

## A Case Report "Typhoid Resistant to Chloramphenicol"

Muhammad Zeeshan Zafar\*, Muhammad Asim, Muhammad Ahsan, Tahir Bashir and Saliha Rasheed

Department of Pharmacy, University of Sargodha, Pakistan

\*Corresponding author: Muhammad Zeeshan Zafar, Department of Pharmacy, University of Sargodha, Pakistan, Tel: 03466189496; E-mail: shanmughal11@gmail.com

Received Date: March 10, 2017; Accepted Date: March 15, 2017; Published Date: March 21, 2017

Copyright: © 2017 Zafar MZ, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

Typhoid fever is an infection caused by a strain of bacteria called *Salmonella typhi*, which is related to the bacteria that causes salmonella food poisoning. The infection can affect the whole body and damage multiple organs. Unless treated, this infection can have life threatening consequences. A 20 year old girl was examined suffering from high fever from one week and abdominal pain for few days. The patient had suffered from typhoid fever last year. Ultra-sonogram of abdominal, hematology-cell analysis, serology (widal test), urine analysis and blood culture were performed for accurate diagnosis. Ultra-sonogram shows multiple organ infection by *Salmonella typhi*. Hematological analysis shows the elevated level of t- lymphocytes and anemia. In widal test, patient serum was agglutinated with the bacterial antigen i.e. lipopolysaccharide and flagellar proteins. The typhidot test was positive for IgG. The patient was diagnosed with typhoid fever. Patient possesses multi drug resistance and the rational treatment was with ceftriaxone for one week and patient recovered.

**Keywords:** Multiple drug resistance; Multiple drug resistance typhoid fever; Immunoglobulins G; Reticulo endothelial system; *Salmonella typhi*

### Introduction

Typhoid fever is an infection caused by a strain of bacteria called *Salmonella typhi*, which is related to the bacteria that causes salmonella food poisoning. The infection can affect the whole body and damage multiple organs. Unless treated, this infection can have life threatening consequences. Its major symptoms are abdominal pain, fever, headache, lethargic and constipations. Typhoid fever is a type of enteric fever along with paratyphoid fever [1].

Typhoid fever also called as enteric fever because its bacteria are growing in intestine and affected this part mainly. Typhoid can be spread by eating food or drinking water contaminated with feces of infected person. It can be diagnosed by different bacterial culture tests of stool as well as blood Widal test. A typhoid vaccine can be prevented in 30-70% of cases during first two years. Its treatment is possible by using specific antibiotics but some strains of typhoid can be able to resist these antibiotics so for this purpose broad spectrum antibiotics are used for its treatment because it's a life-threatening in severe cases [2,3].

In this case report our main objective to describe that *Salmonella typhi* has resistant against narrow spectrum antibiotics in some countries so for this purpose broad spectrum strains are used.

### Case Report

A 20 year-old girl admitted in a hospital with a one-week history of high-grade fever (>100°F), malaise, lethargic, nausea and abdominal pain. The physical examination revealed discomfort in the right upper quadrant and lower abdomen [4]. Ultra-sonogram of the abdomen revealed hepatomegaly (12 cm) and gall bladder, bile ducts, pancreas and kidney were found normal. No other abnormalities were detected. Spleen size was enlarged at 9 cm. Overall results revealed mild

hepatosplenomegaly. Hematological analysis show the anemia (Hb level 8.9 mg/dL), lymphocytes were slightly elevated at 52.3%, neutrophils level also rises to 71%, levels of sodium and potassium ions were normal and there was no any history of hepatitis B & C also shown in Table 1.

No.	Test Name	Patient's Value	Normal Value
1.	Sputum AFB Smear (ZN Stain)	2+	Negative
2.	Erythrocyte Sedimentation Rate (ESR)	50 mm	0-15 mm/h
3.	Urea level	34 mg/dl	15-50 mg/dl
4.	Hemoglobin level	8.9 mg/100 ml	13.5-17.5 g/100 ml
5.	Creatinine level	0.9 mg/dl	0.7-1.3 mg/dl
6.	Neutrophils level	71%	45-65% of total Leukocytes
7.	Lymphocytes level	52.30%	
8.	Bilirubin level	0.7 mg/dl	0.1-1.2 mg/dl
9.	Blood Na+ Level	140 mEq/L	130-145 mEq/L
10.	Blood K+ Level	4.0 mEq/L	3-5 mmol/L
11.	Anti-HBV	Negative	
12.	Anti-HCV	Negative	
13.	Anti_HIV	Negative	
14.	Chest X-ray result	Lung infection	

**Table 1:** Diagnostic report and results.

Widal testing revealed that patient's serum was agglutinated with the lipopolysaccharide (TO) and flagellar (TH) and antigen of serotype S.

*typhi* was present. Typhidot test was positive for IgG and is significant with 1:160 as shown in Table 2. The urine analysis report exhibited pus cells 3-4; occasional RBC; epithelial cells 2-3; bile salt and bile pigment were negative; and bac-terial cells absent. Blood cultures were negative with no history of antimicrobial therapy in the previous seven days [5,6].

Bacterium Genotype	01:20	01:40	0.09722	0.15278	0.26389
S. Typhi 'O'	+	+	+	+	-
S. Typhi 'H'	+	+	+	+	+
S. Para A 'O'	+	+	+	-	-
S. Para A 'H'	+	+	+	-	-
S. Para B 'O'	+	+	+	-	-
S. Para B 'H'	+	+	+	+	-

**Table 2:** Widal test report.

The first line therapy started by chloramphenicol (250 mg three times a day orally) along with paracetamol 500 mg after every four hours till the axillary temperature remain below 100°F and pantoprazole plus ranitidine in two separate doses. This therapy was maintained till the reports clear the diagnosis but reports of patient was not clear after using chloramphenicol, so doctor identified that typhoid was multiple drug resistant and this therapy was not sufficient for its treatment. After two days physician prescribed him second line treatment fluoroquinolones which was a broader spectrum antibiotics that was ciprofloxacin (500 mg twice a day orally) along with paracetamol and pantoprazole plus ranitidine in same doses for seven days. After the seven days, same test were carried out and results were a bit different [7]. The physician also pre-scribed third generation cephalosporin i.e. ceftriaxone (500 mg twice a day orally) for seven days. After a week clinical examination was performed and the results were negative and physical symptoms also disappeared and no relapse occurs during the follow up. But to a long tenure of medication patient feel laziness and lethargic and discomfort in stomach so doctor advised him some multi-vitamins and to use fresh juices [8].

## Discussion

Multiple drug resistance is emerging problem in the treatment of typhoid fever. The patient complete case study is described in the start. Generally symptoms appear in the typhoid are fever, nausea, headache, abdominal pain, hepatomegaly, splenomegaly, anemia etc. The therapy given to the patient was penicillin's (ampicillin and chloramphenicol). To reduce other complication pantoprazole (proton pump inhibitor) plus ranitidine (histamine receptor antagonist) was used [9]. Paracetamol (analgesic and antipyretic) was also administered to reduce the axillary temperature. But the patients do not show effective recovery as the *S. typhi* strain is developing resistance to the penicillin. Other antibiotics such quinolones (ciprofloxacin) was administered

but the test reports results were not satisfactory. The final therapy was by third generation cephalosporin's (ceftriaxone) and with fluoroquinolones. After a week the patient recovered and the organism was completely eradicated and no relapse occurred [10,11].

## Conclusion

Multidrug resistance is emerging problem in treatment of typhoid fever. In different eras Asia, Africa etc. many *Salmonella typhi* strains were identified which were resistant to chloramphenicol, trimethoprim, and ampicillin so cephalosporin, ceftriaxone and cefixime. Ceftriaxone is well tolerated drug but is expensive. Ofloxacin is also used alternatively which is cheap and have comparable therapeutic effect.

## Acknowledgment

I take this opportunity to express my profound gratitude and deep regards to Dr. Taha Nazir (Assistant Professor and Course Director Microbiology & Immunology, Faculty of Pharmacy, University of Sargodha) for his exemplary guidance, monitoring and constant encouragement throughout the course of this case report. Also thanks to the staff at the DHQ/UTH hospital Gujranwala.

## References

1. Zaki SA, Karande S (2011) Multidrug-resistant typhoid fever: a review. J Infect Dev Ctries 5: 324-337.
2. Levinson W (2014) Review of Medical Microbiology and Immunology 13th Edition. Appleton & Lange, McGraw Hill Education, NY, USA, p. 410.
3. Wain J, Hendriksen RS, Mikoleit ML, Keddy KH, Ochiai RL (2015) Typhoid fever. Lancet 385: 1136-1145.
4. Crump JA, Mintz ED (2010) Global trends in typhoid and paratyphoid Fever. Clin Infect Dis 50: 241-246.
5. Ammah A, Nkuo-Akenji T, Ndip R, Deas J (1999) An update on concurrent malaria and typhoid fever in Cameroon. Trans R Soc Trop Med Hyg 93: 127-129.
6. Chew SK, Cruz MS, Lim YS, Monteiro EH (1992) Diagnostic value of the widal test for typhoid fever in Singapore. J Trop Med Hyg 95: 288-291.
7. Al-Sanouri TM, Paglietti B, Haddadin A, Murgia M, Bacciu D, et al. (2008) Emergence of plasmid-mediated multidrug resistance in epidemic and non-epidemic strains of *Salmonella enterica* serotype typhi from Jordan. J Infect Dev Ctries 2: 295-301.
8. Mishra S, Patwari AK, Anand VK, Pillai PK, Aneja S, et al. (1991) A clinical profile of multidrug resistant typhoid fever. Indian Pediatr 28: 1171-1174.
9. Mirza SH, Beeching NJ, Hart CA (1996) Multi-drug resistant typhoid: a global problem. J Med Microbiol 44: 317-319.
10. Jesudason MV, John R, John TJ (1996) The concurrent prevalence of chloramphenicol-sensitive and multidrug resistant *Salmonella typhi* in Vellore, S. India. Epidemiol Infect 116: 225-227.
11. Coovadia YM, Gathiram V, Bhamjee A, Garratt RM, Mlisana K, et al. (1992) An outbreak of multi-resistant *Salmonella typhi* in South Africa. Q J Med 82: 91-100.