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Non-HIV Male with Urinary Tract Infection by Salmonella Enteritidis

Lucía Ordieres-Ortega*, Irene García-Fernández-Bravo, Pablo Demelo-Rodríguez and Juan Carlos Cano-Ballesteros

Department of Internal Medicine, Hospital General Universitario Gregorio Marañón.Calle del Dr. Esquerdo, 46, 28007 Madrid, Spain

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***Corresponding author:** Lucía Ordieres Ortega, Department of Internal Medicine, Hospital General Universitario Gregorio Marañón. Calle del Dr. Esquerdo, 46, 28007 Madrid, Spain, Tel no: 0034657668473; E-mail: lucia.oomere@gmail.com*

Abstract

Salmonella sp. can produce urinary tract infections, especially in immunocompromised patients (mainly due to HIV infection).

We present the case of a male who was admitted into the Internal Medicine ward with a urinary tract infection. Ceftriaxone was initiated. Salmonella D9 grew on urine and blood cultures. HIV tests were negative. An echocardiogram did not show any signs of infective endocarditis. An abdominal ultrasound showed an enlarged prostate. The patient was also diagnosed of diabetes mellitus, previously unknown, due to persistently high glycaemia and high glycated haemoglobin, along with cardinal symptoms. His symptoms improved and he was discharged with oral cephalosporin for 6 weeks, along with insulin therapy.

There is scarce available information on systemic salmonellosis in non-HIV patients. Diabetes mellitus could cause a higher susceptibility to Salmonella infections. These infections should be treated with a third generation cephalosporin for 4 to 6 weeks, adding a quinolone in severe cases.

Keywords: Salmonella enteritidis; Bacteraemia; Immunocompromised; Urinary tract infection

Introduction

Salmonellosis is an increasingly worrying health problem, especially in developing countries. Salmonella is a genus of gram negative bacillum of the Enterobacteriaceae family. It is classified as S. bongori and S. enterica, the latter of which is divided into six subspecies. Among these is Salmonella enterica subsp. enterica, divided into typhi, paratyphi A, B and C (which cause typhoid fever) and other subtypes, depending on the antigens, mainly O and H. The most frequent serotypes are B (Typhimurium), C and D (or Enteritidis) [1]. Salmonella spp. is capable of indirectly infecting humans by means of animals or infected foods, and may cause potentially fatal events. Human infections are mainly caused by Salmonella enterica.

Salmonella can also be divided into typhoidal and non-typhoidal. The reservoir is animal, except for serotypes Typhi and Paratyphi A, which are strictly human-only. Most infections are acquired by ingesting contaminated food, usually poultry, eggs and dairy products [2]. Salmonellosis can manifest in at least five different clinical forms: gastroenteritis (around 70% of all cases), typhoid fever, bacteraemia of unclear origin, chronic carrier and local infection [3].

Urinary Tract Infections (UTI) due to Salmonella are not a common presentation, and occur mainly in immunocompromised patients, mainly those infected by the human immunodeficiency virus (HIV). Saphra and Winter [4] reported UTI (especially acute pyelonephritis and pyelitis) in 0.6% of patients with salmonellosis caused by non typhi species. All patients with bacteraemia caused by Salmonella were immunocompromised, mostly due to HIV infection.

Clinical case

We present the case of a 63-year-old male evaluated at the Emergency Room with 12-hour fever up to 39 degrees Celsius. He also complained of dysuria and haematuria, but denied the presence of blood clots in the urine.

His personal history was remarkable for acute myocardial infarction 9 years before that was treated with angioplasty and stent and received antiaggregation with acetylsalicylic acid and clopidogrel. Later on, he voluntarily decided to discontinue medication and abandoned medical follow-up.

Physical examination was unremarkable. Blood analysis showed glucose 308 mg/ dL, haemoglobin 13.9 mg/ dL, leukocytes 6800/ mm^3, creatinine 0.77 mg/ dl and C-reactive protein 18.2 mg/ dL. Urinalysis showed mild presence of bacteria with positive leukocyte esterase and intense haematuria. Ceftriaxone was started and the patient was admitted to the Internal Medicine ward with the diagnosis of complicated UTI. He presented a favourable evolution, with resolution of symptoms in the following 48 hours.

Upon admission, the patient also referred weight loss, polydipsia and polyuria for the previous six months. He presented glycosuria and ketonuria. Glycated haemoglobin was 12.5%. A diagnosis of diabetes was given and insulin therapy was therefore started [5].

The urine and blood (2 out of 3) cultures extracted at the ER demonstrated the presence of Salmonella D9, resistant to

quinolones and vancomycin and sensitive to cephalosporins.

A transthoracic echocardiogram revealed a slightly diminished global systolic function, without any suggestive findings of infective endocarditis. An abdominal ultrasound was performed, showing signs of chronic hepatopathy and enlarged spleen (14 cm). The prostate was enlarged (estimated volume 66 cm^3) and there was a protrusion of the middle lobe into the urinary bladder. The prostate specific antigen was 34.98 ng/ mL. Tamsulosin was initiated. A serology test for HIV was negative.

Upon discharge, antibiotic therapy was maintained with cefixime 400 mg bid for 6 weeks. Two months later, the patient was asymptomatic, with an adequate glycemic control and a negative control urine culture.

Discussion

Several cases of bacteraemia due to Salmonella spp. described in the literature refer to immunocompromised patients (mainly HIV infected). These patients have 20 times higher risk of acquiring salmonellosis than the general population, and a 100 times higher risk of disseminated infection [6,7]. There is, however, scarce available information on systemic salmonellosis in non-HIV patients. Our patient was HIV negative, and he did not seem to present any risk factors for the haematic dissemination of non-typhi Salmonella D. On the other hand, the origin of the infection in this patient could not be clarified.

The presence of Salmonella spp. in the urine is rare, especially in non-HIV patients. There is also a lack of literature referring to patients with urosepsis by this pathogen. A case presented by Vartian [8] presented a history of diabetes mellitus that had been known for years. Our patient was also diagnosed of diabetes mellitus which had been uncontrolled for a few months. It would be interesting to clarify whether diabetes mellitus could be related to an increased susceptibility of infection by Salmonella. Other authors relate the presence of diabetes mellitus to a higher risk of neck abscesses [9] and osteomyelitis [10]. It is thus not improbable that diabetes mellitus could also be a risk factor for UTI produced by Salmonella.

Treatment of bacteraemia due to Salmonella involves a third generation cephalosporin for 4 to 6 weeks. In severe cases, a quinolone should be added until the results of the antibiogram are known [11]. These infections require a thorough clinical and microbiological evaluation. Antibiotic resistances in Salmonella spp are steadily escalating, seemingly linked to the use of antimicrobial agents in agriculture.

In short, we present the case of a non-HIV patient with a urinary tract infection and bacteraemia due to non-typhi Salmonella, who was treated with cephalosporins with a good outcome.

Conflict of interest

The authors declare that they have no conflict of interest.

Clinical Study

The manuscript does not contain clinical studies or patient data.

The patient's consent for publication of this case was obtained.

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