(International Print/Online Journal)

SJIF IMPACT FACTOR: 4.617
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume2, Issue 6, Page No: 171-173
November-December 2019

A Case Report on Salmonella Paratyphi B Infection

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Type of Publication: Case Report
Conflicts of Interest: Nil

ABSTRACT
Members of genus Salmonella can cause a variety of disease including gastroenteritis and enteric fever. Serotype *typhi* is the exclusively human pathogen, whereas other strains are associated with animals and foods involving eggs and poultry. Feco-oral transmission occurs, and may involve chronic carriers. More than 95 percent of cases of salmonella infection are foodborne and hereby we are reporting a case of Salmonella paratyphi B infection in an adult patient.

Keywords: Gastroenteritis, Feco-oral transmission, Salmonella Paratyphi B

INTRODUCTION

Salmonellae are Gram-negative, nonsporulating, flagellate, facultative anaerobic bacilli. Genus Salmonella belongs to the family Enterobacteriaceae and consist of >2300 serotypes. Enteric fever, caused by Salmonella enterica serotype Typhi (typhoid fever) or S. enterica serotype Paratyphi A, B or C (paratyphoid fever) is a major public-health problem in developing countries. The genus Salmonella has two major groups: Typhoidal Salmonella and Non-typhoidal Salmonella. Salmonella enterica belonging to the group Typhoidal Salmonella can cause human illness through consumption of contaminated food or water, whereas Nontyphoidal Salmonella can cause food borne gastroenteritis and septicemia[1]. Salmonella enterica serovars Typhi and Paratyphi are restricted to human hosts, whereas nontyphoidal Salmonella (NTS) serotypes have zoonotic reservoirs. Long term asymptomatic carriage in humans has been reported with non-typhoidal Salmonella. Salmonella infections are responsible for a significant burden of morbidity and mortality worldwide. There are an estimated 11–21 million cases of typhoid fever and approximately 1,28,000–1,61,000 deaths annually, compared to an estimated 6 million cases of paratyphoid fever and 54,000 deaths annually.Gastroenteritis is the most common manifestation of *Salmonella* infection worldwide, followed by bacteraemia and enteric fever[2].

Patients with acute Salmonella infection shed the organism in their stool and occasionally urine, and may continue to excrete bacteria following symptom resolution during convalescent or temporary carriage. The major dissemination routes of the pathogens involve trade in animals and uncooked animal food products. The slaughtering process of food animals at abattoirs is considered one of the important sources of organ and carcass contamination with *Salmonella.* In many developing countries, open defecation can lead to contamination of water systems, resulting in an increased risk of Salmonella transmission through the ingestion of bacteria in water used for drinking, washing, or irrigating produce. Factors related to water source and storage, sanitation practices, and street food consumption have also been associated with increased risk of infection[4]. S. Paratyphi B infections are presently uncommon; however, in previous decades they constitute a significant proportion of disease. Hence, we report a case of Salmonella Paratyphi B infection.

Case Report:

A 36 year old male admitted in the emergency medicine department of our hospital with complaints of fever associated with watery stools, vomiting and intermittent abdominal pain since 5 days. Patient gave history of recent travelling and consumption of food and water during the travel. On physical examination, his pulse rate was 98 bpm, blood pressure 90/60mmHg, with a body temperature of 39.8°C with dehydration. All other systemic examinations were normal. Per abdomen examination of the patient revealed soft and tenderness in the epigastric region. The patient was conscious and oriented. Blood sample of the patient was sent for routine investigations which showed blood hemoglobin of 16.9g/dl and TLC of 6710 cells/cu.mm. His serum electrolytes, total bilirubin and renal function tests were within normal limits. Abdominal & pelvis ultrasound of the patient was normal. Stool sample from the patient was sent to department of Microbiology for routine microscopy and culture. The patient was then put on IV fluids along with IV ciprofloxacin empirically. Stool microscopy revealed moderate number of inflammatory cells, No RBCs and No parasitic forms were seen. The stool sample was simultaneously cultured on to MacConkey agar and Hektoen enteric agar for isolation of intestinal pathogens. The plates after inoculation were incubated at 37^0c. after 18-24hrs of incubation, MacConkey agar showed Non-lactose fermenting colonies **(image 2)** along with lactose fermenting commensal flora and Hektoen enteric agar showed green colored colonies **(image 1)**. Non-lactose fermenting colonies were subjected to identification and antimicrobial susceptibility testing using Vitek 2 compact system. Later the isolate was identified as Salmonella Paratyphi B, which was confirmed by agglutinating with type specific antisera(O4 and H-B). Antimicrobial susceptibility pattern of the isolate was sensitive to Ampicillin, Amoxycillin-clavanulic Acid, Piperacillin/Tazobactum, Ceftriaxone, Cefepime, Ertapenem, Imipenem, Meropenem, Ciprofloxacin, Colistin, Cotrimoxazole and resistant to Cefuroxime, Amikacin and Gentamicin. As the patient was receiving IV ciprofloxacin and the isolate being sensitive for the same, the antibiotic course was continued. There were no known complications observed. The patient improved symptomatically and was discharged with stable condition.

Discussion: There is lack of reporting on gastroenteritis due to *Salmonella enteric* serovar Typhi and Paratyphi globally due to their lower incidence relative to illness caused by more frequent enteric pathogens such as rotavirus, *Shigella*, non-typhoidal *Salmonella*, *Campylobacter jejuni*, *Escherichia coli* and *Vibrio cholerae* in developing countries. According to Indian reports, Salmonella typhimurium and Salmonella enteritidis have been reported to be the most common causes of human salmonellosis, which were found to account for 57-67% of the Salmonella isolates[2].

Poultry populations, in particular chicken, are frequently colonized with *Salmonella* without detectable symptoms. The presence of *Salmonella* in healthy poultry animals is suggested as the main risk factor, by allowing the bacteria to easily transmit in the table eggs and poultry meat to humans[3].

In this case, the infection may be due to consumption of contaminated food and water during the travel by the patient. Though there is a lower incidence of Salmonella enteric paratyphi causing salmonellosis, it is essential to track the infection right from the poultry farms to the food handlers and must be reported to the public health departments who can resist the risk of outbreaks..

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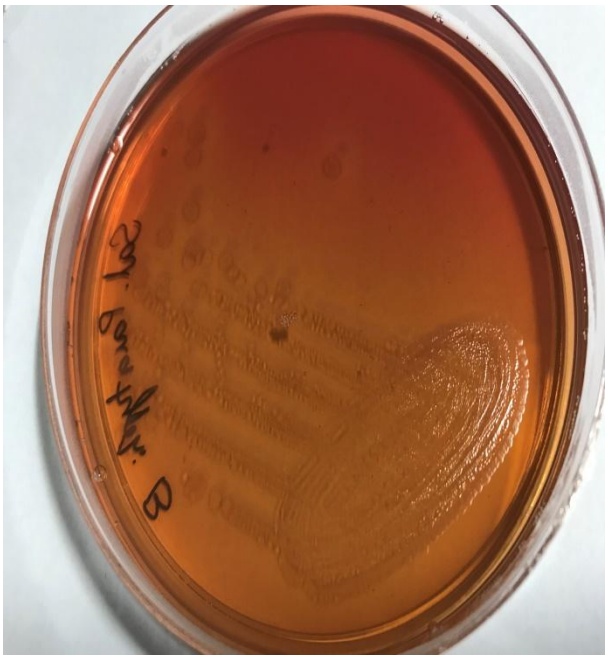
Images:

Picture 1: showing Salmonella Paratyphi B with black coloies on HEA agar

Picture 2: showing Salmonella Paratyphi B with flat non-lactose fermenting colonies on MacConkey agar



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