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Case Report

Atypical Presentation of Salmonella Typhi Blood Stream Infection in an Immuno compromised Patient

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1. Abstract

The genus Salmonella is an important enteric pathogen which carries high morbidity and mortality in many parts of the world [1, 2]. The serotypes of *Salmonella enteric* namely serovars Typhi, Paratyphi A, Paratyphi B and Paratyphi C are the causative agents of the enteric fever. Other serovars collectively called as Non Typhoidal Salmonella (NTS) mainly cause gastroenteritis [1-3]. The usual manifestations of enteric fever in the first week are fever, lethargy, toxemia and constipation. Patient in the second week may have fever, diarrhea, splenomegaly and neutronpenia. Complications of the illness intestinal hemorrhage, perforation and encephalopathy occur in the third week [4]. However this is the typical pattern of the disease and presentations might differ in an immune compromised host [5]. The unusual features reported in immune compromised patients are splenic abscess and rupture, liver abscess, psoas abscess, endocarditis, nephritis, cholecystitis, osteomyelitis and central nervous system affection in the form of cerebellar ataxia, schizophrenia and suicide [4-6].

Colonic involvement causing colitis, ulceration or toxic mega colon is amongst the rarer manifestations of the disease [7]. However, large bowel diarrhea is usually not associated with S Typhi [8]. We report here a case of large bowel diarrhea in an immune compromised patient.

2. Case Report

A 52y old immune compromised individual, who was a known case of Discoid Lupus Erythematosus and Autoimmune hepatitis, presented with a history of loose stools. The patient was drug defaulter too and had been noncompliant with medication for past eight months. He complained of [8-10] episodes of loose stools. The volume of stool passed was small with blood and mucus. The bowel movements were painful. However there was no history of associated fever, vomiting, recent travel or consumption of outside food. On examination, the patient was tachycardic with a feeble pulse. The patient had hypotension with a blood pressure of 70/40 mm mercury, right arm supine. The oxygen saturation was low at 77% ambient air. The peripheries were cold and clammy. The liver was palpable 2cm below right sub coastal margin.

Pt was admitted to the Intensive Care Unit and managed with inotropes and fluid resuscitation. Antibiotics in the form of a beta lactamase and beta lactamase inhibitor were added, while also covering for parasites with metronidazole and Nitazonaxide. The investigations revealed a Hemoglobin of 11.4g/dl, total leukocyte count (TLC) of 19,900 with neutron philia. Platelet count was normal. Urea was normal at 25mg/dl but create nine was raised to 2.8mg/dl. Potassium was reduced at 3.2mEq/l. The value of Sodium was normal at 147mEq/l. The ala nine transfer a seen zyme levels were also raised too

138IU/L. The procalcitonin was 83.5ng/ml and fecal calprotectin was 28µg/g. CD4 counts were 67cells/$mm^{3.}$

The *Clostridium difficile*tox in was negative. Stool was sent for culture and inoculated in Mac Con key and Deoxycholate Citrate agar. No growth was seen after incubation at 37°C for 24h. Modified Ziehl-Neelsen stain was performed on the stool sample using 1% H_2SO_4 and oocysts of cryptosporidium were seen (10-15)/oil immersion field. A paired blood culture was sent for culture and antibiotic sensitivity using the Bact Alert(BIOMÉRIEUX, Marcy-I'EToile, France) blood culture bottles. The inoculated bottles were incubated using BacT/ALERT 3DTM 60 automated blood culture systems by BIOMERIEUX (BIOMERIEUX, Marcy-I'EToile, France).

On 2nd day of incubation, the blood culture bottle was positive for growth. Subculture was done on blood and MacConkey agar. After 24h of incubation, the blood agar grew non-hemolytic colonies and non lactose fermenting colonies were obtained on the MacConkey Agar which was identified as Salmonella typhi by Vitek 2 Compact (for automated identification and ABST) instrument by BIOMERIEUX (BIOMERIEUX, Marcy-I'EToile, France). Serological confirmation was done by sero-agglutination using anti sera against O and H antigen of S. Typhi and S. Paratyphi A and B. The antibiotic sensitivity testing showed sensitivity to Cotrimoxazole, Ceftriaxone, Azithromycin and fluoroquinolones. In view of the positive blood culture the patient was started on Azithromycin. He improved symptomatically and tablet Azithromycin was continued for 21 days. Nitazonaxide was stopped after seven days of therapy. The patient was discharged with prophylaxis of tablet Septran in view of his immune compromised state. The patient has been reviewed subsequently in Out Patient Department and was doing symptomatically better with normal TLC counts.

3. Discussion

Salmonellae have a worldwide distribution. Morphologically they are Gram negative, motile, nonsporing, facultative anaerobes belonging to the *Enterobacteriaceae* family [6]. Daniel E Salmon first isolated *Salmonella enterica* serotype Cholerasu is in pigs in 1884 and the genus Salmonella derives its name from him. *Salmonella enterica* serotype Enteritidis effects people all over the world [6]. It is an important enteric pathogen causing enteric fever in developing countries [5-6]. The usual manifestations are fever, bacteremia and septicemia [6]. Extra intestinal disease causes suppurative complications like arthritis, osteomyelitis, and abscesses in the liver, spleen and psoas muscle [7].

However cases are being reported increasingly where typical features of the disease may not be seen. These atypical presentations may cause both difficulty and delay in diagnosis leading to even complications in a case of enteric fever [4]. The bacterium has the capability to survive despite the humoral and cellular immunity [9]. Cellular immunity is important defense against infection by *Salmonella* [1] and impaired cellular immunity is associated with extra intestinal *Salmonella* infection [6]. Also the infection tends to be more severe in patients with impaired cellular immunity in the form of decreased T helper cells and decreased ratio of T helper to T cytotoxic cells. Although gastrointestinal tract is mainly affected, other sites may also be affected. Bacteremia is seen in cases of HIV, SLE, liver cirrhosis and solid organ cancers. Also such immune compromised patients tend to have atypical presentation of the disease [9]. This was seen in our patient too, who was immune compromised, being a patient of DLE. He was a case of invasive salmonellosis, who presented with the complaints of loose stools with no associated symptoms and not with fever as is the case in bacteremia with Salmonella infections.

The other interesting aspect was the presentation of the case as a large bowel diarrhea, which is not associated with *Salmonella* infection [8].

4. Conclusion

In conclusion, we have presented a case of enteric fever in an immune compromised patient. The patient presented as a bacteremia with atypical features of large bowel diarrhea, a symptom not associated with *Salmonella* infection. The patient was a febrile throughout. Therefore, in such cases of patients presenting with diarrhea with no accompanying symptoms, a high suspicion of index should be maintained and blood cultures should be a part of routine investigations of diarrheal disease.

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