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Profile of the prevalence of typhoid fever at the Beni Reference General Hospital in the city of Beni in the Democratic Republic of Congo

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Abstract

Context: Typhoid fever is a potentially severe bacterial systemic infection. The current incidence of typhoid fever worldwide is 21.6 to 26.9 million cases per year. The outcome of the infection is fatal in 1 to 4% of cases, which corresponds to 216 000 deaths per year in 2000. In Africa an incidence of 10 to 100 cases per 100 000 inhabitants per year is reported. It poses a real public health problem. **Objectives:** The objective of this study was to determine the prevalence of typhoid fever at the Reference General Hospital in the city of Beni in the DRC. **Material and methods:** The medical records collected from the bedridden patients at Beni Reference General Hospital during the period 2012 to 2016 were used as material in this cross-sectional descriptive study. **Results:** The results show different annual frequencies of typhoid fever, the highest of which was 9.1% and the smallest of 1.7%. There were more women than men for different years of schooling. The town of Bungubuhad more cases than other towns. **Conclusion:** Typhoid fever is still present in Beni town, efforts should be combined with clinicians and the provincial ministry of health to achieve a significant reduction in the prevalence of this endemic disease.

Keywords: Prevalence, Fever, Typhoid, Beni, DRC.

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INTRODUCTION

Typhoid fever is a serious enteric disease caused by the genus *Salmonella*. Although typhoid has been found with a high incidence in some regions of the world, it has been known since antiquity when cases were already reported [1-3]. However, it is in the Middle Ages that the typhoid is really ravaging. At that time, it was described as a divine punishment, due to demons or Jews who were accused of contaminating the water of fountains[4,5].

The Typhoid is a disease of fecal or fecal peril. Transmission can be directly inter-human, by contact with an infected person. Subjects are infected prior to onset of symptoms and up to one week after convalescence [6,7]. Most frequently, contamination occurs indirectly through ingestion of food contaminated with the pathogen[8,9].

This disease most often occurs in areas where hygiene is precarious. In areas with little or no sewerage and low levels of street hygiene, contamination of water by faecal matter is common. A person is considered to be infected with typhoid fever if a fever of at least 38 °C persists for three days or more with laboratory confirmation by isolation of *Salmonella enterica Serovartyphi* from clinical specimens [10, 11].

In developing countries, typhoid fever is an important public health problem, mortality and morbidity rates remain very high as access to care and immunization are less facilitated[5, 12].

The incidence of enteric fever varies among continents: more than 100 cases per 100,000 inhabitants per year in South-East Asia, India, South Africa; from 10 to 100 cases per 1000000 inhabitants per year in Africa and South America[6, 10].

Our work was aimed at determining the epidemiological situation of typhoid fever at the large reference general hospital in the city of Beni, in North Kivu of the Democratic Republic of Congo, during the years

2012 to 2016.

MATERIAL AND METHODS

Study environment

Our researchwasconducted at the Beni Reference General Hospital. This structure serves the population of the entire Urban-Rural Health area of Beni. The Beni referencegeneralhospitalis a state health facility in the DRC, in the province of North Kivu, in the town of Beni, Bungubutown, district BIUTU.

The city of Beni counts 433992 inhabitants have the age which varies between 0 and 15 years. This population is divided between 67873 households. Agriculture and small trade are the main sources of population.

The town of Beni issituated at an altitude of 900 m in tropical regions, 80 km fromEcuador in the northern hemisphere. Urbansanitation services are virtually absent and the majority of households do not have access to drinking water.

The hospital organizes the following services: pediatrics, surgery, maternity, internal medicine, laboratory, radiology, dentistry, pharmacy, ambulatory care and emergencies.

Study materials

The medical records collected from the hospitalized patients constituted the material for this study. The parameters were as follows: Age, Sex, Municipality of residence.

Type and length of study

Our cross-sectional descriptive study took place in the period from 1 January 2012 to 31 December 2016, ie five consecutive years. Included in this study were all patients who were hospitalized for typhoid fever at the Beni Reference General Hospital during the study period. Participation in the study was conditional on the free and informed consent of each patient[1, 13].

RESULTS AND DISCUSSION

Our study found a lowest annual frequency of 1.7%, this is in 2012 and 2016 (Table 1). Our results differ from those of Mbula *et al.* (1993) in their research in Kinshasa; they found a frequency of 1%. It must be said that the fluctuation of this rate over time depends on the efforts of both the national and provincial health departments to eradicate this epidemic. Thus, in view of our results, it appears that there is still room for improvement in the health policy of the city of Beni, so as to keep constant the fight against this disease [11, 14].

Table 1: Frequency of typhoid fever from 2012 to 2016

Year	Case of typhoid	N	Frequency
2012	97	5616	1.7 %
2013	209	5664	3.7 %
2014	490	5412	9.1 %
2015	119	5712	2.1 %
2016	102	5952	1.7 %
Total	1017	28356	3.7 %

Table 2: Distribution of the frequency of typhoid fever by age groups

Age brackets (year)	Case of typhoid	Percentage
0-10	23	2.3 %
11 – 20	455	44.7 %
21 – 30	360	35.4 %
31 – 40	97	9.5 %
41 – 50	62	6.1 %
> 50	20	2.0 %
Total	1017	100 %

Table 3: Distribution of the frequency of typhoid fever according to the place of origin of the patients

Town	Case of typhoid	Population	Frequency
BEU	145	4537	14.3 %
Bungubu	409	10492	40.2 %
Mulekera	371	11910	36.5 %
Rwenzori	92	14170	9.0 %
Total	1017	28356	100 %

Our findings show that the typhoid fever was no longer present in the 11 to 20 age group (Table 2). Our findings corroborate Fy *et al.* (2000) research, which showed that the most affected age group is 20 to 39, followed by 10 to 19 years, simply because this fraction of the population is the one that travels the most either for work or for school. We also believe that around this age group, food hygiene seems less rigorous; it is therefore easy to put at the teeth everything that presents itself without much questioning[8, 11].

Our research showed that there were slightly more women than men with typhoid fever (Figure 1). Our results differ fromthose of Mbula *et al.* (1993), which revealed a male predominance. However, Soraya Naji-Rammal (2010), in her study, showed that the distribution of cases according to sex was homogeneous between men and women from a statistical point of view.

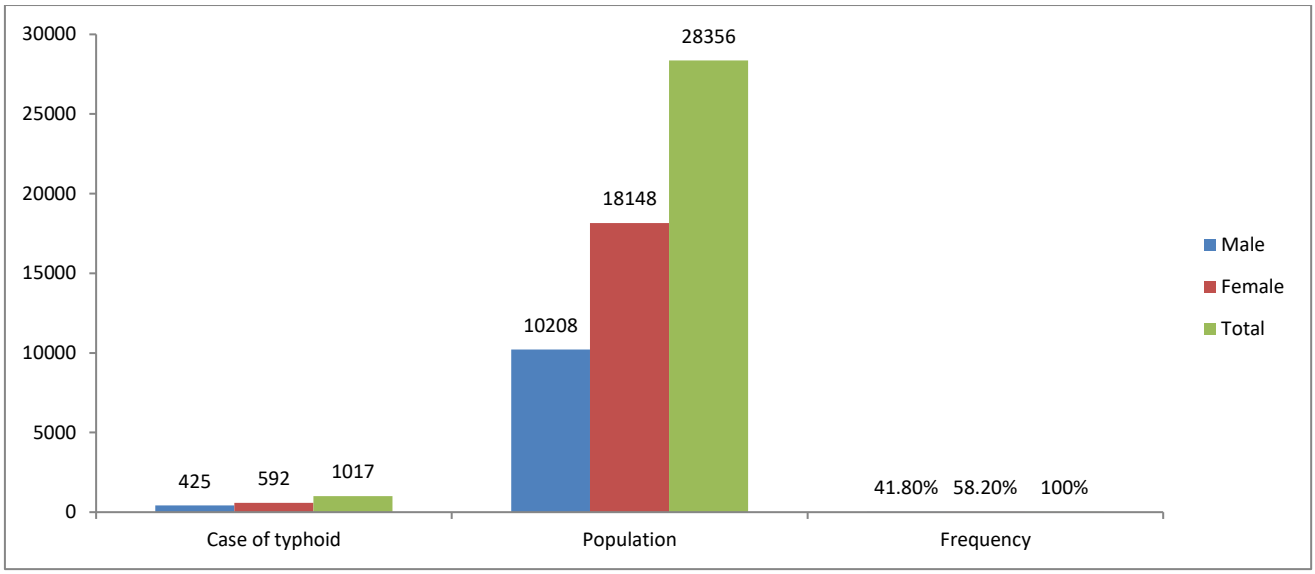

Figure 1: Distribution of the frequency of typhoid fever by sex

Table 4: Distribution of the frequency of typhoid fever according to the quarters of hospitalization of the patients

Quarter	Case of typhoid	Population	Frequency
First quarter	367	6806	36.1 %
Second quarter	148	5954	14.6 %
Third quarter	236	8223	23.2 %
Fourth Quarter	266	7373	26.1 %
Total	1017	2856	100 %

Sako (2004) showed in a study carried out in Bamako that women were more affected by this pathology than men. In this, his results corroborate ours.

The results showed a high incidence of typhoid fever in Bungu but own (Table 3). Several facts may explain this, namely the problem of drinking water supply on the one hand and the problem of environmental sanitation on the other[2, 10].

Our results showed that there was not really a monthly or quarterly impact, as there was a good number of cases in the first and second quarter and then in the third quarter (Table 4). In a study carried out in Kinshasa by Mbula *et al.* (1993), it was shown that there was no significant monthly, annual or seasonal fluctuation. Thus, we estimate that the apparent peak observed in the first and third quarters, according to our results, may be due to epidemics that occur during these periods.

Payet *et al.* (1965) and Fy *et al.* (2000) found epidemiological evidence of a recrudescence of typhoid fevers during the dry season.

Payet *et al.* (1965) also showed that poor hygiene during both the rainy and dry seasons could lead to typhoid fevers. We agree with this statement, to show that it is possible that, regardless of the seasons, precarious hygiene is the cause of recorded cases.

Exposure to faecal pollution mayfavor the emergence of a multitude of diseases, including cholera, typhoid fever, or salmonellosis, etc. The absence of an adequate sewage disposal system would be responsible for the presence of typhoid fevers in North Kivu, particularly in the town of Beni[6, 12, 15].

CONCLUSION

In this study on the determination of the prevalence of typhoid fever in Beni's Reference General Hospital, we have recorded several medical records collected from patients hospitalized for typhoid fever during the period 2012 to 2016; The following observations were made: a high prevalence (9.1%) was recorded in the years 2014 and the lowest (1.7%) in the years 2012 and 2016. The age range of 11 to 20 years was the most affected; there were more women than men with this disease; a high prevalence was recorded in the town of Bungubu; and itis more in the first and fourth quarter of the year that we recorded respectively high frequencies of typhoid fever.

Limitations of the Study

This study has some limitations in that it was carried out only in one hospital in Beni, itwould have been good to carry out the same study in all the hospitals and healthcenters of Beni to arrive at definitive conclusions for the whole city of Beni.

Contribution of authors

All authors contributed to this work. They read and approved the final version.

Conflict of interest

The Authors declare that there are no conflicts of interest.

1. Polonsky JA, Martinez-Pino I, Nackers F, Chonzi P, Manangazira P. *et al*. Descriptive epidemiology of Typhoid Fever during an

epidemic in Harare, Zimbabwe, 2012. Plos One 2014;9(12):1-16.
2. Kutsukake K, Nakashima H, Tominage A, Tatsuhiko A. Two DNA invertases contribute to flagellar phase variation in *Salmonella entericaserovar* Typhimurium Strain LT2. Journ of Bacterio 2006;188(3):950–7.
3. Soraya Naji-Rammal NB. La fièvre typhoïde au Liban : étude épidémiologique. Cahiers santé 2010;20(2):81–86.
4. Hamze M, Vincent P. La fièvre typhoïde au nord du Liban :étude sur 8 ans (1992 – 1999) utilisant le test de widal. La revue de santé de la Méditerranée Orientale 2004 ;10(1/2):180–186.
5. Payet M, Sankale M. Aspects cliniques des ébertellosesdakaroises. Bull Soc Patho Exot 1965;58:122–7.
6. Kim JH, Mogasale V, Im J, Ramani E, Marks F. Updated estimates of typhoid fever burden in sub-Saharan Africa. Lancet Glob Health 2017;5(10):e969.
7. Fy L, Ah V. The epidemiology of typhoidfever in the Dong Thapprovence, Mekong Delta region in vietnam. Am J Trop Med Hyg 2000;62:644–8.
8. Zuckerman JN, Hatz C, Kantele A. Review of current typhoid fever vaccines, cross-protection against paratyphoid fever, and the European guidelines. Expert Rev Vaccines 2017;16(10):1029-1043.
9. Sako F. Evaluation d'un test rapide (*Sérodiagnostic qualitatif*) dans le diagnostic de la fièvre typhoïde dans les centres de santé périphériques du district de Bamako. Thèse Med Bamako 2004;64.
10. Salerno-Gonçalves R, Tettelin H, Lou D, Steiner S, Rezwanul T, Guo Q *et al*. Use of anovel antigen expressing system to study the *Salmonella enterica* serovar Typhiprotein recognition by T cells. PLoS Negl Trop Dis 2017;11(9):e0005912.
11. De Jong HK, Garcia-Laorden MI, Hoogendijk AJ, Parry CM, Maude RR, Dondorp AM *et al.* Expression of intra- and extracellular granzymes in patients with typhoid fever. PLoS Negl Trop Dis 2017;11(7):e0005823.
12. Hannemann S, Galán JE. *Salmonella enterica* serovar-specific transcriptional reprogramming of infected cells. PLoS Pathog 2017;13(7):e1006532.
13. Redhuan NEM, Chin KL, Adnan AS, Ismail A, Balaram P, Phua KK. Salivary Anti-50 kDa Antibodies as a Useful Biomarker for Diagnosis of Typhoid Fever. J Clin Diagn Res 2017;11(6):DC10-DC13.
14. Otegbayo. Typhoid Fever: The Challenges of Medical Management. Ann of Iba Post Med 2005;3(1):60 –2.
15. Mbula M, Odio W, Kashongwe K, Mizerero M. Les Aspects épidémiologiques de la fièvre typhoïde à Kinshasa : A propos de 208 observations. Médecine d'Afrique Noire 1993;40(11):674-678.