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Seroprevalence of Hepatitis B among Blood Donors in Mbuji-Mayi, "Case of Dipumba General Hospital" (DRC)

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Abstract

Seroprevalence among blood donors is a major public health problem, both in developed and developing countries, in its magnitude. The aim of this study was to determine the seroprevalence of hepatitis B in blood donors. This is a descriptive study carried out in the city of Mbuji-Mayi at the General Hospital of Dipumba in blood donors (family, volunteer and remunerated) recorded from 01/to31/December 2016; the data were collected in a transverse fashion. The following observations were made: During the study period, 1584 blood donors were registered. After analyzing the data, the seroprevalence of hepatitis B in blood donors was 2.2%, 77.8% were male (sex ratio M/F 3.5 and voluntary donors were 50.4%.

Subject Areas

Hematology, Public Health

Keywords

Seroprevalence, Hepatitis B, Donors, Mbuji-Mayi

1. Introduction

Blood transfusion is a life-saving intervention that plays an essential role in the

care of patients in health care systems. Hepatitis B virus (HBV) infection is a global public health problem, and an estimated two billion people worldwide have been infected over the course of their lives. HBV is a DNA virus belonging to the Hepadnaviridae family and the genus Orthohepadnavirus, and its reservoir is human [1].

Tounkara A., Sarro Y.S. and Kristensen S. report that despite progress in the fight against human immunodeficiency virus (HIV) and hepatitis B (HBV) and C (HCV) viruses, these pandemics continue to be a problem that deserves special attention in sub-Saharan Africa, which remains the most affected region of the world [2].

In France, monitoring of HBs antigen in blood donors from 1991 to 2003 showed a drop in the prevalence of HBsAg from 5.3 to 1.8 per 10,000 donations. In new donors, the prevalence of HBsAg increased from 28.4 to 11.7 per 10,000 donations, a positive donation rate divided by 2.4 in 13 years. For known donors, this rate was divided by 72, with a prevalence that decreased from 1.45 to 0.02 per 10,000 donations [3] [4]. In Guadeloupe the frequency of occult hepatitis B in the blood donor population is low; it is between 0.4% and 3.1% [5].

In developing countries or economies in transition, many people die because of lack of safe blood, and, even in some urban healthcare facilities. [6] In Mali, in a study of seroprevalence of virus Hepatitis B among blood donorsporting the HBsAg was 5.3% [7]. By against Cameroon, Magloire Biwole S. Jeatsa Gapdo and Mbangue reported a prevalence of 5.3% [8].

In the Democratic Republic of Congo, hepatitis B infection, particularly by transfusion, remains a major public health problem, as the geographic distribution of the prevalence of hepatitis B Different from that of other African countries, the seroprevalence of chronic carriage of the Hbs antigen varies between 8 and 15% in the general population [9].

The results of Kabamba Nzaji Michel and Kabyla Ilunga Benjamin showed that the overall seroprevalence of HIV, HBV, HCV and syphilis was 2.9%, 1.6%, 0.2% and 0.2%, respectively, in Kamina [10], while Namululi B.A., Guerrieri C., and Dramaix M.W. reported prevalence in Bukavu blood donors of 1% for HIV and 3.7% for Ag HBs [11].

The province of Kasai Oriental in general and in particular the city of Mbujimayi our research community is not spared by this problem because we have observed that the use of blood transfusion constitutes a therapeutic way to meet certain needs of the care of patients.

The aim of this study is to determine the blood donor profile and the prevalence of the hepatitis B virus in the city of Mbuji-Mayi in order to contribute to safe transfusion.

2. Material and Methods

We performed a retrospective cross-sectional descriptive study of serum hepatitis B markers in blood donors. The study was spread over a period of 12 months,

from January 1 to December 31, 2016.

Our target population is made up of all voluntary, family and remunerated blood donors who have consulted Dipumba General Hospital during 2016. Consisting of 1584 donors, our sampling is exhaustive.

Included in the study are all blood donors (volunteers, family members and remunerated) registered at the blood bank of the Dipumba General Reference Hospital (Mbuji-Mayi). The serodiagnosis on each donation was performed by Determination TM HBs Ag Abbott reagents for HBV. A recording grid was used to collect the data from the study.

We have encoded the data with the Excel software but the analysis was done using the SPSS 20 software. The descriptive analysis was carried out by calculating the proportions for the qualitative variables. The study variables are age, sex, donor categories and HBs serology.

The descriptive analysis was carried out by calculations the proportions for the qualitative variables and the different frequency comparisons were encrypted using the Chi-square test of Pearson and the Fisher test if necessary. We set the statistical significance threshold at $p < 0.05$.

This study was approved by related ethics committee besides and donors sign informed consent and have a whole understanding of this study. Our study had no binding character. Any information collected from donors has been and will remain confidential. Similarly, the names of participants will remain confidential and will not be mentioned in the presentation of results or associated to results in any way whatsoever. They will also be disclosed to any third party.

3. Results

Table 1 indicates that the prevalence of ' hepatitis B in blood donors is 2.2%.

It appears from Table 2 that the majority of donors in our study was 19 to 35 years or 60.4%; 77.8% were male (sex ratio M/F 3.5); and 76.9% of married. Note that 50.4% of donors were our series family,

The results in Table 3 show that the proportions of HBs positive are high among males (2.4%) compared to females, the same observation is made to unmarried or donors (3.8%). Compared to the categories of blood donors, the conclusion is that the proportions of ' positive HBs are elevated in family donors or paid either (2.3%), there are donors older than 35 years with (2.5%) without this being statistically significant. These results show a statistically significant association between the vital donor and positive HBs because the value of p-value is less than 5%.

Table 1. Prevalence of hepatitis B in donors.

Case	Effective	Percentage
Negative	1549	97.8%
Positive	35	2.2%
Total	1584	100%

Table 2. Breakdown of cases by sociodemographic characteristics of the donor.

Characteristics	Effective n = 1584	Percentage
Age		
19 to 35	957	60.4%
Less than or equal to 18 years	101	6.4%
Above 35 years	526	33.2%
Sex		
Female	352	22.2%
Male	1232	77.8%
Total	1584	100%
Marital status		
Single	362	22.9%
Divorced	4	0,3%
Married	1218	76.9%
Donor Category		
Volunteer	349	22.%
Family	798	50.4%
Paid	437	27.6%

Table 3. Association between results HBs and characteristics of the donor.

Characteristics	HBs		odds Ratio	IC (95%)	P
	Negative	Positive			
Sex					
Female	346 (98.3%)	6 (1.7%)	1390	[0.573 - 3.375]	0.464
Male	1203 (97.6%)	29 (2.4%)			
Marital status					
Married	1197 (98.3%)	21 (1.7%)	2267	[1.141 - 4.505]	0.016
Not married	352 (96.2%)	14 (3.8%)			
Categories donors					
Volunteer	343 (98.3%)	6 (1.7%)	1375	[0.566 - 3.338]	0.480
Family or paid	1206 (97.7%)	29 (2.3)			
Age					0.472
19 to 35	942 (98.4%)	15 (1.6%)			
Less than or equal to 18 years	99 (98.0%)	2 (2.0%)			
Above 35 years	513 (97.5%)	13 (2.5%)			

4. Discussion

Indeed the results of our studies have shown that the prevalence of Hepatitis B among blood donors is 2.2%. HBV seroprevalence in this study is less than that found in our country, 3.63% in 2005 in Kinshasa, [12] than 3% in Kisangani in

2004 [6] and Morocco 2.81% [13] to that found in Kinshasa-East (9.2%) [14] in 2001, 3.7% for HBsAg among blood donors in Bukavu and the rate found by other African studies such as the Ivory Coast 12.5% [15] and Ghana 8.2% [16].

However, our observations are similar to those of Kamina and Lubumbashi where the porting of antigen HBs was 1.6% respectively [10] and 2.67% [17]. This difference can be attributed to differences in methodologies, in fact we worked on whole population donors (replacements and volunteers) while other authors have worked solely on volunteer blood donors and some authors used confirmatory tests while we used the test for serology.

The majority of donors in our study was 19 to 35 years or 60.4%. Which diverges with Kamina where the tranche age represented 57.1% [10]. This cans s due to the fact that in low- and middle-income youth are more likely to donate blood than in high-income countries [17]

Regarding found predominantly male 77.8% (sex ratio M/F 3.5). These results are similar to those of Ngama Kakisingi Christian, Mukuku Olivier, Serge *et al* Kapend Matanda who Lubumbashi a majority consisting of male donors (83.14%) with a sex ratio M/F 4.93 [17]. These results are consistent with those established by other authors who believe that generally according to some traditional African beliefs or convictions, man would usually healthier than women [18] [19] [20]. The observations of our study support this assertion.

In terms of category, family donors were the majority (50.4%). These results contrast with those of Kamina where the authors had reported 51.4% of volunteer blood donors [10], But similar to those of Lubumbashi where the category, family donors accounted for 62.27% [19]. Note that 72 countries among which the Democratic Republic of Congo, collecting more than 50% of their blood supplies through the gift of a family member/compensation or paid donors [21].

The results of this study revealed a statistically significant association between donor status and HBs positive (P = 0.016). This is explained by the fact that the majority of the donors in our study are married, and the sexual voice is a mode of transmission of Hepatitis B [22].

5. Conclusions

The prevalence of hepatitis B in blood donors is a public health issue that deserves special attention. In the objective to determine that—one in the city presented the study led to the findings that the prevalence is 2.2%.

The results of this analysis suggest that the seroprevalence of HBV and Mbuji-Mayi is comparable to that observed in other city of the DRC.

Moreover, the majority of blood donors in this study is male (77.8%). The sex ratio was 3.5. The slice of age 19 to 35 years is60.4%, 76.9% of donors were married and 50.4% were volunteers.

However, another study is important to determine the seroprevalence of Hepatitis C in donors in the city of Mbuji-Mayi.

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