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Case report

Splenic Abscess due to *Salmonella Enteritidis* after Abdominal Trauma Resolved by Interventional Radiological Methods: A Case Report

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SUMMARY

Introduction. Splenic abscess is a very rare extra-intestinal complication of Salmonella infection in the post-antibiotic era with the incidence between 0.14% and 2%. It usually follows bacteremia due to varied etiologies such as trauma, infective endocarditis, intravenous drug abuse, immunodeficiency status (AIDS, diabetes mellitus).
Case report. An 82-year-old woman presented with complaints of upper abdominal pain, fever and nausea for two weeks following abdominal trauma. Computed tomography scan of the abdomen showed hypodense lesion measuring 110 × 80mm (CCxLL), with minimal peripheral contrast enhancement, diagnosed as a splenic abscess.
The patient underwent an ultrasound and X-ray guided percutaneous needle aspiration to collect a sample of pus for microbiological analyses, and in the next step, percutaneous drainage was performed.
***Salmonella enteritidis* was isolated from the culture; the isolate was sensitive to ampicillin, ciprofloxacin, and third-generation cephalosporins. The initially started empiric therapy with amikacin was replaced by cefriaxone. After one month, the patient was discharged for home treatment. During the six-month follow-up, there were no recurrent symptoms and a follow-up CT scan showed a normal-sized spleen with thin, low-density zones under the capsule-sequels of inflammation.**
Conclusion. Only a few cases of splenic abscess caused by *Salmonella enteritidis* have been described in the literature and they were mostly treated with splenectomy. This case of a rare splenic abscess due to *Salmonella enteritidis* was treated successfully with a combination of percutaneous drainage, prolonged antibiotic therapy, and intensive care.

Keywords: ***Salmonella enteritidis*, splenic abscess, percutaneous drainage**

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INTRODUCTION

Splenic abscess is a very rare extra-intestinal complication of Salmonella infection in the post-antibiotic era with the incidence ranging between 0.14% and 2% (1). It usually follows bacteremia due to varied etiologies such as trauma, infective endocarditis, intravenous drug abuse, immunodeficiency status (AIDS, diabetes mellitus) (2-5). Splenic abscesses usually present as unilocular and solitary lesions raging in size from 1 to 18 cm. Numerous microorganisms may be found in splenic abscesses such as staphylococci, streptococci, anaerobic organisms, *Mycobacterium tuberculosis* and fungi, while cultures remain sterile in 11% of cases. Salmonella is responsible for 15% of splenic abscesses (2, 4). Currently, splenectomy is the gold standard in the treatment, while interventional radiological methods can be considered as an alternative therapy, especially in the case of a solitary abscess. We report a case of splenic abscess due to *Salmonella enteritidis* after abdominal trauma successfully treated with percutaneous drainage and antibiotic therapy.

CASE REPORT

An 82-year-old woman presented with complaints of upper abdominal pain, fever and nausea for two weeks following abdominal trauma. Laboratory investigations revealed a raised total leukocyte count, anemia, and elevated C-reactive protein (111 mg/dl). Computed tomography scan of the abdomen showed hypodense lesion measuring 110 x 80mm (CCxLL) with minimal peripheral contrast enhancement, diagnosed as a splenic abscess (Figure 1). The patient underwent an ultrasound and X-ray guided percutaneous needle aspiration with free-hand technique using an 18 Gauge needle to collect a sample of pus for microbiological analyses. In the next step, an 8.5F multisidehole pigtail catheter was placed in collection by performing the Seldinger technique (Figure 2 and 3). The patient was in pronation under analgosedation and with local anesthesia on the site of punction. In next 24 hours, 300 ml of purulent fluid was drained and about 100 ml each day in the next 3-4 days, and then the catheter was extracted. *Salmonella enteritidis* was isolated

Figure 1. *Multidetector computed tomography, an axial image—splenic abscess*

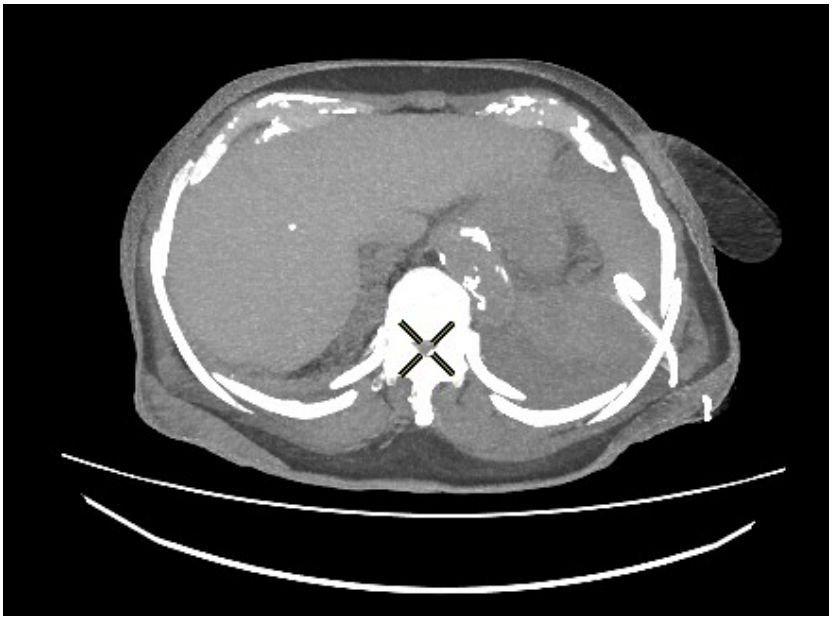

Figure 2. *Multidetector computed tomography—an axial image after placing a drainage catheter*

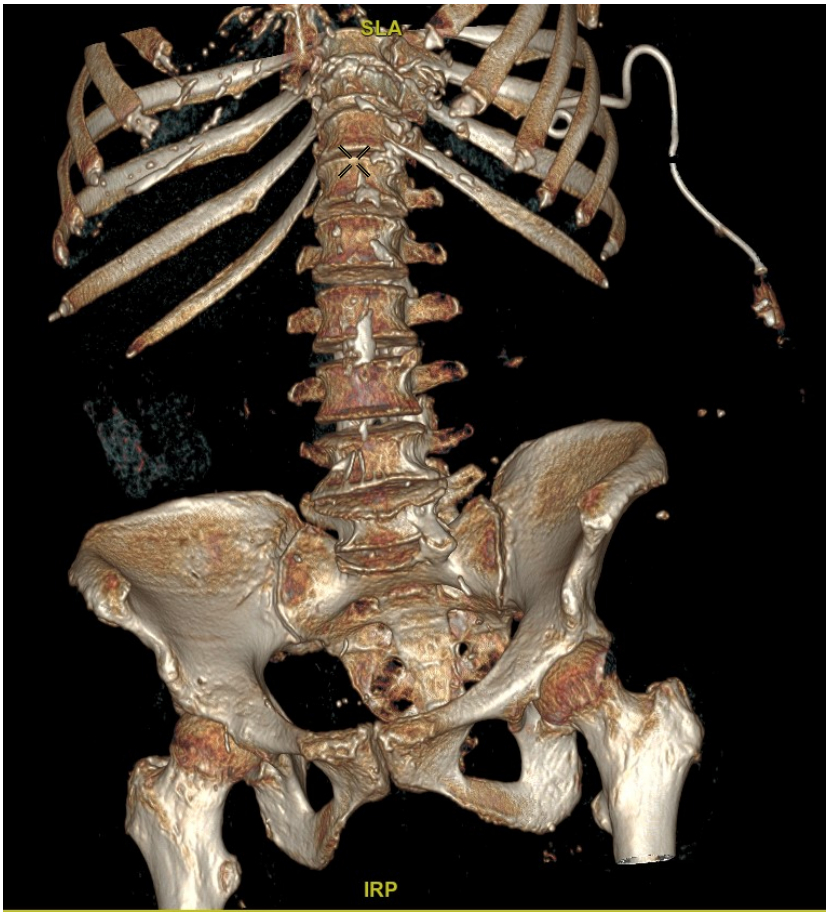

Figure 3. *Multidetector computed tomography—a virtual reality image after placing the drainage catheter*

Figure 4. *Multidetector computed tomography—an axial image after drainage the splenic abscess*

from the culture, and the isolate was sensitive to ampicillin, ciprofloxacin and third- generation cephalosporins. The initially started empiric therapy with amikacin was replaced by cefriaxone. After one month, the patient was discharged for home treatment. During the six-month follow-up, there were no recurrent symptoms and a follow-up CT scan showed a normal-sized spleen with thin, low-density zones under the capsule-sequels of inflammation (Figure 4).

DISCUSSION

Salmonella spp. is a bacterial genus that belongs to the Enterobacteriaceae family, present in the intestinal tract of healthy people and animals, but can generate abdominal symptoms after consumption of contaminated food (such as contaminated eggs or meat) (4). These symptoms include diarrhea, nausea, vomiting, abdominal pain and/or fever. Complications may occur in up to 7% of cases and extraintestinal infections are observed in up to 4% of the patients (6). Some serotypes such as *Salmonella typhimurium* and *Salmonella enteritidis* show a greater tendency to cause bacteraemia (2). Splenic abscesses caused by Salmonella spp are uncommon with the incidence between 0.14% and 2% (3). Splenic abscess is associated with high morbidity and mortality if not diagnosed and treated in time. Usually, they stand for the complication of bacteremia (in 49% cases) in the context of trauma, immunosuppression (HIV, diabetes, sepsis, etc.), infectious endocarditis, embolization, use of intravenous drugs or haemoglobinopathies (sickle cell anaemia) (2). In our case, the splenic localization of the abscess may be the consequence of bacteremia following abdominal trauma after falling from ladder. Ultrasonography and CT scan are the gold standard for early diagnosis (3-5), while splenectomy is the gold standard for treatment; ultrasound or CT assisted-percuatneus drainage and antimicrobial therapy can be considered as therapeutic alternatives (1, 3, 4). Although splenectomy is the gold standard, in our case, we opted for a minimally invasive radiological method of treatment due to accompanying comorbidities (atrial fibrillation, arterial hypertension and hypothyroidism) along with the impaired general condition of the patient. Performing a surgical intervention under general anesthesia in this case carries a high risk of complications with longer postoperative recovery.

CONCLUSION

Only a few cases of splenic abscess caused by *Salmonella enteritidis* have been described in the literature and they were mostly treated with splenectomy (2, 4, 7) and only in one case with antibiotic treatment alone (6). This case of rare splenic abscess due to *Salmonella enteritidis* following trauma was treated successfully with a combination of percutaneous drainage, prolonged antibiotic therapy, and intensive care (Figure 5).

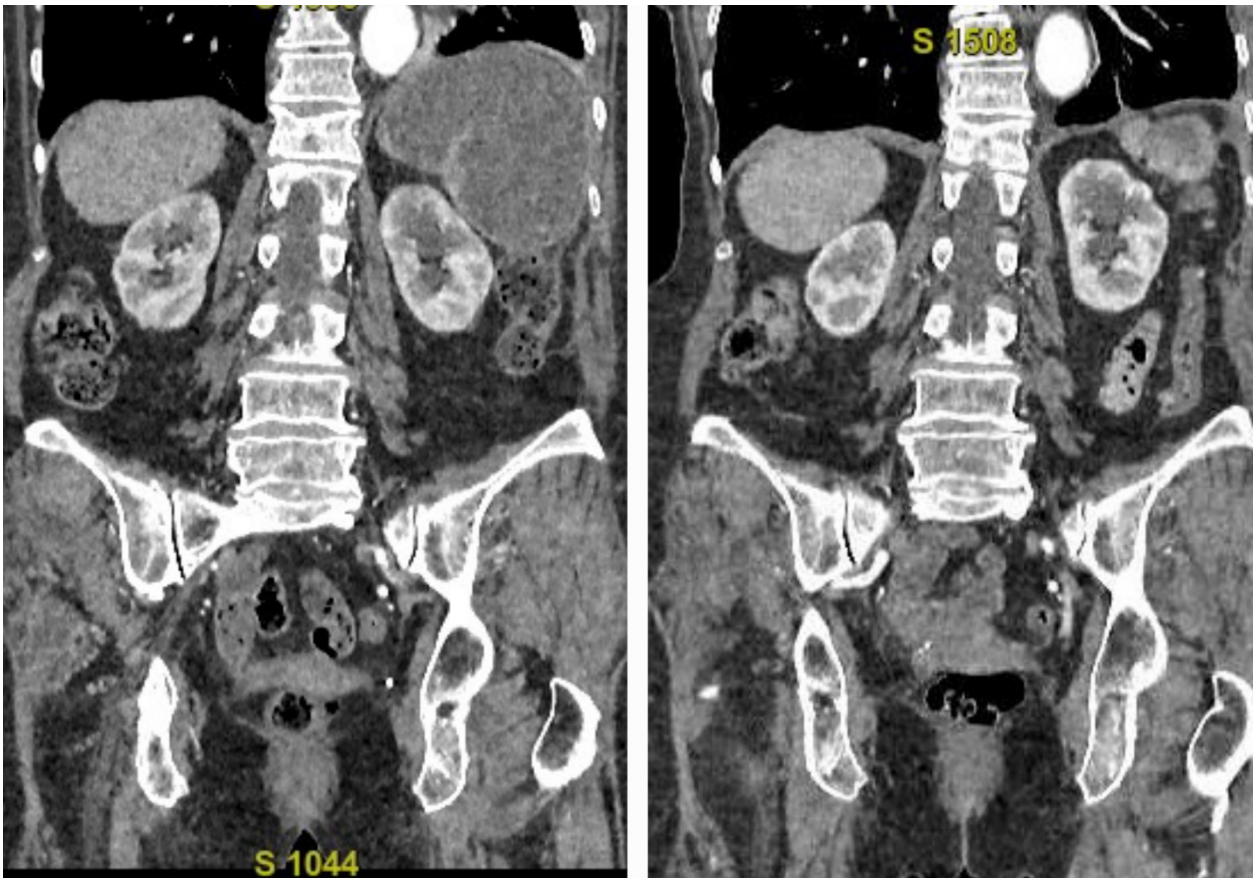

Figure 5. *Multidetector computed tomography—coronal images compared before and after percutaneous drainage of the splenic abscess*

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Apsces slezine izazvan salmonelom enteritidis nakon abdominalne traume izlečen interventnim radiološkim metodama: prikaz slučaja

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SAŽETAK

Uvod. Apsces slezine je veoma retka ekstraintestinalna komplikacija infekcije bakterijom *Salmonella enteritidis* u postantibiotskoj eri, sa incidencijom između 0,14% i 2%. Uglavnom prati bakteriemiju nakon traume, infektivnog endokarditisa, intravenske primene narkotika i imunodeficijencije (AIDS, dijabetes melitus).

Prikaz slučaja. Opisan je slučaj osamdesetdvogodišnje bolesnice sa tegobama u vidu bolova u gornjim delovima abdomena, mučninom i groznicom koji su trajali dve nedelje nakon traume abdomena. Prilikom CT pregleda uočena je hipodenzna lezija dimenzija 110 mm x 80 mm (CCxLL) sa minimalnim perifernim kontrastom, koja je dijagnostikovana kao apsces slezine. Urađena je perkutana aspiracija, koja je bila ehosonografski vođena i pod kontrolom radioskopije, kako bi se uzorkovao sadržaj kolekcije za mikrobiološku analizu, a zatim je obavljena perkutana drenaža. Iz kulture je izolovana *Salmonella enteritidis*, senzitivna na ampicilin, ciprofloksacin i cefalosporine treće generacije. Inicijalno empirijski započeta terapija amikacinom zamenjena je terapijom ceftriaksonom. Bolesnica je posle mesec dana puštena na kućno lečenje. Prilikom praćenja, koje je trajalo šest meseci, nisu zabeleženi recidivni simptomi. Kontrolni CT pregled je pokazao da je slezina normalne veličine, sa tankim zonama niske gustine ispod kapsule koje su bile posledice upale.

Zaključak. U literaturi je opisano samo nekoliko slučajeva apscesa slezine izazvanih salmonelom enteritidis, koji su uglavnom lečeni splenektomijom. U ovom radu je predstavljen slučaj retkog apscesa slezine izazvanog salmonelom enteritidis koji je uspešno izlečen kombinacijom perkutane drenaže, produžene terapije antibioticima i intenzivne nege.

Ključne reči: ***Salmonella enteritidis*, apsces slezine, perkutana drenaža**