Case Report

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A Case of Salmonella Bacteremia in a New Diagnosed HIV-Positive Adult Patient

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Abstract

Salmonella species are gram-negative bacteria that cause foodborne infections with significant morbidity and mortality worldwide. Salmonella species are known pathogens associated with bacteremia, especially in immunocompromised patients. Salmonellosis is an AIDS-defining disease when it occurs in HIV-positive patients. In this case report, HIV-positive adult patient diagnosed with Salmonella bacteremia with prominent respiratory symptoms but no gastrointestinal symptoms is presented. It is concluded that Salmonella bacteremia is a diagnosis that should not be overlooked among the manifestations of HIV infection.

Keywords: AIDS, bacteremia, HIV, salmonella

Introduction

Salmonella species are Gram-negative bacteria classified in Enterobacteriaceae associated with human and animal infections. The most common initial symptoms of salmonellosis are fever, nausea, vomiting, headache, abdominal pain, diarrhea, chills, and arthralgias. Non-typhoid *Salmonella* (NTS) infections occur with various clinical syndromes, including gastroenteritis, bacteremia, endovascular infection, and focal infections (1-3). Although salmonellosis is generally a self-limiting disease in immunocompetent individuals, HIV-positive patients are at great risk of developing bloodstream infection, such that recurrent salmonella septicemia. So that, recurrent *Salmonella* septicemia has been recognized as an acquired immunodeficiency syndrome (AIDS)-defining illness (3). In developed countries, secondary bacteremia develops in approximately 5% of patients with non-typhoidal salmonellosis, and this bacteremia usually occurs in immunosuppressed HIV patients, patients with malignancy, chronic kidney or liver disease, diabetes, etc. (2). This case report describes a *Salmonella* bacteremia occurring in an HIV-infected adult patient.

Case Report

In this case, is presented a *Salmonella* bacteremia occurring in a 23-year-old newly diagnosed HIV-positive adult male patient. The patient had presented to the emergency department with a five-day history of cough, sputum, and intermittent hemoptysis. In addition to these complaints, fever and nocturnal sweats also accompanied. The patient had nausea but no vomiting. The day before coming to the outpatient clinic, the patient had semi-solid, non-bloody mucoid defecation twice daily. The patient was hospitalized at the infectious diseases clinic due to preliminary diagnoses of bacterial pneumonia, pneumocystis pneumonia (PCP) and pulmonary tuberculosis. The patient was diagnosed with HIV approximately three months before hospitalization and had not previously received any antiretroviral treatment. The patient received fifteen days of outpatient treatment for pneumonia a year ago. He lost approximately 10 kg in ten days at that time. The patient has been smoking for twelve to thirteen years but does not drink alcohol or addictive substances.

On admission, the patient was conscious, presented with a Glasgow Coma Score (GCS) of 15/15, cooperative,

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oriented, hemodynamically and respiratory stable, body temperature of 36.6 °C, pulse rate of 74 per min, blood pressure of 103/70 mmHg, oropharynx hyperemic. There was widespread candidal plaque in the oral mucosa and generalized lymphadenopathy with the nodes 1.1-1.7 cm in diameter in the submandibular and axillary zones. There was tenderness in the right upper quadrant of the abdomen but defense and rebound were negative. Lung breath sounds were normal. No amoeba, parasites, leukocytes, or erythrocytes were observed in stool microscopy but stool was positive for occult blood. *Salmonella* spp was positive in the blood culture taken from the patient during the fever period on the first day of hospitalization. There was no bacterial growth in the sputum culture with negative PCP. They found that anergic purified protein derivative (PPD), sputum acid-fast bacilli for Mycobacteria and I*nterferon Gamma Release Assay* (IGRA) tests were negative. Pre-treatment and post-treatment laboratory data are given in Table-1.

On the patient's thoracic tomography, consolidation areas containing infectious air bronchogram were observed on the posterior upper lobe of the right lung and the mediobasal and posterobasal segments of the left lung (Figures-1 and 2). Pneumonic consolidation zones were consistent with tuberculosis, but laboratory data did not support tuberculosis. No any significant finding was observed in the abdominal ultrasonography. Echocardiography did not reveal any vegetation or thrombus.

Piperacillin-tazobactam 4x4.5 gr treatment was initially started empirically due to respiratory symptoms and consolidations in favor of pneumonia on the thoracic tomography. In the follow-up of the patient, cough, sputum, hemoptysis, and diarrhea symptoms regressed, and the fever continued to be undulating. Piperacillin-tazobactam therapy was stopped on the 11th day in the patient who had bacteremia, and a 7-day tigecycline (100 mg loading dose, then 50 mg twice daily) treatment was applied. On the 11th day of the patient's hospitalization,

Table 1: Pre and post-treatment laboratory data

Parameters	Pre-treatment values	Post-treatment values (18th day)
WBC	3400/mm^3	2400/mm^3
PLT	48,000/mm^3	130.000/mm^3
Hb	8.9 g/dL	9.2 g/dL
AST	80 IU/L	23 IU/L
ALT	46 IU/L	19 IU/L
CRP	385 mg/L	8.4 mg/L
PCT	10.39 ng/mL	0.03 ng/mL
CD4$^+$ T cell	7 cells/µL	-
HIV-RNA	3743194 IU/mL	-

WBC: White blood cell; **PLT:** Platelet; **Hb:** Hemoglobin; **AST:** Aspartate aminotransferase; **ALT:** Alanine aminotransferase; **CRP:** C-reactive protein; **PCT:** Procalcitonin; **HIV-RNA:** Human Immunodeficiency Virus – Ribonucleic acid.

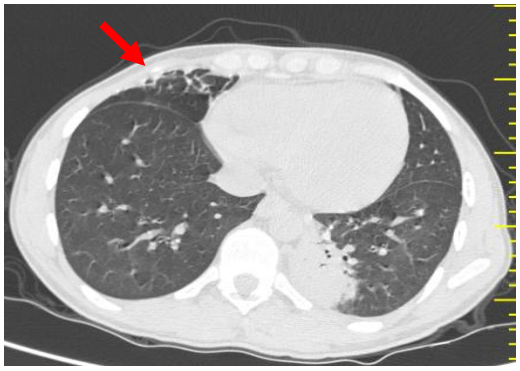

Figure 1. Consolidation area on the anterior upper lobe of the right lung on the thoracic tomography

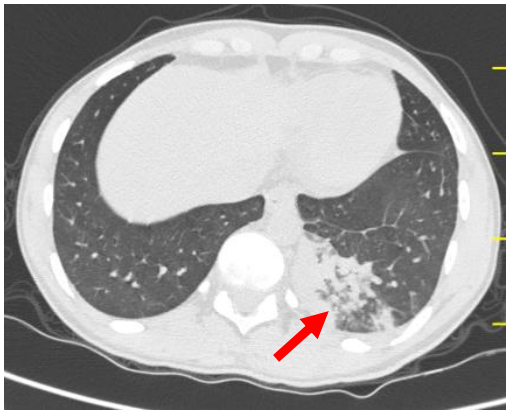

Figure 2. Consolidation area on the the mediobasal and posterobasal segments of the left lung on the thoracic tomography

both antiretroviral therapy with bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) 50 mg/200 mg/25 mg once daily and trimethoprim/sulfamethoxazole 160/800 mg once daily as primary prophylaxis was started when pulmonary tuberculosis was excluded. Seven days after the treatment, no bacterial growth was observed in the control blood culture. The patient responded positively to the therapy applied. The patient improved clinically and was discharged on the 18th day of the hospitalization because the fever was limited and he had no active complaints. In the 4th month of antiretroviral therapy, HIV-RNA was negative, and CD4 count was 237 cells per µL. In the 10th month of antiretroviral therapy, the CD4 count was found to be 423 cells per µL, and trimethoprim/sulfamethoxazole prophylaxis was discontinued.

Discussion

Here, we report a rare case from our country in which both Salmonella bacteremia and HIV-infection coexist in an adult patient. Salmonellosis is an infection usually characterized by fever, abdominal pain, diarrhea, nausea, and vomiting. Symptoms of illness usually appear 6-72 hours after the agent is ingested, and this period can last up to 7 days (3). *Salmonella* infections with self-limiting enterocolitis

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generally do not require antimicrobial therapy, but when *Salmonella* bacteria enter the systemic circulation, all tissues and organs are susceptible, causing various focal *Salmonella* infections (4). It is also recommended to investigate whether the patient has a genetic or acquired immune deficiency or an endovascular focus of infection when *Salmonella* bacteremia is diagnosed in an adult patient (5). Therefore, it is reported that *Salmonella* infection and especially bacteremia should be considered as a diagnosis of AIDS in a patient at risk for HIV infection (3,5). We reported a *Salmonella* bacteremia in an HIV-positive adult patient, which is rarely seen in our country.

On the other hand, patients with invasive Salmonella disease often present with focal infection in the lower respiratory tract (2). Respiratory system symptoms such as cough, sputum, and hemoptysis were prominently observed in our HIV-positive patient with *Salmonella* bacteremia but no obvious gastrointestinal symptoms other than diarrhea. A *Salmonella* bacteremia was previously reported in an HIV-positive adult patient in Türkiye, which was also caused by *Salmonella arizonae* (6). Although the cited case reported that the HIV-positive patient also had diabetes, bronchiectasis, and tuberculous lymphadenitis, the patient's respiratory and gastrointestinal symptoms were unclear.

In a retrospective analysis of patients with non-typhoidal *Salmonella* bacteremia in a study conducted in Malaysia, an extraintestinal focus of infection was noted in 30.9% of patients, the majority of which were pulmonary and soft tissue infections. In the mentioned study, 65.5% of the patients had serious underlying clinical immunosuppressive conditions, the most common being malignancy and HIV (7). Similarly, our patient had underlying HIV infection, and *Salmonella* bacteremia was associated with pneumonia. Again, CD4 T-lymphocyte counts are reported as less than 200 cells per μL in the majority of adult patients with invasive non-typhoidal salmonella disease in association with HIV (2,3). Our patient's CD4 T-lymphocyte count was found to be less than the mentioned value (Table-1).

It is reported that treatment of salmonellosis with antibiotics does not reduce the duration of uncomplicated *Salmonella* gastroenteritis but rather significantly prolongs the period of fecal excretion of bacteria and increases the risk of resistance to antibiotics. Therefore, salmonellosis should be treated with antibiotics only in the presence of bacteremia, enteric fever, focal infection or abscess (8). Tang et al. (9) showed that tigecycline had significant in vitro and in vivo antimicrobial activities against extracellular and intracellular *Salmonella* in a murine peritonitis model. However, the emergence of *Salmonella* antibiotic resistance is also a significant public health problem worldwide (1,3). Furthermore, tigecycline was also found to be effective against ceftriaxone-resistant *Salmonella* spp. (10). Since one of our patient's preliminary diagnoses was tuberculosis, we avoided the use of quinolones in order not to encourage tuberculosis resistance. Tigecycline therapy was applied for the treatment of *Salmonella* bacteremia, and our patient responded favorably to this treatment.

Conclusion

In this case report, it was concluded that *Salmonella* bacteremia, which has relatively few gastrointestinal symptoms, is a diagnosis that should not be overlooked among the signs of HIV infection and that careful treatment with effective antibiotic therapy is necessary to a good prognosis.

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