

## Rare complications of Salmonella

Complications of Salmonella

Ayşe Kaya Kalem, İmran Hasanoğlu, Bircan Kayaaslan, Rahmet Güner  
Department of Infectious Disease, Ankara Yıldırım Beyazıt University School of Medicine, Ankara City Hospital, Ankara, Turkey

### Abstract

Although non-typhoidal salmonellosis presents with gastroenteritis and bacteremia, there are also some rare complications. In this study, we present the clinical presentation, diagnosis, and treatment of three patients who presented to our clinic with rare complications. Salmonella gastroenteritis can be deadly owing to complications as well as being a self-limiting infection. It should therefore be taken into account in patients with risk variables, as a differential diagnosis. In the event of suspicion, cultures should be acquired.

### Keywords

Salmonella; Rare complications; Endocarditis

DOI: 10.4328/ACAM.20083 Received: 2019-12-05 Accepted: 2020-07-28 Published Online: 2020-10-30 Printed: 2021-01-01 Ann Clin Anal Med 2021;12(1):108-110

Corresponding Author: Ayşe Kaya Kalem, Ankara State Hospital, Department of Infectious Disease Üniversiteler Mah. 1604. Cd. No:9 06800 Çankaya, Ankara, Turkey.

E-mail: dr.aysekaya09@hotmail.com GSM: +90 506 300 9586

Corresponding Author ORCID ID: <https://orcid.org/0000-0002-4759-0066>

## Introduction

Non-typhoidal salmonellosis is an infection caused by any of the salmonella species other than *Salmonella typhi*. Although it frequently presents with gastroenteritis and bacteremia, there are also some rare complications. In this study, we present the clinical presentation, diagnosis, and treatment of three patients who presented to our clinic with rare complications. Informed consents were obtained from the patients.

## Case Report

### Case 1

A 32-year-old male patient admitted to the emergency room with complaints of fever with chills, malaise, and hematuria that started 4 days ago. The patient had atherosclerotic heart disease and he had undergone aortic valve replacement due to rheumatic valve disease 13 years ago. On physical examination, 2/6 systolic murmur in aortic focus and hepatosplenomegaly were detected. Results of blood tests were as follows: leukopenia in peripheral blood smear, neutropenia, C-reactive protein: 367mg/L, erythrocyte sedimentation rate (ESR): 51mm/hr, AST: 71(0-40U/L), ALT: 46 (0-41U/L), total bilirubin: 4.5mg/dl, direct bilirubin: 3.45mg/dl. No vegetation was detected in the transthoracic echocardiography. Abdominal and thoracic computed tomography (CT) revealed hepatosplenomegaly and subcapsular millimetric hemorrhage in the spleen. *Salmonella enteritidis* is isolated from the patient's blood cultures. Since the fever persisted despite ampicillin sulbactam treatment, transesophageal ECHO was performed and revealed vegetation measuring 2x0.8 cm in the anterior paravalvular area of the mechanical prosthetic aortic valve and abscess formation measuring 1.7x0.5 cm in the annular region. On the 10th day of treatment, respiratory distress, tachypnea, and low saturation were detected and the patient was intubated for five days. No growth in blood cultures was detected after 14 days of treatment. The patient was operated by the cardiovascular surgery team on the 22nd day and prosthetic valve replacement was performed. There was no growth in the prosthetic valve culture. The patient's treatment was completed in six weeks and he was discharged from the hospital. He is currently at the 14th month of follow-up without any problems.

### Case 2

A 68-year-old female patient with known polymyalgia rheumatica and hypertension was admitted to the emergency room with complaints of myalgia and left shoulder pain. The patient had long been using prednisolone 5mg/day. She had somnolence but oriented and cooperative, and had no nuchal stiffness. Laboratory test results were as follows: white blood cell count: 24,900/mm<sup>3</sup> (93%PNL), hemoglobin: 11g/dl, CRP: 247 mg/L, ESR: 96 mm/h, procalcitonin: 16.5 ng/ml. Lumbar MRI was performed due to a history of previous surgery. Following intravenous Gad DTPA injection, a millimetric fluid collection showing peripheral contrast enhancement was detected in the paraspinal area and submucosal fatty tissue. The patient underwent simultaneous operation by orthopedic surgeon and neurosurgeon for pathologic fracture on the left shoulder detected by MRI. Intraoperatively, no appearance suggesting infection was seen in the lumbar region. However, *Salmonella enteritidis* was isolated in the intraoperative left

shoulder joint fluid culture which is sensitive to ampicillin, cefotaxime, and ciprofloxacin. Four weeks of ceftriaxone therapy was administered. Hemoglobinopathy was not detected in hemoglobin electrophoresis. At the 6th month of her follow-up, no complication was observed.

### Case 3

A 72-year-old male patient with type 2 diabetes mellitus (DM), asthma, and atherosclerotic heart disease was admitted with complaints of high fever, chills, nausea, and vomiting that persisted for 1.5 months. He had also complaints of weight loss and fatigue. In the patient's medical history, it was found out that the use of parenteral antibiotics was present and complaints ceased during the treatment and were repeated after the cessation of treatment. He underwent coronary angioplasty and stent placement. Dullness on percussion of the traube's space was detected. Toxic granulation and 70% PNL were observed in the peripheral blood smear. Abdominal CT scan revealed a saccular aneurysmatic dilatation and loculated fluid collection (pseudoaneurysm) consistent with abscess containing millimetric air values with heterogeneous density and contrast at the periphery in the abdominal aorta proximal to the iliac bifurcation. *Salmonella enteritidis* was isolated in blood cultures. With the diagnosis of mycotic aneurysm, an aneurysm resection and femoral graft operation were performed by the cardiovascular surgery team on the 35th day of treatment. The treatment of the patient was stopped after eight weeks with ceftriaxone 2gr/day. The patient is currently at the 24th month of follow-up, there is no clinical complaint, and the laboratory values for inflammation are within normal limits.

## Discussion

Focal and metastatic infections for non-typhoidal salmonella-invasive infections are common, especially in patients with predisposing heart valve disease, aneurysm, atherosclerotic heart disease, hemoglobinopathy, urinary or bone anomalies, and prosthesis [1]. Risk factors in our cases are identified as diabetes, prosthetic valve replacement, atherosclerotic heart disease, older age, and steroid use. The prevalence of salmonella-associated endocarditis is reported as 0,01-2,9% in the literature [2-4] and mitral valve is frequently involved. Our case with endocarditis is on the 14th month of the follow-up and follow-up is continuing without any problems. Although early surgery is recommended, there is no study regarding the time and benefit of early surgery.

Bone and joint involvement due to *Salmonella* infections was reported in less than 1% of cases [5]. In our case with bone and joint involvement, even though there was a presence of peripheral leukocytosis, septic arthritis was not considered in preliminary diagnosis because of the absence of classic findings of septic arthritis, and accompanying fracture has come into prominence. Diagnosis was made by isolating the causative agent in the joint fluid culture. In our patient who had no evidence of osteomyelitis in his CT scan, older age and steroid use were identified as risk factors.

Mycotic abdominal aneurysm is the development of aneurysm after arterial wall degeneration due to bacterial or fungal agents [6]. The mycotic aneurysm associated with salmonella has a high mortality rate due to rupture which is a common

complication [7,8]. This disease, which is difficult to diagnose, can now be diagnosed earlier and more frequently thanks to the availability of imaging techniques and increased sensitivity of the current diagnostic methods in patients with abdominal pain. Our case with abdominal involvement has been under follow-up for 24 months as of now and is in good condition.

Besides being a self-limiting infection, salmonella gastroenteritis may be fatal due to complications. Therefore, it should be kept in mind as a differential diagnosis in patients with risk factors. In case of suspicion, cultures should be obtained prior to antibiotic treatment since an increase in resistance rates have been reported.

#### **Scientific Responsibility Statement**

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

#### **Animal and human rights statement**

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

#### **Conflict of interest**

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

#### **References**

1. Cohen JL, Bartlett JA, Corey GR. Extra-intestinal manifestations of salmonella infections. *Medicine*. 1987;66(5):349-88. DOI:10.1097/00005792-198709000-00003.
2. Morpeth S, Murdoch D, Cabell CH, Karchmer AW, Pappas P, Levine D, et al. Non-HACEK gram-negative bacillus endocarditis. *Ann Intern Med*. 2007;147(12):829-35. DOI:10.7326/0003-4819-147-12-200712180-00002.
3. Krcmery V, Demitrovicova A, Hricak V, Kisac P. Endocarditis due to Gram-negative bacteria. *Int J Infect Dis*. 2010;14:e359.
4. Bor DH, Woolhandler S, Nardin R, Bruschi J, Himmelstein DU. Infective endocarditis in the US, 1998–2009: a nationwide study. *PLoS One*. 2013;8(3):e60033. DOI: 10.1371/journal.pone.0060033.
5. Mandell LG, Douglas RG, Bennett JE, Hook E W. *Salmonella species (including typhoid fever), Principle and Practice of Infectious Diseases*. New-York: Livingstone; 1990. p:1700-16.
6. Sorelius K, Mani K, Björck M, Sedivy P, Wahlgren CM, Taylor P, et al. Endovascular treatment of mycotic aortic aneurysms: a European multicenter study. *Circulation*. 2014;130(24):2136-42. DOI:10.1161/circulationaha.114.009481.
7. Zhou T, Guo D, Chen B, Jiang J, Fu W, Wang Y. Endovascular stent-graft repair of mycotic aneurysms of the aorta: a case series with a 22-month follow-up. *World J Surg*. 2009;33(8):1772-8. DOI:10.1007/s00268-009-0075-6.
8. Hsu RB, Chen RJ, Wang SS, Chu SH. Infected aortic aneurysms: clinical outcome and risk factor analysis. *J Vasc Surg*. 2004;40(1):30-5. DOI: 10.1016/j.jvs.2004.03.020.

#### **How to cite this article:**

Ayşe Kaya Kalem, İmran Hasanoğlu, Bircan Kayaaslan, Rahmet Güner. Rare complications of Salmonella. *Ann Clin Anal Med* 2021;12(1):108-110