

Research Article

Clinical Spectrum and Risk Factors of Typhoid Fever in Patients Presenting to a Tertiary Care Hospital of Khyber Pakhtunkhwa

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Abstract

Background: Typhoid is the leading cause of morbidity and mortality in developing countries. The presentation of the disease is vague and most of the patients have experienced the symptoms before presenting to hospital. The morbidity, mortality and the incidence related to typhoid fever can be reduced by educating healthcare professionals and masses regarding the clinical spectrum and modifiable risk factors.

Objective: We carried out this study to look for the clinical spectrum and the risk factors for typhoid fever in our local population.

Study design: Prospective study

Place and duration of study: Conducted on patients presenting to Combined Military Hospital Peshawar from 1st November 2022 to 30 June 2023

Materials and Methods: Those patients subjected to any empirical treatment Patients aged more than 18 years and confirmed typhoid cases through blood culture and sensitivity for typhoid were excluded. Data was gathered by a self-made questionnaire after taking informed consent from our patients. Data was analyzed through SPSS 23 version.

Results: This study included 99 patients out of which 51(51.5%) were male and 48(48.4%) were females. 40(40.4%) of the patients aged between 18-60 years, 30(30.3%) patients were less than 18years and 19(19.19%) patients aged above 60 years. Risk factors in the cases were socioeconomic, urban population was 39(39.3%) and rural 60(60.6%). 57(57.5%) of the sample population had history of uncooked food consumption. 71(71.1%) had consumed unpasteurized milk while 28(28.2%) had no history. 37(37.3%) had access to clean water. The most common presenting complaints in our cohort was fever 95(95.9%) followed by generalized body aches 82(82.8%), abdominal pain 72(72.7%), vomiting 67(67.6%), diarrhea 47(47.4%), appetite loss 57(57.5%), dysentery 24(24.2%), constipation 22(22.2%) and drowsiness 11(11.1%). Clinical signs most prevalent in our typhoid patients were coated tongue71 (22%) patients followed by toxic look in 59(18%), hepatomegaly 48(15), splenomegaly 46(14), pallor 42(13%), abdominal tenderness 17(5%), rose spots 13(4%), jaundice 9(3%), relative bradycardia 9(3%) and enlarge lymph node 7(2%).

Conclusion: The clinical spectrum of typhoid fever is very broad. Most of the patients' lives can be saved by early picking these sign and symptoms.

Keywords: Clinical Spectrum, Typhoid Fever and Risk Factors

1. Introduction

Typhoid is also known as enteric is a multiorgan and multisystem disease and is a huge burden on the health infrastructure. The infective agent is salmonella typhi and salmonella paratyphi from the bacterial family enterobacteriacea, genus salmonella [1]. This genus has 2 subtypes, salmonella enteric serovar and enteritis. Salmonella typhi and Para typhi are serotypes of salmonella enterica [2]. Transmission is by the 4F's "flies, feces, fomites, fingers" through the fecal-oral route from an already infected person. Epidemiologically there are 26 million reports of typhoid fever every year with 215000 deaths worldwide especially in low-income population [3]. Once ingested the bacteria effects the reticulo-endothelial system via the lymphatics and blood stream where they multiply. This early phase is usually asymptomatic and lasts for 24-72hrs till the bacteria grow and start releasing again into the blood stream leading to symptom manifestation which is known as secondary phase [4].

The clinical picture of symptoms is very vast and sometimes nonspecific. Acute gastroenteritis is observed after 12-48 hrs of infection which may start with nausea, vomiting and generalized abdominal pain. Diarrhea could be watery or containing blood, depending on the proliferation of the payers patches, which are lymphoid tissue found in the small Volume - 2 Issue - 1

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intestines, some patient may experience constipation more than diarrhea, especially the patients who are immune-compromised like the patients of HIV, immune-suppression therapy, children and old age, followed by an asymptomatic phase with fever along with flu like symptoms like malign dry cough deck sense of smell and nasal fullness [5]. Fever may follow step ladder fashion and could be low grade and high grade, hepato-splenomegaly and relative bradycardia maybe positive but relative bradycardia becomes more pronounced in 2nd phase of this disease. This 2nd phase is characterized by the presence of fever, which is now high grade, abdominal distension, diarrhea, constipation, blood in stool and abdominal rigidity if ileal perforation has occurred which is called as complicated typhoid [6, 7]. In the presence of previous gallstones pathology the patients may experience jaundice, dark urine and pale stools, giving a picture of obstructive jaundice [8]. Other manifestations include dry cough, dry skin, dehydration, coated tongue, sunken eyes, lethargy, distress and rose spots which is blanch able maculopapular rash of 2-7mm lesions Patients of endemic areas may also show neurological symptoms starting from 3rd week including delirium, confusion, insomnia along with toxic look increasing tenderness in abdomen and distension increasing the likelihood of pancreatitis or perforation. Some may also show pneumonia symptom.

Categorizing the symptoms systemically, in cardio-vascular system relative bradycardia, shock (sepsis), in neurology, confusion, delirium, encephalitis, insomnia, in respiratory system bronchitis, pneumonia and pharyngitis along with hematological anemia, hepato-splenomegaly on palpation or USG abdomen, maybe be positive.

The evaluation of typhoid includes a well investigated history, physical and systemic examination augmented with laboratory evidence including a nonspecific and specific panel. Non-specific includes raised TLC and neutrophils levels, abdominal x-ray for bowel perforation, chest x-ray for pneumo-

Table 1

nia, USG abdomen for hepato-splenomegaly, gallstones and evidence of pancreatitis. Specific labs include, bone marrow aspirate culture (gold standard), blood culture, stool culture, test, ELISA and PCR.

Some patients nearly 5-10% may experience relapse of the symptoms 02 weeks after resolution of fever this relapse is characterized by mild symptoms. Reinfection could also occur in some patients and this is differentiated from relapse by molecular [9]. 1-4% may become long term carriers which is more common in women and cholelithiasis patients. We carried out this study to look for the clinical spectrum and risk factors of typhoid fever in our local population.

2. Material and Methods

This prospective study was done on patients presenting to Combined Military Hospital Peshawar from 1t November 2022 to 30 June 2023. Permission from Ethical review committee was obtained before starting our study reference number: 22-076 (dated 15 Oct 2022). Sample size of this study was calculated by using WHO calculator based on the study of Chowdhury FJ et al [10]. Were included in our study. Those patients who had received any empirical treatment Patients aged more than 18 years and confirmed typhoid cases through blood culture and sensitivity for typhoid were excluded. Data was gathered through a self-made questionnaire after taking informed consent from our patients. Data was analyzed through SPSS 23 version. The results of our data are displayed in graphs and figures.

3. Results

This study included 99 patients out of which 51(51.5%) were male and 48 (48.4%) were females. 40 (40.4%) of the patients aged between 18-60 years, 30 (30.3%) patients were less than 18years and 19 (19.19%) patients aged above 60 years shown in table1. As the table below depicts, 64 (64.6%) of the sample size were illiterate followed by undergraduates 23 (23.2%) and graduates 12 (12.1%).

Variable		Number (n)	Percentage %
Age	Less than 18	30	30.3
	18 to 60	40	40.4
	Greater then 60	19	19.9
Gender	Male	51	51.5
	Female	48	48.4
Education	Illiterate	64	64.6
	Undergrad	23	23.2
	Graduate	12	12.1

As depicted in table below, risk factors in the cases of typhoid fever were socioeconomic status, 47 (47.4%) had below Average status, 37 (37.3%) average and 15 (15.1%) had above average status. urban population was 39 (39.3%), rural 60 (60.6%) and 57 (57.5%) of the sample population had histo-

ry of uncooked food consumption while 42 (42.4%) had no history. 71 (71.1%) had consumed unpasteurized milk while 28 (28.2%) had no history, 37 (37.3%) had access to clean water while 62 (62.6%) had no access.

Table 2

Residence	Urban	39	39.3
	Rural	60	60.6
Raw Food	Yes	57	57.5
	No	42	42.4
Unpasteurized products	Yes	71	71.1
	No	28	28.2
Socio economic status	Below average	47	47.4
	Average	37	37.3
	Above average	15	15.1
Access to clean water	Yes	37	37.3
	No	62	62.6
Hand washing before eating	Yes	39	39.3
	No	60	60.6
Outside food and drinks	yes	77	77.7
	no	22	22.2



Graph 1: Clinical spectrum of symptoms

Prevalent presenting complaints in our cohort were fever 95 (95.9%), generalized body aches 82 (82.8%), abdominal pain 72 (72.7%), nausea and vomiting 67 (67.6%), diarrhea 47 (47.4%), appetite loss 57 (57.5%), dysentery 24 (24.2%), constipation 22 (22.2%) and drowsiness 11 (11.1%) as shown in graph 1.



Graph 2: Spectrum of clinical signs

As evident from graph 2, prevalent clinical sign in our typhoid patients was coated tongue71 (22%) patients followed by toxic look in 59 (18%), hepatomegaly 48 (15), splenomegaly 46 (14), pallor 42 (13%), abdominal tenderness 17 (5%),

rose spots 13 (4%), jaundice 9 (3%), relative bradycardia 9 (3%) and enlarge lymph node 7 (2%).

4. Discussion

Typhoid is one of the primary leading causes of mortality and morbidity in developing countries 11 adding to the cost of health provision services. The clinical signs and symptoms considering typhoid diagnosis are very vague and nonspecific and they depend mostly on the time of presentation to a hospital for documentation [11]. Patients may have experienced these symptoms or sings but had consulted a GP on a later stage making the diagnosis difficult. This study highlights the prevalent clinical signs, symptoms and risk factors, similar to CDCs guide on typhoid, with which the patients present in a tertiary care hospital which when considered in the health care provider and local administrative bodies in relation to the education of the masses and patient counselling can help decrease that burden of the disease [12]. The study also emphasizes the dealing with the modifiable risk factors which along with burden of disease help in the major aspect of this disease that is antibiotic resistance that Pakistan is facing.

In our study we have highlighted the significance of demographics like age, residence and literacy level which directly or indirectly affected the exposure of patients to typhoid fever. Our study revealed that typhoid was prevalent amongst people of age 18-60 years, which is similar to the findings of study conducted by Mohamed et al showing increase incidence in young age group along with other risk factors and that the prevalence increased with illiteracy rate i.e. more cases of illiterate people, presenting to a hospital intensifying the need for educating masses and role of medical and paramedical staff along with local administrative bodies on the awareness of this disease. The risk factors which are highlighted in the study included raw food, unpasteurized milk, socioeconomic status, clean water, outside food, and hand washing. We observed the link of typhoid fever with

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these modifiable risk factors as majority of the patients presenting to a hospital had contact or history of consumption which again emphasizes that educating the masses can decrease the national burden of disease significantly. For example, 57% had consumed raw food, 71% had history of unpasteurized product consumption study, 62% had no aces to lean water, 62% had poor hand washing before eating, 77% had consumed outside food and drinks [13, 14]. Which was parallel with the study done by Raza J Et al which showed increase contamination by salmonella bacterium in ready to eat foods. These risk factors that were highlighted were like the study conducted by Brockett S Et al which showed that modifying these risk factors significantly prevented the disease and every risk factor has a significant percentage attributable to the disease and is preventable with some direct or indirect intervention [15].

Our study has highlighted some of the most prevalent signs and symptoms in typhoid fever in a tertiary care hospital which along with the risk factors can help a health care provider in diagnosis. The findings were in parallel with the study conducted by Sanjay Pundalik Baviskar Et al which highlights the prevalent symptoms with which the patients present to a hospital in our study we found that the commonest symptoms were fever 95% followed by generalized body aches and pain abdomen which were like the study of Sanjay Pundalik Baviskar Et al [16].

In our study we have highlighted prevalent signs which included coated tongue, hepatosplenomegaly, toxic look, rose spots and abdominal tenderness. Most prevalent was coated tongue 71 % in our patients followed by toxic look 59% and hepatosplenomegaly 48%. These were in parallel with the study done by Nusrat N et al in which they these findings were present in a greater number of patients and in the study done by Niranjan Sahu which showed that hepato-splenomegaly was present in almost all patients in their study [17, 18].

In the study the findings were in parallel with other studies done on similar lines. This data can help a rapid diagnosis of typhoid patient and the identification of risk factors, signs and symptoms which can be helpful in an outbreak and general screening of the population in an endemic area [19].

5. Conclusion

The spectrum of signs and symptoms for typhoid fever is very broad. Most of the patients' lives can be saved by early picking these sign and symptoms so that the disease can be managed in initial stages without any complication and prevention is also made easy by controlling the modifiable risk factors of transmission.

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