Original Research Article

PATTERN OF TYPHOID FEVER AMONG PATIENTS ATTENDING GENERAL HOSPITAL KALTUNGO

Abstract

Typhoid and paratyphoid fevers are caused by the bacteria; *Salmonella typhi* and *Salmonella paratyphi* respectively. Out of the one thousand two hundred and six (1206) sample analyzed for Typhoid and Paratyphoid fevers using tile method; 748 (62.0%) were positive while 458 (38%) were negative. Females were found to have the highest positivity rate of 413 (55.3%), while males had 335 (44.7%) positivity rate. The age bracket with the highest positivity rate 0-10years and above (28.3%), followed by 11-20years (26.2%). The age bracket with the lowest percentage positivity was 60years and above (6.0). We therefore wish to conclude that women should take personal hygiene serious and people from the following age groups of 0-10years and those at age 11-20 regardless of their sex should do likewise as Salmonellosis was found to be high among those categories of people.

Keywords: *Salmonella typhi, Salmonella paratyphi*, Hygiene, Gender, Kaltungo.

Introduction

Typhoid fever (enteric fever) caused by salmonella typhi is an endemic disease in the tropic and sub-tropic and has become a major public health problem in developing countries of the world with an estimated annual incidence of 540 per 100, 000. The annual incidence of typhoid fever is estimated to be about 17 million cases worldwide World Health Organization (WHO, 2008). It is often encountered in tropical countries including Nigeria where they constitute serious sources of morbidities and mortalities (Ibekwe *et al.*, 2009). Typhoid and paratyphoid fevers are infections caused by bacteria, which are transmitted from faeces and urine to the mouth by ingestion. However, clean water, good hygiene and

proper sanitation prevent the spread of typhoid and paratyphoid. Contaminated water is one of the pathways of transmission of the disease (WHO, 2008).

Typhoid and paratyphoid fevers are caused by the bacteria salmonella typhi and paratyphi respectively. Salmonella typhi and Salmonella paratyphi is Gram negative bacteria, which are motile though non-flagellated variants occur. They are intestinal pathogens (Miriam, 2005).

It is pathogenic to both man and mammals with associable inflammatory reaction in the intestinal tract. Typhoid and paratyphoid germs are passed in the faeces and urine of infected people. People become infected after eating food or drinking water or beverages that have been handled by person who is infected or by drinking water that has been contaminated by sewage containing the bacteria. Once the bacteria enter the person's body they multiply and spread from the intestine into the blood stream, they penetrate further to the bone marrow, Liver, and Bile ducts. (WHO, 2008).

People older than 70 years and less than 20 years of age are in the highest risk groups of getting infected with typhoid fever. Eating raw meat or raw eggs or eating unwashed vegetables or fruits increase the risk of salmonella typhi infection (European Commission, 2003).

In some countries, shell fish taken from sewage-contaminated is an important route of infection. Where water quality is high and chlorinated water pipe into the house is widely available, transmission is more likely to occur only via food contaminated by carriers handling food not the other way (WHO, 2008).

Infection through contaminated surgical equipment and person-to-person contact in hospital has also been reported (Carol, *et al.,* 2014). Another risk factor associated with typhoid and paratyphoid fevers is visiting or living in areas where typhoid fever occurs (Miriam, 2005). Salmonella typhi somatic antigens and glycolipid micro capsule are the virulence antigen (Baver, 2018). Typhoid fever is a global health problem which real impact is difficult to estimate because the clinical features is confused with those of many

other febrile infections. Additionally, the disease is under estimated because there is no bacteriology laboratory in most areas of developing countries.

Typhoid fever also has a very high social and economic impact because of the hospitalization of patients with acute disease and the complication and loss of attributes to the duration of the clinical illness.

Typhoid fever is one of the most infectious diseases affecting many communities in African countries and even the world at large since there are many different species of salmonella. In acute or chronic state of infection it leads to severe headache, weakness, vomiting, and fatigue. In some cases, it is associated with stomach pain and if not properly treated can lead to intestinal perforation which requires operation and affect the financial state of the family subsequently affecting the economic conditions of the community. Because of its great social-medical problem and high morbidity and mortality, it is therefore important to determine the incidence of salmonella infection by highlighting its implication in Kaltungo Local Government area of Gombe State and the different sources of drinking water in Kaltungo, which may serve as a potential source of the infection.

Risk Factors

Typhoid fever remains a serious worldwide threat especially in the developing world affecting an estimated 22 million people each year, according to the centers for disease control and prevention. The disease is endemic in India, South east Asia, Africa, South America and many other areas (Buckle, *et al.,* 2012). Worldwide, children are at the greater risk of getting the disease, although they generally have milder symptoms than adults do.

If you live in a country where typhoid fever is rare, you are at increased risk if you:

i. Work in or travel to areas where typhoid fever is endemic
ii. Work as a clinical microbiologist handling salmonella typhi bacteria
iii. Have close contact with someone who is infected with typhoid fever.
iv. Have immune system weakened by medications such as corticosteroids or disease such as HIV/AIDS.

v. Drink water contaminated by sewage that contains Salmonella typhi (Murray, *et al.*, 2014).

MATERIALS AND METHODS

Study Area

General Hospital Kaltungo is a secondary Health care located in Kaltungo Local Government Area along Yola road. Kaltungo Local Government Area is one of the 11 local government in Gombe State of the Federal Republic of Nigeria. It is located at South-East of Gombe bounded by Shongom Local Government Area by South-East Balanga Local Government Area by East and Billiri Local Government be West. The Local Government was created in the year 1991 which has an area of 881Km and population of 149,805 as of 2006 census.

Sample Size

All patients that came to the lab for Widal test from 1st February, 2020 to 30th April, 2020 were recruited for this study, totaling 1206 (One thousand two hundred and six)

Principle of the Test

The test depends on the ability of the antibody in the patient's serum to agglutinate the stained bacterial antigens. When this occurs, the aggregates become clearly visible to the naked eye (Fangtham, *et al.*, 2008).

Method of Sample Processing

Blood samples collected were centrifuged or spin at 3000 revolution per minutes for 5 minutes in order to separate the serum from red cells.

Sera obtained from the blood samples and the test reagents (previously stored in the refrigerator at 2-8^{o}C) were brought out of the refrigerator and left on work bench for an hour to attains room temperature, after which the Widal test was carried out by rapid screening tile agglutination test. Procedure as shown below:

a. A drop of the serum was placed on eight different reaction circle of the tile
b. A drop of each of the stained antigen suspension was added respectively
c. It was mixed using different applicator stick
d. The tile was rocked for two minutes, and the agglutination was observed immediately. Therefore, the result was recorded according to the level of the agglutination.

Method of Data Analysis

The data collected at the course of this research is been analyzed using the frequency table and is been converted to percentage

RESULTS

Table 1: Shows the prevalence of typhoid infection among the study group.

Status	Prevalence	Percentage (%)
Positive	748	62. 0
Negative	458	38.0
Total	**1206**	**100**

Table 1 shows that the prevalence of typhoid infection among the study group is 62% (748) were positive, while, 458 (38%) were negative.

Table2: Prevalence of typhoid infection in relation to Sex

Sex	No Examined	No Positive (%)
Male	549	335 (61)
Female	657	413 (62.9)
Total	**1206**	**748 (62)**

Table 2 shows that, of the 1206, 549 were male and out of which 335 were positive representing 61%, also, 413 representing 62.9% out of 657 females were positive.

Table 3: Prevalence of typhoid infection in relation to age.

Age (years)	**No Examined**	**No Positive**
<1-10	329	212 (64.4)
11-20	345	196 (56.8)
21-30	217	131 (60.4)
31-40	114	74 (64.9)
41-50	92	58 (63)
51-60	46	32 (69.6)
>60	63	45 (71.4)
Total	**1206**	**748 (62)**

Table 3 explains typhoid infection in relation to age, <1-10 had 329 out of which 212 (64.4%) were positive, ages 11-20, 345 were examined out of which 196 (56.8%) were positive, 21-30 age group had 217 examined, of which 131 (60.4%) were positive, age group 31-40 had 114 examined, 74 (64.9%) were tested positive. Similarly, age group 41-50 had 92 examined, out of 58 (63%) were positive, age group 51-60 had 46 examined, 32 (69.6%) were positive, lastly, the highest infected group with typhoid had 63 examined, 45 (71.4%) were tested positive.

Discussion

All patients that came to laboratory from 1st February, 2020 to 30th April, 2020 were recruited, totaling 1206. The result obtained from the research showed that Out of the one

thousand two hundred and six (1206) Sample analyzed; 748 (62.0%) were positive while only 458 (38%) were negative. Based on this research findings it implies that positivity rate is high (62%) in General Hospital Kaltungo. Females were found to have the highest positivity rate of 413 (55.3), while males had 335 (44.7) positivity rate. This is in agreement with the findings reported by Saratu, *et al.,* (2017) where female had 53.3% and males had 46.7%. Though our percentage is higher than hers the difference could be due to the fact that their sample size of 150 is lower than our own (1206). The age bracket with the highest positivity rate was 0-10years and above (28.3%), followed by 11-20years (26.2%), this may be as a result of their eating habits and low immunity in children. People from age group 60years and above were found to have lower rate of infection this may be as a result of their eating habits and loss of appetite that is common in old age.

Conclusion

We therefore wish to conclude from this research that typhoid fever infection in Kaltungo is high particularly among females and people from age group 0_20years. However, the aged (60years and above) had lower rate of infection.

Recommendations

Considering the findings of this study, the following recommends were opined:

- Government should provide good source of portable water for the people of Kaltungo.
- Government should enforce the laws of good personal and environmental hygiene.
- Government should enforce the laws of proper screening of food handlers.
- Health care providers should intensify efforts on Health talks on mode of Typhoid fever transmission and preventive measures

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