

CASE REPORT

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Salmonella bacteremia: A case report

Karolina Viquez Beita

ABSTRACT

Salmonella is one of the most common causes of acute gastroenteritis worldwide and it is usually acquired by ingesting contaminated food. Its course is usually self-limited, but in patients with some underlying conditions this pathogen can cause life-threatening infections, such as bacteremia. Here we present the case of a 76-year-old female with *Salmonella* bacteremia.

Keywords: Bacteremia, Non-typhoidal salmonellosis, *Salmonella*

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INTRODUCTION

Salmonella is a gram-negative bacillus known to be one of the most common causes of acute diarrheal illness worldwide [1–3]. Non-typhoid *Salmonella* (NTS) and typhoid *Salmonella* are the subspecies affecting humans.

Transmission is mostly by ingesting contaminated food, historically poultry, but the disease can also be contracted from direct exposure to animals [4]. Non-typhoidal *Salmonella* typically causes acute enterocolitis that is mild and self-limiting in most people, but it can also present as bacteremia, meningitis, or focal infections that, if untreated or improperly treated, can be fatal especially in individuals with underlying conditions such as sickle cell disease, human immunodeficiency virus (HIV), or malignancy [3]. Here we present the case of a 76-year-old female with *Salmonella* bacteremia.

CASE REPORT

A 76-year-old female with history of type 2 diabetes mellitus, hypertension, hypothyroidism, and obesity presented to the hospital with encephalopathy and one week history of diarrhea. The patient denied any recent travel, no camping, no well water, no recent new diet changes, or no pets.

Vital signs were as follows: Blood pressure 106/55 mmHg, heart rate 55 bpm, respiratory rate 21 breaths per minute, and temperature 39.9°C. Laboratory results showed the following: WBC 10.9k, hemoglobin 14.4 g/dL, sodium 136 mmol/L, potassium 2.6 mmol/L, chloride 104 mmol/L, creatinine 1.6 mg/dL, blood urea nitrogen (BUN) 35 mg/dL, anion gap 20 mmol/L, lactate 3.2 mmol/L, glucose 127 mg/dL, aspartate aminotransferase 59 units/L, and alanine transaminase 40 units/L.

The patient started sepsis protocol. She received normal saline 150 cc/h and potassium correction intravenous (IV) was given. Per nephrology recommendations bicarbonate drip started to correct her metabolic acidosis. Empiric antibiotic ceftriaxone started. Stool culture was positive for *Salmonella*. Blood cultures collected on admission positive for *Salmonella* species susceptible to ciprofloxacin, ceftriaxone, and ampicillin. Echocardiogram showed normal systolic and diastolic function and no signs of endocarditis. Ceftriaxone 2 g daily was started and continued while inpatient. The diarrhea and metabolic abnormalities corrected, repeated blood cultures were negative, and the patient was discharged home on oral ciprofloxacin, planning to complete 14 days of antibiotics.

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DISCUSSION

Salmonella is motile, gram-negative, facultative anaerobic bacilli and is classified within the family *Enterobacteriaceae* known to cause a wide spectrum of pathologies from gastroenteritis, osteomyelitis to more severe presentations such as bacteremia, endocarditis, and meningitis [1–3]. Most human infections are caused by *Salmonella enterica* spp. and its subspecies include typhoidal and non-typhoidal serovar. Typhoidal serovars cause typhoid (enteric) fever and non-typhoidal salmonellosis (NTS) mainly results in acute self-limiting gastroenteritis, although more severe infection can occur, especially in immunocompromised host [4].

Most NTS infections are associated with the consumption of contaminated water and food of animal origin (eggs, poultry, and dairy products), and to be facilitated by conditions characterized by poor hygiene. However, transmission can also occur from contact with pet reptiles and amphibians (most commonly turtles, iguanas, frogs, lizards, and snakes), live poultry, pet rodents (hamsters, hedgehogs, mice, and rats), cats and dogs, and even from handling pet foods [5].

Patients with certain underlying conditions such as hemoglobin disorders, infection with human immunodeficiency virus (HIV), malignancy, or other causes of immune suppression have an increased risk of severe disease and death from complications [3]. The epidemiology of NTS infections is quite different from that of typhoid fever. Non-typhoid *Salmonella* infections have a worldwide distribution, whereas most typhoidal *Salmonella* infections in the United States are acquired abroad [6].

Non-typhoid *Salmonella* bacteremia should be suspected in patients with gastrointestinal symptoms and systemic febrile illness in the setting of the after mentioned risk factors. Although the patient we described in this case report did not have any of those underlying conditions. Patients should have a careful physical examination for possible extraintestinal metastatic foci of infection. Initial broad spectrum antibiotic therapy is warranted for patients with NTS bacteremia pending susceptibility results and an infectious diseases consultation is advisable. Preferred antibiotic agents include third-generation cephalosporin (ceftriaxone or cefotaxime) or fluoroquinolone (ciprofloxacin or levofloxacin) [7]. Once susceptibility data are available, antibiotics should be tailored to the microbiology data and clinical picture of the patient.

The duration of treatment of NTS without extraintestinal focal infection will be determined by the patient's immune status. Immunocompetent hosts should receive 10–14 days of antibiotic therapy while immunocompromised hosts should be treated for four to six weeks, given higher risk of recurrence or relapse [8, 9]. If extraintestinal focal infections are identified the duration of the treatment will vary depending on the organ/system affected and host immune systems and clinical status [10].

CONCLUSION

Non-typhoid *Salmonella* usually presents as a self-limited diarrheal illness but more severe presentations such as bacteremia should be suspected and promptly treated. Clinical suspicion plays a crucial role in identifying NTS bacteremia, even in patients lacking typical risk factors, like the patient described in this case report. Third generation cephalosporins are the initial antibiotic choice and once microbiology data are available antibiotics should be tailored based on susceptibilities. Duration of treatment will vary depending on the host immune status.

REFERENCES

1. Crump JA, Sjölund-Karlsson M, Gordon MA, Parry CM. Epidemiology, clinical presentation, laboratory diagnosis, antimicrobial resistance, and antimicrobial management of invasive salmonella infections. *Clin Microbiol Rev* 2015;28(4):901–37.
2. Feasey NA, Dougan G, Kingsley RA, Heyderman RS, Gordon MA. Invasive non-typhoidal salmonella disease: An emerging and neglected tropical disease in Africa. *Lancet* 2012;379(9835):2489–99.
3. Haselbeck AH, Panzner U, Im J, Baker S, Meyer CG, Marks F. Current perspectives on invasive nontyphoidal *Salmonella* disease. *Curr Opin Infect Dis* 2017;30(5):498–503.
4. Lamas A, Miranda JM, Regal P, Vázquez B, Franco CM, Cepeda A. A comprehensive review of non-enterica subspecies of *Salmonella enterica*. *Microbiol Res* 2018;206:60–73.
5. Galán-Relaño Á, Valero Díaz A, Huerta Lorenzo B, et al. *Salmonella* and salmonellosis: An update on public health implications and control strategies. *Animals (Basel)* 2023;13(23):3666.
6. Gal-Mor O, Boyle EC, Grassl GA. Same species, different diseases: How and why typhoidal and non-typhoidal *Salmonella enterica* serovars differ. *Front Microbiol* 2014;5:391.
7. Wen SC, Best E, Nourse C. Non-typhoidal *Salmonella* infections in children: Review of literature and recommendations for management. *J Paediatr Child Health* 2017;53(10):936–41.
8. Kurtz JR, Goggins JA, McLachlan JB. *Salmonella* infection: Interplay between the bacteria and host immune system. *Immunol Lett* 2017;190:42–50.
9. Mori N, Szvalb AD, Adachi JA, Tarrand JJ, Mulanovich VE. Clinical presentation and outcomes of non-typhoidal *Salmonella* infections in patients with cancer. *BMC Infect Dis* 2021;21(1):1021.
10. Chen PL, Chang CM, Wu CJ, et al. Extraintestinal focal infections in adults with nontyphoid *Salmonella* bacteraemia: Predisposing factors and clinical outcome. *J Intern Med* 2007;261(1):91–100.

Author Contributions

Karolina Viquez Beita – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

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Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Author declares no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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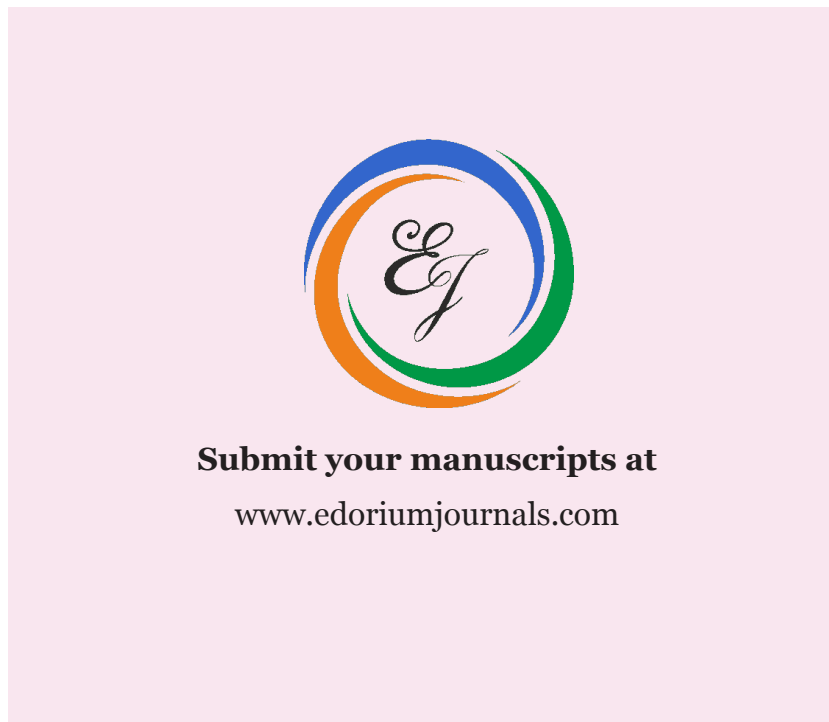
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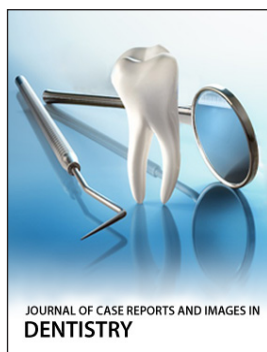
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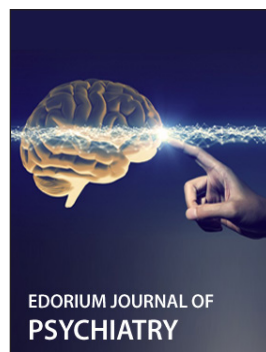
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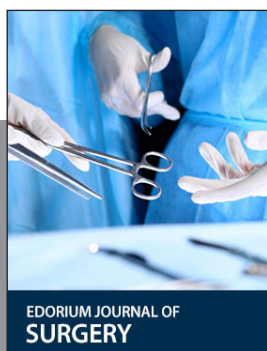
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