

# Salmonella enteritidis sepsis, a rare cause of splenic abscess: a case report

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## ABSTRACT

**Background:** Salmonella infection usually causes mild self-limiting gastroenteritis. Nontyphoidal salmonella can sometimes cause bacteremia and extra-intestinal infection. In rare occasions, it can result in splenic abscess.

**Case Presentation:** We reported a case of splenic abscess resulting from Salmonella enteritidis infection. Our patient is a 57-year-old man with diabetes mellitus, came with acute febrile illness associated with epigastric pain. He was diagnosed to have splenic abscess based on computed tomography and subsequently recovered well after antibiotic therapy and abscess drainage.

**Conclusion:** Diagnosis of splenic abscess is often difficult and requires high index of suspicion. Early diagnosis is often associated with better outcome. Abscess drainage is an important treatment modality of splenic abscess.

**Keywords:** Nontyphoidal Salmonella, Salmonella enteritidis, Splenic abscess, antibiotic, drainage

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## Background

Salmonella infection can be generally divided into typhoidal and nontyphoidal Salmonella (NTS) serovars. NTS serovars have broader host range and frequently zoonotic. In humans, it can cause mild self-limiting diarrheal disease, bacteremia, and rarely extraintestinal focal infections. Isolated splenic abscess is an unusual but potentially life-threatening complication of Salmonella sepsis. It is often challenging for clinician to diagnose early as the symptoms are often non-specific. Here, we reported a case of Salmonella enteritidis splenic abscess in an immunocompromised patient.

## Case Presentation

A 57-year-old man with diabetes mellitus, hypertension, and ischemic stroke presented with fever for 1 day with chills and rigors. It was associated with epigastric pain and nausea. There was no diarrhea, no vomiting, no cough, no dyspnea, or chest pain. On examination, his blood pressure was 126/43 mm Hg, pulse rate was 93 bpm, temperature was 38.4°C. His blood glucose read at 9.8 mmol/l. There was evidence of splenomegaly on palpation. Respiratory and cardiovascular examination were normal.

His initially full blood count showed hemoglobin of 16.8 g/dl, total white blood cell of  $19 \times 10^9/l$ , platelet of  $434 \times 10^9/l$ . His renal function showed sodium 125 mmol/l, potassium 4.9 mmol/l, urea 4.3 mmol/l, creatinine 67  $\mu\text{mol/l}$ . Liver function test was normal (Table 1). Ultrasound abdomen done showed a well-defined hypoechoic solid cystic

lesion at the spleen measuring 4.9 cm  $\times$  4.3 cm  $\times$  4.3cm. He was treated with broad-spectrum antibiotic.

Subsequently, his blood culture showed Salmonella enteritidis, confirmed by serotyping (Figure 2). A computed tomography of the abdomen was done, which showed a well-defined hypodense lesion (HU10-22) seen in the supero-posterior pole of spleen measuring 7 cm  $\times$  6.6 cm  $\times$  9.4 cm, suggestive of splenic abscess (Figure 1). There was no liver abscess or aortic aneurysm. An ultrasound-guided drainage of the abscess was done. Patient



**Figure 1.** Computed tomography of abdomen showing a well-defined hypodense lesion in the supero-posterior pole of spleen measuring 7 cm  $\times$  6.6 cm  $\times$  9.4cm suggestive of abscess.



**Figure 2.** *Salmonella-Shigella* agar showing yellowish to colorless colonies with presence of hydrogen sulphate, subsequently confirmed as *Salmonella enteritidis* by serotyping.

was treated with 8 weeks of IV ceftriaxone and recovered well. The patient was well on follow-up. Subsequent ultrasound showed a complete resolution of splenic abscess.

### Discussion

NTS species are an important cause of foodborne disease with acute diarrheal illness being the most common presentation. NTS is estimated to cause 93 million of enteric infections and 155,000 deaths annually [1]. NTS infection varies from self-limiting diarrhea, bacteremia to extra-intestinal focal infection. Extraintestinal focal infections have been reported to occur in 5%–10% of patients with NTS bacteremia [2]. Extra-intestinal focal infections include endovascular infection, osteomyelitis, intraabdominal abscesses, etc.

Interesting to note, NTS invasive infection often associated with immunosuppression. In a Malaysian study, an underlying medical illness has been reported in up to 90% of the patients [3]. Risk factors for invasive NTS infection include human immunodeficiency virus (HIV) infection, congenital immunodeficiency disorder, diabetes mellitus, malignancy, immunosuppressive therapy, and post transplantation. In a patient with NTS infection, an underlying immunosuppression risk factor must be looked for. In our patient, the risk factor is diabetes mellitus. In our patient, he is negative for HIV infection or malignancy.

The clinical presentation of *Salmonella* infection is usually self-limiting acute diarrheal illness. Around 5% of patient with NTS infection will develop bloodstream infection [4]. In immunosuppressed patient, the bacteria can transverse the intestinal mucosal barrier and invade

**Table 1.** Serial investigation of the patient.

	UNIT	27/10	29/10	1/11	5/11	8/11	12/11	18/11	26/11
Hb	g/dl	16.8	15.9	15.9	14.4	14.1	14.2	14.2	14.1
TWBC	10 <sup>9</sup> /l	19	13	11	14.9	14.8	13.1	18.4	13.9
Platelet	10 <sup>9</sup> /l	434	287	202	410	431	420	391	471
Sodium	mmol/l	125	133	127.5	130	130	134	132	134
Potassium	mmol/l	4.9	4.4	4.4	4.9	4.4	4.5	4.5	4.2
Urea	mmol/l	4.3	3.9	2	2.6	2.4	2.8	2.5	1.7
Creatinine	µmol/l	94	56	68	44	41	60	51	54
Total bili	µmol/l	29		33	28	22	15	18	8.3
ALT	U/l	57		75	40	30	20	12	14
ALP	U/l	226		269	282	178	151	104	89
Alb	g/l	39		32	33	33	35	33	38
Glo	g/l	33		27	30	30	31	30	24
pH		7.47		7.35					
pCO <sub>2</sub>	mmHg	28.3		35					
pO <sub>2</sub>	mmHg	73.9		56					
HCO <sub>3</sub>	mmol/l	20.5		22					
BE	mmol/l	-3.1		-1.1					
Blood culture		Salmonella enteritidis, sensitive to chloramphenicol, ampicillin, ciprofloxacin, ceftriaxone. (27/10/18)							

into bloodstream. Invasive NTS infection usually presents with features of acute febrile illness, hepatosplenomegaly, and respiratory symptoms [2]. Diarrhea is typically not seen in invasive NTS infection as in our patient.

Splenic abscess is a rare complication of NTS infection. The diagnosis of splenic abscess is often a difficult and challenging one. The triad of fever, leukocytosis, and left upper quadrant pain is not seen in all the patients. The symptoms of splenic abscess are often non-specific. Hence, a high index of suspicion is needed. The gold standard for diagnosis is computed tomography scan of the abdomen [5]. Ultrasonography is a helpful preliminary tool but it is less sensitive compared to a computed tomography scan in diagnosing splenic abscess.

In terms of treatment, splenic abscess is treated by antimicrobial therapy coupled with drainage of the abscess. The usual antibiotics of choice is ceftriaxone. It should be accompanied with percutaneous drainage or fine-needle aspiration of the abscess. In the event of worsening sepsis despite percutaneous drainage, a surgical splenectomy should be considered to remove the source of infection [6]. Splenectomy should also be considered for multilocular abscesses, fungal abscess, infected hematomas, and abscess with thick contents.

## Conclusion

In conclusion, the splenic abscess is a rare complication of NTS infection. It is often challenging to diagnose and manage. Clinicians should have a high index of suspicion. An underlying immunocompromised state should be excluded in a patient with NTS. Patient with splenic abscess should receive appropriate antibiotics and source control.

## List of Abbreviations

HIV	Human immunodeficiency virus
NTS	Nontyphoidal Salmonella

## Summary of the case

1	<b>Patient (gender, age)</b>	Male, 57 year old
2	<b>Final diagnosis</b>	Salmonella enteritidis Splenic Abscess
3	<b>Symptoms</b>	Fever, epigastric pain and nausea
4	<b>Medications</b>	IV ceftriaxone
5	<b>Clinical procedure</b>	Percutaneous splenic abscess drainage
6	<b>Specialty</b>	Infectious disease

## Consent for publishing

A written informed consent was obtained from the patient for this publication.

## Ethical approval

Ethical approval is not required at our institution for publishing a case report in a medical journal.

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