Non-Typhoidal *Salmonella* Group D Bacteremia and Urosepsis in a Patient Diagnosed with HIV Infection

Said Abuhasna, Amer Al Jundi¹, Masood Ur Rahman, Walaa Said

Departments of ¹Critical Care Medicine, ¹Pharmacy, Tawam Hospital, Al Ain, United Arab Emirate

### ABSTRACT

Urinary tract infections caused by non-typhoid *Salmonella* are rare and usually develops in patients with predisposing factors such as immune deficiency or occult urologic problems. This report describes a case where *Salmonella* Group D was isolated from the blood and urine of a patient with documented human acquired immunodeficiency syndrome who developed urosepsis and was successfully treated with antibiotics.

**Key words:** Bacteremia, HIV, *Salmonella*, Urosepsis

### INTRODUCTION

*Salmonella* are gram-negative non-spore-forming facultative intracellular anaerobes that cause a wide spectrum of disease, especially in the warm season.[¹] The clinical presentation depends on the serotype of *Salmonella* and host factors and can range from a gastroenteritis, enteric fever, bacteremia, focal infections, to a convalescent lifetime carrier state.[²] The non-typhoidal species of *Salmonella* tend to produce a more localized response including self-limited form of gastroenteritis because they are believed to lack the human-specific virulence factors.[¹] Therefore, extra-intestinal non-typhoidal *Salmonella* (NTS) is uncommon and usually occurs in patients with predisposing factors such as immune deficiency or occult urologic problem. About 95% of cases of *Salmonella* infection are food-borne; however, the incidence of direct contact exposure with animal carriers is uprising.[³] Therapeutic management depends on the clinical manifestations. Antibiotic administration is crucial in patients with systemic symptoms.[⁴,⁵] Since *Salmonella* has the potential to grow intracellularly, antibiotics with high intracellular concentrations like ciprofloxacin should be utilized.[⁶] However, percutaneous catheter drainage and surgical intervention for abscesses can have important roles in the management of localized infections.[⁷]

### CASE REPORT

A 52-year-old male was admitted to our intensive care unit with high grade fever, shortness of breath, hypotension, and urosepsis. Patient had a history of poor oral intake for several weeks with significant weight loss. There was no history of cough, expectoration, nausea or vomiting, dysuria, bleeding, loose bowel movements or alteration of higher mental functions. The patient has been drinking unpasteurized camel milk. Patient had a past medical history of hypertension and diabetes. His social history single and denies sexual activities. He has served in the military. There was no past history of sexual transmitted diseases, blood transfusion, homosexuality, or travel outside the country. On physical examination, he was in moderate distress, febrile (38.1°C), with decreased breath sounds bilaterally and blood pressure of 100/50 mmHg; carotid pulsations were visible with no bruits and non-elevated jugular venous pressure (JVP). Cardiovascular examination showed normal heart sounds. Abdomen was soft, non-tender with no hepatospleenomegaly or pain on deep palpation. No other abnormalities were noted on systemic examination. Laboratory analysis revealed: hemoglobin, 85 g/liter; total leucocyte count, 6200/mm³; normal platelet count (1.6 × 10⁹/liter); C reactive protein, 222 mg/L. No malaria parasites were seen on blood smear. Additionally, colonoscopy and endoscopy showed internal...
hemorrhoids and gastritis. Gastric biopsy for Helicobacter pylori stain was negative. CT scan revealed no mediastinal, hilar or axillary lymphadenopathy. However, there was 3 cm pleural effusion noted on the right side and 1.4 cm on the left side with minor amount of pericardial effusion noted as well. Additionally, there were no focal changes noted in the liver, pancreas, spleen, kidneys, or adrenals. There was no retroperitoneal or intraperitoneal lymphadenopathy noted. There was minor amount of free abdominal fluid with lesser fluid noted within the pelvis.

Serial cultures of blood and urine revealed the presence of non-typhoidal Salmonella Group D sensitive to piperacillin/tazobactam, ciprofloxacin, and ampicillin, but resistant to cefuroxime, gentamicin, and trimethoprim/sulfamethoxazole. The antimicrobial susceptibility was performed using Kirby Bauer disk diffusion method. Hence, the decision was to investigate for malignancy, tuberculosis, or HIV as a differential diagnosis for the unusual presence of NTS in the blood and urine. A positive ELISA result, followed up with a positive Western blot test, confirmed the diagnosis of HIV. Cytology report was negative for malignancy. Sputum smears and cultures using fluorescence microscopy for acid-fast bacilli were also negative. The patient was treated with ciprofloxacin 200 mg IV twice daily, which was then switched to piperacillin/tazobactam 3 days later with a total duration of 7 days. A urine culture obtained later showed negative growth.

**DISCUSSION**

Non-typhi Salmonella urinary tract infection (UTI) is uncommon and usually occurs in patients with a predisposition.[8] Salmonella can infect the urinary tract through hematogenous spread or ascending the urethra after direct invasion.[9] In our case, the patient had blood stream invasion of Salmonella that was most likely due to an exposure to unpasteurized camel milk. As such, hematogenous spread as a potential etiology for seeding the urine in our patient is most likely. Since the vast majority of Salmonella infections involve the gastrointestinal tract, the urinary symptoms and subsequent urosepsis raised the question of a predisposing factor. Our patient was diagnosed with an HIV infection and hence had the extraintestinal manifestation of non-typhoidal Salmonella. Salmonella bacteraemia is a well-known manifestation of immunosuppression in patients with human immunodeficiency virus infection, and these patients have 20 to 100 fold increased prevalence of acquiring Salmonella infection and bloodstream invasion versus the general population.[10] Our patient had a CD4 count of 11 and a very low CD4/CD8 ratio (7%), which represents a state of severe immunosuppression. As such, the patient developed bacteraemia, which is the most common manifestation of salmonellosis in immunocompromised patients and is considered an AIDS-defining illness.[11] Moreover, focal infections in HIV-infected patients including urinary tract are more prevalent compared to general population.[12] Our patient developed urosepsis subsequent to bacteremia that was successfully treated with antibiotics without the development of renal scarring. The duration of treatment was 7 days.

**CONCLUSION**

The presence of extraintestinal non-typhoidal Salmonella serotypes should raise an index of suspicion for predisposing factors. Therefore, the presence of underlying diseases should be investigated. Our patient was diagnosed with an HIV, and prompt antibiotics were started for the management of his urosepsis. The patient recovered without any renal complications. An early treatment seems to determine a good outcome.

**REFERENCES**

1. Coburn B, Grassl GA, Finlay BB. Salmonella, the host and disease: A brief review. Immunol Cell Biol 2007;85:112-8.
2. Yang CH, Tseng HH, Chen KJ, Liu JD. Salmonella infections: A retrospective 10-year analysis of 134 cases in a regional hospital in Taiwan. Scand J Infect Dis 1996;28:171-5.
3. Linam WM, Gerber MA. Changing epidemiology and prevention of Salmonella infections. Pediatr Infect Dis J 2007;26:474-7.
4. Wistrom J, Jerborn M, Ekwall E, Norlin K, Söderquist B, Strömberg A, et al. Empire treatment of acute diarrheal disease with norfloxacin. A randomized, placebo-controlled study. Swedish Study Group. Ann Intern Med 1992;117:202-8.
5. Sirinavin S, Garner P. Antibiotics for treating Salmonella gut infections. Cochrane Database Syst Rev 2000;CD001167.
6. Centers for Disease Control and Prevention. National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS): Human Isolates Final Report, 2004.
7. Lee SC, Yang PH, Shieh WB, Lasserre R. Bacteremia due to non-typhi Salmonella: Analysis of 64 cases and review. Clin Infect Dis 1994;19:693-6.
8. Ramos JM, Aguado JM, García-Corbeira P, Alés JM, Soriano F. Clinical spectrum of urinary tract infections due to nontyphoidal Salmonella species. Clin Infect Dis 1996;23:388-90.
9. Gefken J, Gallagher E, Ortega AM, Cunha BA. Salmonella enteritidis urinary tract infection. Heart Lang 1996;25:81-3.
10. Baron EJ, Ng KP, Hafeez A, Raja NS, Hassan HH. Salmonellosis in persons infected with human immunodeficiency virus from Malaysia. Vol. 35. Kuala Lumpur, Malaysia: Department of Medical Microbiology, University of Malaya Medical Center; 2004. p. 361-5.
11. Centers for disease control- Revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. MMWR Recomm Rep 1992;41(RR17):1-19.
12. Fernández Guerrero ML, Ramos JM, Núñez A, Núñez A, de Górgolas M. Focal infections due to non-typhi Salmonella in patients with AIDS: Report of 10 cases and review. Clin Infect Dis 1997;25:690-7.

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