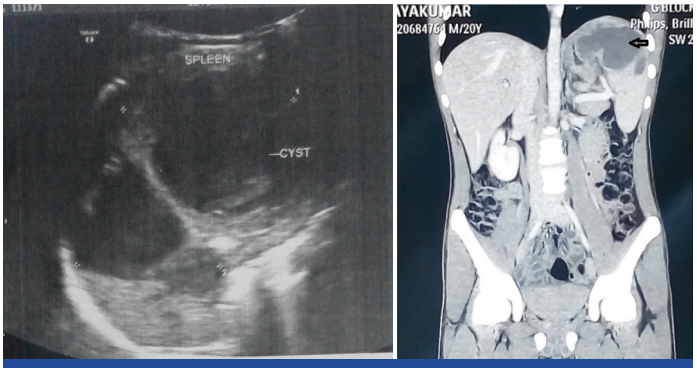
## CASE REPORT

A 20-year-old male presented to male surgical outpatient department with complaints of fever and abdominal pain. Fever was high grade and intermittent present for more than two months duration and was not associated with rashes, bowel or bladder disturbances, nausea or vomiting. During the initial course of fever the patient sustained a blunt injury to his abdomen due to an assault, following which he developed dull aching left quadrant abdominal pain. For the same complaints he was treated locally and investigated. (TLC - 5200 cells/mm$^3$; P-77%, L–20%, E-3%; Widal test TO 1: 80 positive, TH 1: 40 positive, AH & BH 1: 20 negative.) Ultrasound study of abdomen was normal. There was no previous history of presence of diabetes mellitus, heart disease or hemoglobinopathies.

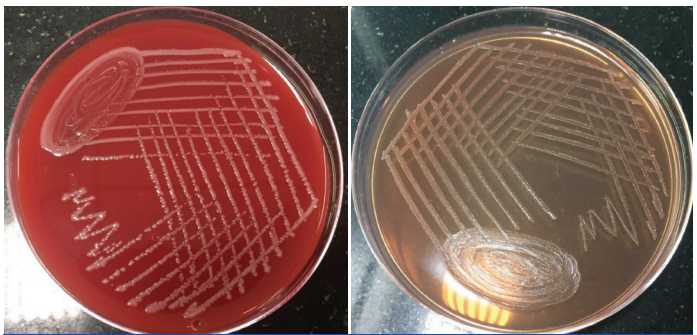
On examination he was conscious, well oriented and febrile. Abdominal examination revealed tenderness over left upper quadrant without guarding or rigidity. Spleen was palpable and enlarged. All other systemic examination was normal. Ultra sound abdomen [Table/Fig-1]. showed a minimally enlarged spleen having 9.5 x 5.6 cm mixed echogenic area with septated irregular cyst. Contrast Enhanced CT abdomen [Table/Fig-2] revealed a multiloculated hypodense lesion in the upper pole of the spleen with peripheral enhancement on contrast administration suggestive of splenic abscess. As patient did not improve with intravenous cefaperazone injection conservatively, was taken up for splenectomy surgery. Intraoperatively pus collected from the splenic abscess was sent to the microbiology laboratory for culture and sensitivity. Gram stain performed from the pus showed occasional pus cells and occasional Gram-negative bacilli. Pus was inoculated into 5% sheep Blood agar, Chocolate agar, Mac-Conkey agar and Thioglycolate broth, After 12 hours of incubation, 5% sheep Blood agar [Table/Fig-3] and Chocolate agar showed growth of grey opaque moist colonies which was confirmed as Gram-negative bacteria by Gram staining. Meanwhile Mac-Conkey agar grew Non lactose fermenting Gram-negative bacteria in it [Table/Fig-4]. The Gram-negative bacteria were identified as *Salmonella typhi* using Vitek 2 Compaq along with antibiotic susceptibility pattern. The organism was susceptible to ampicillin, chloramphenicol, cotrimoxazole, tetracycline, ceftriaxone, levofloxacin, ciprofloxacin and azithromycin. Postoperatively the patient's stay in the hospital was uneventful.

## DISCUSSION

Splenic abscess usually follows bacteraemia due to varied aetiologies such as trauma, immunodeficiency status (AIDS, diabetes mellitus, etc.,) infective endocarditis, embolization, hemoglobinopathies (sickle cell disease), IV drug abusers, septicemia etc. Occurrence of splenic abscess due to *Salmonella typhi* is very rare. Allal and his colleagues have reported 2% (8) of splenic abscess in 400 patients with enteric fever [1]. In India splenic abscess due to *Salmonella spp* has been reported by Piplani et al., Kanwal S *et al*., and Bhongle NN *et al*., in various case scenarios [2-4]. In our case, splenic abscess has most probably developed by seeding from *Salmonella typhi* bacteraemia, with a predisposing factor of blunt trauma to the abdomen. Most often splenic abscess presents with the triad of fever, left upper quadrant abdominal pain and a tender mass. Same mode of presentation has been observed in our case also. Kalyanwat A has reported the classical presentation of triad in one third of the cases [5]. Clinical suspicion of splenic abscess due to *Salmonella typhi* is challenging due to its uncommon incidence. Splenic abscess usually takes place after the 2$^{nd}$ week




**[Table/Fig-1]:** UltrasonaGram of Abdomen. **[Table/Fig-2]:** CT Abdomen.



**[Table/Fig-3]:** Blood Agar plate showing grey, opaque and moist colonies. **[Table/Fig-4]:** Mac-Conkey Agar with Non-Lactose fermenting colonies.

of infection [5]. Percentage of recovering *Salmonella typhi* from the blood culture decreases from the first week of illness and also factors like administration of antibiotics prior to blood cultures results in negativity of the culture report. According to Tung CC *et al.*, Ultrasonography and CT scan are gold standard for early diagnosis. *Salmonella typhi* splenic abscess are frequently solitary and rarely present as multiple numbers [6]. Allal has reported solitary splenic abscess in 6 out of 8 cases [1]. In our case also the patient had solitary type of abscess. Splenic abscess can be managed conservatively for preserving spleen with antibiotics and percutaneous aspiration. Since the lesion described by CT scan was multiloculated, percutaneous aspiration was not undertaken. Also, since conservative management with antibiotics was not effective, he was taken up for splenectomy. Complications of splenic abscess can be life threatening which include peritoneal perforation, rupture into pleural cavity or bowel and thus may have a worse prognosis. Mortality rate following splenic abscess is as high as 40 % and any deferral in diagnosis and precise treatment can result potentially lethal to the patient [7].

## CONCLUSION

Splenic abscess even though a rare complication following enteric fever should be suspected in patients with predisposing factors and with history of fever for more than two weeks not responding to antibiotics. Owing to insidious onset and nonspecific presentation, a high degree of clinical awareness is mandatory for an early identification of splenic abscess caused by *Salmonella typhi*. A good microbiological investigation of the appropriate sample at appropriate time is required in such unusual vague presentations.

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**PARTICULARS OF CONTRIBUTORS:**
1. Post Graduate, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai, India.
2. Post Graduate, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai, India.
3. Associate Professor, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai, India.
4. Demonstrator, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai, India.
5. Associate Professor, Department of Microbiology, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra University, Porur, Chennai, India.

**NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:**
Dr. Dhivyalakshmi Shanmugam,
No. 245, S. Kolathur Main Road, Viduthalai Nagar, Kovilambakam, Chennai-600117, Tamil Nadu, India.
E-mail: dhivyaslak@gmail.com

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