

Case Report

Pneumonia due to *Salmonella typhimurium* in an HIV-Infected Patient

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ABSTRACT

HIV-related Immunosuppression significantly increases the risk of acquiring opportunistic infections. This report describes a 69-year-old man, referred to hospital with decreased consciousness and productive cough. This man was a known case of human immunodeficiency virus positive. The sputum of this patient was positive for *Salmonella typhimurium*. Pulmonary auscultation signaled brief and scattered crackles especially in the lung bases. Lung graphy showed bronchopulmonary infiltration. Diagnosed with pneumonia due to *Salmonella*, the patient underwent treatment but he succumbed after 48 hours in septic shock. This case report demonstrates the importance of including general medical causes of immunosuppression and their treatment in the differential diagnosis and aetio-pathogenesis of HIV-infected patients with unusual clinical presentations.

Keywords: Pneumonias, *Salmonella typhimurium*, HIV

Introduction

HIV-related immunosuppression significantly increases the risk of acquiring opportunistic infections due to bacteria, viruses, fungi, and protozoa (1). The opportunistic infections are a major source of morbidity and mortality in HIV-infected patients

(1). The widespread use of highly active antiretroviral therapy (HAART) has also led to a dramatic decline in the incidence of opportunistic infections (1, 2). Each year, an estimated 1.4 million persons are infected with *Salmonella* in the United States (1). Most infections result in mild-to-moderate gastroenteritis but severe infections can occur, resulting in bacteremia, menin-

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gitis, and death. *Salmonella* infections lead to an estimated 16,430 hospitalizations and 582 deaths annually (1). *Salmonella* infection is an opportunistic infection in HIV-infected patients (1-3).

In the mid-1980s, the average annual incidence of *Salmonellosis* among AIDS patients was almost four per 1000 (3). The centers for disease control and prevention (CDC) reported that from 1992 to 1997, the incidence of recurrent *Salmonella* septicemia in patients with HIV infection was two per 1,000 person-year although there are data that suggest this number may be on the rise (4-6).

HIV-infected persons represent a patient's population at increased risk for invasive, recurrent *salmonella* infections (7). In search, we find two previous reports about *S. typhimurium* pneumonia in HIV-infected patients.

We report a case of a 69-man presented with *S.typhimurium* pneumonia as the complication of HIV-infection. This case report demonstrates the importance of including general medical causes of immunosuppression and their treatment in the differential diagnosis and aetio-pathogenesis of HIV-infected patients with unusual clinical presentations. The aim of this case report is winning attention to *S.typhimurium* as a cause of pneumonia in HIV-infected patients.

Case Report

A 69-year-old man with decreased consciousness and having developed a progressive Productive cough a month ago referred for treatment. Since the development of his productive cough, the sexagenarian patient has been subject to hemoptysis and urinary incontinence (several times). The patient is alleged to have already been infected with HIV. Clinical exams showed the patient was not feverish with pulse measured 89, inspiration rate standing at 33, blood pressure measured 140/80 mmHg, abdominal diagnosed normal while pulmonary auscultation signaled brief and scattered crackles especially in the lung bases.

Lung graphy showed bronchopulmonary infiltration and tests giving WBC=4.500, Hb=8, Hct=31, Plt=80,000(Sysmex K21, Japan), alb=2.3 g/dl (NL=3.8-

5.1) (Pars Azmun Kits Company), ESR=55mm, hscrp=25 mg/L (NL<10mg/l) (Pars Azmun Kits Company), Microscopic hematuria in urinalysis test revealed HIV-positive, HBV and HCV-negative antibodies (Elisa method-Euroimmune Kits, Germany).

After Gram staining, Gram-negative *Coccobacilli* were observed in the sputum smear, but no acid-fast bacillus was traced. Following this observation, the Gram-negative *Coccobacilli* were cultured in Mac-Conkey, XLD (Xylose-Lysine-deoxycholate agar) and SS (*Salmonella-Shigella*) mediums. After 24 hours of incubation, colorless colonies grew in Mac-Conkey medium, Red with black centercolonies in XLD and green colonies in SS mediums (Fig.1, 2). These colonies were ferment glucose, catalase, methyl red and citrate positive, but oxydase, indole and VP negative. These colonies were K/A, produced acid and gas in TSI medium. Hence, the organism was diagnosed as *S. typhimurium*. All diagnostic procedures were performed according to Clinical and Laboratory Standards Institute (CLSI) recommendations. This organism was sensitive to gentamycine, ciprofloxacin, ceftriaxone, amikacin and imipenem antibiotics and was resistant to cotrimoxazole and cefipime. Diagnosed with pneumonia due to *Salmonella*, the patient underwent treatment but he succumbed after 48 hours in septic shock.

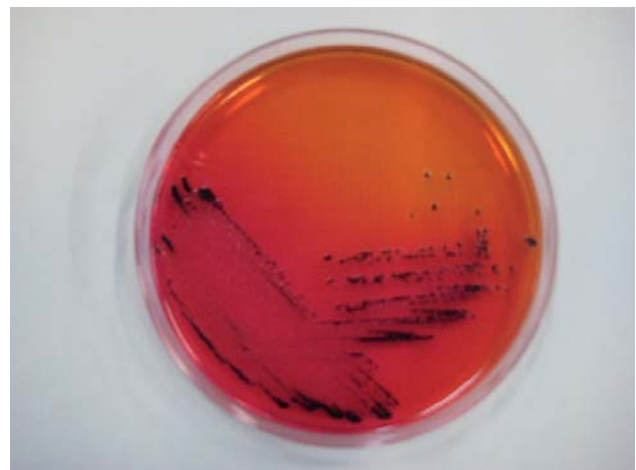


Fig. 1: Black Colonies of *Salmonella* on XLD agar. These Colonies were ferment glucose, Catalase, methyl red and citrate positive & were K/A, produced acid and gas in TSI medium.

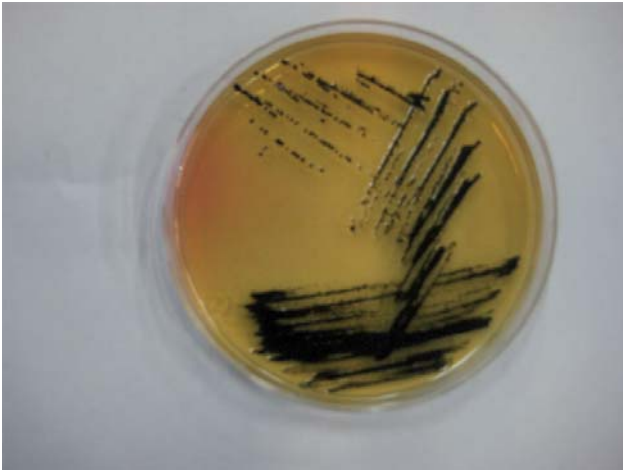


Fig. 2: Green colonies of *Salmonella* on SS agar. These colonies were ferment glucose, catalase, methyl red and citrate positive & were K/A, produced acid and gas in TSI mediu.

Discussion

Strains of *S. typhimurium* usually cause intestinal infection, but may affect any organ system (5); persons of all ages are susceptible to infection although there is an increased incidence among the young and old (3,6,7).

Immunocompromised patients are particularly at risk. Impairment in T-cell function that predisposes to infection is the major reason for increased prevalence in the HIV-infected population (7).

Human disease due to *Salmonella* infections appears to be on the rise worldwide. Despite the availability of vaccines and generally effective antibiotic therapy, salmonellosis, in the forms of gastroenteritis and enteric fever, remains a major cause of morbidity and mortality in many developing countries, especially in young children and immunocompromised hosts(8). In certain highly endemic areas of South and Southeast Asia, the emergence of quinolone-resistant and multi-drug-resistant strains of *Salmonella* contributes to the magnitude of the problem (8). In the United States and Europe, a low but consistent rate of disease appears to be primarily related to ingestion of contaminated poultry, lapses in sanitary agricultural practices, and importation of tainted vegetable products(8).

An improved understanding of the molecular basis of bacterial resistance and improved design and expanded use of vaccines provide hope for containing

the spread and reducing morbidity of the international spectrum of disease due to *Salmonella* pathogens(8).

We report a case of pneumonia due to *S. typhimurium* in a HIV-infected patient. HIV-infected patients are at risk for opportunistic infections. In an expanded search, we only found two cases with *S. typhimurium* in sputum.

Samonis *et al.* reported a case of life-threatening *Salmonella* enterica serotype *Enteritidis pneumonia* in a febrile patient with lung cancer. The organism was isolated from the sputum, the protected specimen brush material of bronchial secretions, and the stool. Despite the early administration of appropriate and adequate treatment, the patient died 7 days after the onset of the infection (9).

Modde isolated an enteritis causing *salmonella* from the sputum (10). Komus *et al.* reported pleural empyema due to *S. typhimurium* in an immunocompromised patient(11) and Genzen *et al.* and Reiss-Levy *et al.* accounted pulmonary infection due to *S. typhimurium* in an immunocompetent patient(12,13).

This case has several important messages: First, it demonstrates the importance of including general medical causes of immunosuppression and their treatment in the differential diagnosis and aetiopathogenesis of HIV-infected patients with unusual clinical presentations (14,15). Second, it demonstrates the importance of identifying a specific etiology, so that targeted antimicrobials may be used in patients with HIV infection, minimizing the risk of empirical therapy causing complex drug-drug interactions with antiretroviral therapy. Finally, the case highlights the need for long-term antibiotic prophylaxis in this patient group.

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