



## Case Study

# Case Report On Typhoid Fever

**Dhruvi Parmar\*, Dhruvi Patel, Dhruval Patel**

*Department of Pharmacy Practice, Indubhai Patel College of Pharmacy and Research Centre, Dharmaj, Anand, Gujrat-388430, India*

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### ABSTRACT

Typhoid fever remains a major health problem worldwide, in contrast to Chile, where this disease is an isolated finding. Clinical presentation is varied, mainly presenting with fever, malaise, abdominal discomfort and nonspecific symptoms often confused with other causes of febrile syndrome. We report a sixteen-year-old boy patient presenting with fever with chill of four days associated with nausea, weakness with body pain and pain in abdomen. Differential diagnoses were considered and a widal reaction and two blood cultures were requested; both came back positive, confirming the diagnosis of typhoid fever caused by *Salmonella typhi*. Prior to diagnosis confirmation, empirical treatment was initiated with ceftriaxone and amikacin.

### INTRODUCTION

Enteric fever is a serious systemic infection caused by Gram negative bacteria; *Salmonella enterica* serotypetyphi and *Salmonella enterica* serotype Paratyphi [1]. This disease is endemic to low- and middle-income countries. It is more common in the continents of Asia and Africa due to inadequate hygiene and the lack of safe drinking water. It is transmitted through the oral/fecal route [1], [2]. These microorganisms colonize the small intestine, invade the gastrointestinal mucosa and then spread to the liver, spleen and bone marrow [3]. The severity of the infection depends on the initial infective dose, virulence and the host

immune response [4]. Both typhoid and paratyphoid fever tend to present acutely with similar clinical manifestations and incubation period of 5 to 12 days. Symptoms can range from a mild course with fever associated to general malaise, abdominal manifestations, roseola, sweating, headache, anorexia, cough, weakness, sore throat, dizziness and muscle pain, to, in some cases, neuropsychiatric manifestations (between 5 and 10% of cases). Other findings include bradycardia, splenomegaly and hepatomegaly [1], [5]. Between the third and fourth week of infection 10-15% of patients may have gastrointestinal bleeding, intestinal perforation, encephalopathy

**\*Corresponding Author:** Dhruvi Parmar

**Address:** Department of Pharmacy Practice, Indubhai Patel College of Pharmacy and Research Centre, Dharmaj, Anand, Gujrat-388430, India

**Email** ✉: [dhruviparmar056@gmail.com](mailto:dhruviparmar056@gmail.com)

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and shock [6], [7]. Other reviews indicate complications such as disseminated intravascular coagulation, pneumonia, arthritis / arthralgia, altered mental status, hepatitis and meningitis [7]. If left untreated, typhoid fever has a mortality rate close to 10 or 15% reducing to one or two percent with adequate and timely antibiotic treatment [8]. Some reviews report that in children under four years lethality is 10 times higher than in older children [9]. By 2010, worldwide, typhoid fever caused about 21.7 million cases and 217,000 deaths; for paratyphoid fever the estimation was 5.4 million affected [1]. The greatest burden of disease was experienced by infants, children and adolescents in South Central and Southeast Asia. In view of the above, WHO recognizes this disease as a major public health problem and recommends immunization with the VI polysaccharide vaccine in high-risk areas [9]. Some studies recognize the importance of maintaining adequate monitoring of this disease, thus determining its geographical distribution and the most affected population in order to carry out targeted vaccination strategies [10]. However, Chile is a country that remains with low endemicity for this disease, with an incidence in 2015 of 0.4 cases per 100,000 inhabitants. Of the cases reported between 2007 and 2015, 87% were typhoid, 8% were paratyphoid fever and 4% paratyphoid unspecified. One of the regions with the lowest incidence is the seventh region of Maule where the data reported in the register of notifiable diseases show a cumulative rate of zero cases by 2015 [11].

### **Clinical case presentation**

A sixteen year old boy admitted to shraddha hospital, Borsad, Gujarat, India with a four days history of fever with chill, nausea, and abdominal pain. Patient experience weakness, with body pain and temperature was 100°F. The blood sample was taken and transferred for serology examination and blood culture.

### **Clinical findings:**

Fever with chill, nausea, weakness with body pain and pain in abdomen.

### **Identification of the patient:**

16 year's old boy was brought to the General medicine ward on December 24, 2022 with fever with chill and weakness.

### **Family background:**

The family consists of four individuals. My patient was diagnosed with Typhoid. Except my patient, who was admitted to the hospital, none of the family members had typhoid and any health problems.

### **Laboratory test showed:**

Hb 12.8 gm/dL, RBC 3.90 million/mm<sup>3</sup>, PCV 37.3 %, MCV 95.6 fl, MCH 32.9 pg, MCHC 34.4 g/dl, RDW 12.1 %, WBC 22500/cmm, Neutrophils 88%, Lymphocytes 07%, Eosinophil 01%, Monocytes 04%, Basophil 00%, platelet 256000/mcL, NLR 12.50, PCT 2.12ng/ml, MPV 8.3 fl, PDW fl, CRP 3.1mg/dl. An abdominal ultrasound is performed showing a moderate hepatomegaly. A widal reaction O and H was performed which was reactive 1: 180. It were indicated at admission were finally positive for Salmonella typhi. The ceftriaxone 1 gm twice a day and amikacin 750 mg once a day antibiotics given to the patient intravenously along with Pantoprazole, Ondansetron, Hyoscin butylbromide and injection Febrinil once every five hours until the auxiliary temperature below 100°F for at least 24 hours. All data were recorded in patient special forms. The patient is observed and examined twice daily clinical signs and symptoms recorded in the patient form. After two to three days of continue treatment the signs and symptoms such as headache, fever, vomiting and abdominal pain is disappeared. No side effects were observed biochemically and clinically from the treatment done with the antibiotic Ceftriaxone and Amikacin. An infection is considered clinically cured.

### **Outcome:**

After two to three days treatment, the patient's condition improves. Fever, headache, vomiting, weakness and abdominal pain all went away.

#### **DISCUSSION:**

Typhoid fever is a disease of high prevalence in Asia and Latin America, but is unusual in Chile. This case reminds us of the importance of keeping typhoid fever in the differential diagnosis of febrile syndromes. That is, one should not forget the possibility of a febrile syndrome corresponds to a case of typhoid fever, because although uncommon in Chile -due to improvements in the sanitary conditions of the country- there is still the possibility of encountering this condition. Despite worldwide efforts to maintain adequate surveillance and improve diagnostic methods, it remains a difficult picture to recognize because of the low sensitivity of both clinical and laboratory examinations. Taking it into account allows the clinician to resort to alternative diagnostic methods in case of therapeutic failure, because if it is not defined right and timely for proper antibiotic treatment, it can lead to a high mortality rate. Finally, it is important to review and investigate similar literature, to maintain the perception of this disease active. Prolonged febrile syndrome is a common presentation of various diseases in children, with a broad spectrum of possible etiologies, from some very common to some uncommon. This, according to the area of origin of the patients, such is the case of typhoid fever endemic in many regions of the world but rare in Chile due to better sanitary conditions in the country. Being *Salmonella typhi* an infection disease difficult to diagnose in children because of the low specificity of symptoms, it tends to be confused with malaria, dengue, flu and other febrile illnesses in countries where such diseases are endemic [16]. In low prevalence countries, such as the case above, the differential diagnoses correspond to the most frequent causes of fever without focus, of short and intermediate duration.

For this reason, in first instance viral infections, acute abdominal processes, both medical and surgical, including bacterial enterocolitis, acute appendicitis, and soon were ruled out. But as the febrile illness persisted, the possibility of an intra-abdominal abscess, a diagnosis that was excluded by imaging tests, was investigated. If even with a thorough study, there were no accurate diagnosis, efforts should be geared to rule out the presence of atypical pathogens, excluding bacterial endocarditis, rickettsial diseases, tuberculosis, brucellosis, lymph proliferative diseases, among others. But given that a definitive diagnosis with the results of blood cultures was obtained, it was not necessary to investigate other diagnostic possibilities beyond those presented, since the diagnostic confirmation requires the isolation of *Salmonella typhi* [17]. The cornerstone in the diagnosis is blood microbiological culture, however, the greatest degree of sensitivity occurs during the first week. During the rest of the clinical picture, sensitivity is between 40 and 60%, but maintains a specificity of nearly 100%. The bone marrow culture has shown a sensitivity greater than 80%, independent of previous use of antimicrobials and the week in which this is done, but it is technically difficult and invasive, which limits its use. Other cultures may be the feces, urine and duodenal contents but these require more cautious interpretation because both can be positive in chronic carriers found in acute stage [5]. In our case the patient had two weeks of clinical manifestations, with two positive serial blood cultures for this agent so there was no need for more invasive procedures. Serodiagnosis of typhoid fever, can be determined with the Widal reaction, which establishes the presence of antibodies against O and H antigen for *Salmonella typhi*. This reaction tends to over diagnose the disease because of the numerous cross-reactions it has. In addition, it is necessary to consider that a negative Widal reaction does not exclude the



diagnosis in a clinical picture compatible with the disease and that for its interpretation it is necessary to know the prevalence of the area, so it is not recommended its use in Chile[11],[14]. ELISA test, used to measure antilipopolsaccharides antibodies and anti-flagella antibodies is more sensitive than the Widal reaction, it is still limited for its low specificity in endemic areas for this disease [15].

### CONCLUSION:

Typhoid fever remains a serious public problem in the developing countries, with mortality range between 5% and 20% [7]. The World Health Organization reported the prevalence of typhoid fever as 28.1 per 1000 febrile episodes in India [7]. Blood culture positivity is typically high during the 1st week of illness but it can also be isolated from subsequent weeks also if there's no prior antibiotic therapy [7, 8]. The public health burden of typhoid fever can be significantly decrease by rapid diagnosis and appropriate antibiotic therapy. The present study tells that Azithromycin, Ceftriaxone and Ceftazidim are the most effective drug which is used against *Salmonella typhi*.

Typhoid fever is very common infection now a day. The common early presentation of typhoid fever is insidious onset of continuous high grade fever, with nonspecific malaise, headache, constipation, vomiting and abdominal pain. The first week of infection the signs are usually not present [9, 10, 11].

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