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Seroprevalence of Hepatitis B and Hepatitis C Virus Among Blood Donors in Missan Governorate - Iraq

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ABSTRACT: Hepatitis B virus (HBV) and hepatitis C virus (HCV) both of them are established causes of post transfusion hepatitis which considered as the commonest causes of chronic liver disease in the several regions of the world. To estimate the prevalence of HBV and HCV among blood donors in Missan governorate. A cross sectional study was conducted in Missan governorate and the data collected from records of blood bank during 2010-2012. A total of 36620 blood donors were selected. The prevalence of hepatitis B virus was 0.12% (44) while the hepatitis C virus prevalence was 0.09% (34), both of HBV and HCV were most common in male and in urban area. A decline in trend of hepatitis B and C virus during 2010-2012 was shown in the study. We concluded that the prevalence of HBV and BCV was lower than other studies that were conducted in Iraq. There is increasing in public awareness about hepatitis infection.

KEYWORDS: Hepatitis, Seroprevalence, HBV, HCV, Transfusion, donor, cirrhosis, chronic liver disease.

1 INTRODUCTION

Hepatitis B virus and HCV are consider as one of the major public health problem in the developing countries and the commonest causes of chronic liver disease in the several regions of the world [1]. HBV and HCV both of them are the two established causes of post transfusion hepatitis. Both infections lead to an acute or chronic course of liver disease progressing from liver impairment to liver failure, cirrhosis and to hepatocellular carcinoma [2]. With every one unit of blood transfusion there is 1% chance of transfusion related complications including transfusion transmitted infections [3]. HBV and HCV cause serious mortality, morbidity and financial burden and thus a major global health problem [4]. The residual risk of HCV 1 per 6.7 million donations and HBV 1 per 1.7 million donations [5]. In general viral hepatitis is an endemic disease in Iraq and it is attribute to the relevant problems and all types of the known causative agents are existing in this locality with various rates of infection [6]. So over the past twenty years, there has been a major increase in the safety of the blood supply, as demonstrated by declining rates of post-transfusion infection and reductions in estimated residual risk for such infections [7]. The World Health Organization (WHO) established a goal of regional blood safety by 2012 through improved organization and management, /appropriate clinical use of blood [8]. Regulation of screening tests together with the development and introduction of nucleic acid technique tests for HBV, HCV, and human immunodeficiency virus has improved blood safety [9]. Despite advances in technology, transfusion-transmitted HBV and HCV infection still exists [10].

2 MATERIAL AND METHODS

This study was a cross- sectional study with an analytic element. It was conducted in blood bank center in Missan governorate, during the period from 1st of February, through March, 2013. The study including all blood donors in governorate who attending the blood bank center regarding their age, sex, residency and date of registry. Data was collected by using a special formula, constructed by the researcher and; based on the standard criteria. The information sheet is

including demographic information; (age, gender, year's registry, residency and address) and the result of laboratory test whether it is positive or negative.

The study protocol was reviewed; approval and official permission were obtained from the Ministry of Higher Education to conduct the present study. The analysis of data was carried out using the available statistical packages for social science, version 16.0 (SPSS-16.0). Data were presented in form of table of number and percentage. Chi-square test ($\chi 2$-test) was used for testing the significance of association between variable under study. Statistical significance was considered whenever the p-value was equal or less than 0.05.

3 RESULTS

The total number of blood donors those attended to the blood bank center during 2010-2012 was 36620 from which 78 was hepatitis B and C virus (44 HBV and 34 HCV), the high frequency was during year 2010 (36).The prevalence for both HBV and HCV was 0.21%, from that 0.12% and 0.09 was prevalence of HBV and HCV respectively. There was a significance association according to year of registry ($P < 0.029$ and $P < 0.041$), as shown in table 1 (A and B). The study show that all the blood donors have hepatitis virus was male except one case was female (HBV), with strong significant association between hepatitis virus and sex of cases, as shown in table 2. Our study show that the high prevalence of HBV was found in age group 25-29 year while the high prevalence of HCV was found in age group 30-34 year, there was positive significant association between hepatitis virus and age groups, as shown in table 3 and figure 1. Regarding the residency of patients, most of cases of diseases was appeared in urban for HBV and HCV which was 35 and 32 respectively, with high statistical significant, as shown in table 4. Also our study shows that the prevalence of hepatitis B virus and hepatitis C virus has declining temporal trend from 2010 to 2012, more obviously in hepatitis B virus disease trend, as shown in figure 2.

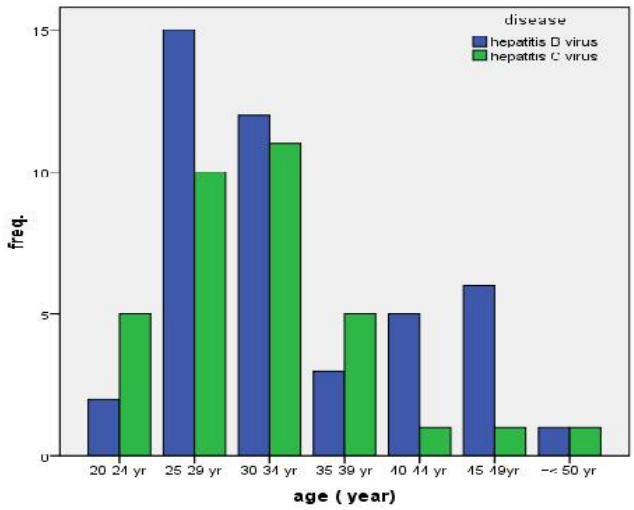

Fig. 1. Distribution of disease according to the age of patients

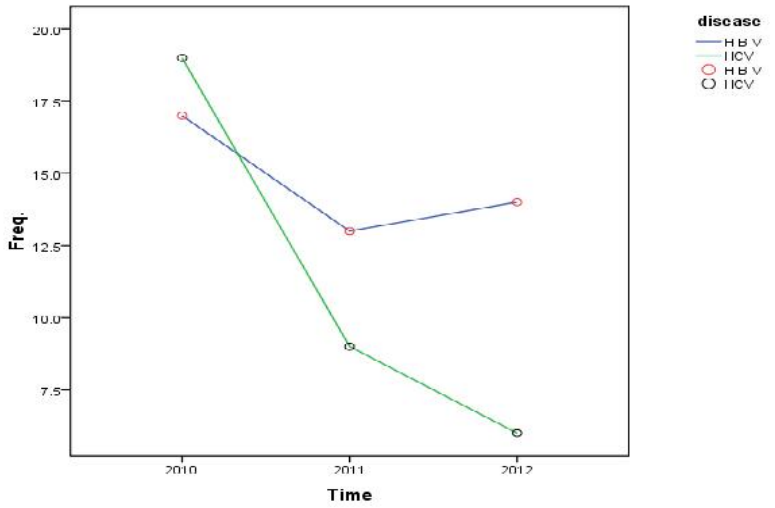

Fig. 2. Distribution of disease according to the year of registry

4 DISCUSSION

According to the WHO and previous study done in different countries, the prevalence of HBV and HCV among blood donors is different and vary for each country. The HBV reported as 0.1-0.5 in normal population of United State and Western Europe, while it is reported as 5-20% in Far East and in tropical area [11]. Also the prevalence of HCV varies from 0.5 to 2% in United State and most European countries [12, [13].

In this study, the prevalence for both hepatitis B virus and hepatitis C virus is 0.21%. The prevalence of hepatitis B virus was 0.12% which it is lower than in some Iraqi governorate like Babylon 0.7%, Najaf 0.66% and Karbala 3.5% [14], [15]. Also it is lower than in the other countries like United Arab of Emirate (U.A.E) 0.88%, Egypt 1.3% and Pakistan 6.2% [14], [16].

In the same matter the prevalence of hepatitis C virus in this study is 0.09% which is lower than prevalence that found in studies was conducted in some governorates of Iraq such as in Babylon 0.5%, also it is lower than that in some countries like U.A.E, Egypt, and Pakistan which was 0.6%, 4.04% and 7.5% respectively [14]. Regarding the gender, all the cases of hepatitis virus was male which is representing 98.7% this in agreement with other study done in Babylon governorate [14].

Our study appeared that the high prevalence of HBV and HCV was distribution in active age groups 25-29 and 30- 34 year respectively, which it is similar to that of some studies [14], [17]. This can be explained by the transmission of hepatitis infection is more common during sexual activities [18].

Regarding the residency of patients, the prevalence of HBV and HCV was higher in urban than in rural and this explained by the most blood donors was come from urban area rather than rural area.

Lastly, the declining in the trend of hepatitis B virus and hepatitis C virus over 2010, 2011 and 2012 may be due to increasing of public awareness about hepatitis infection transmission and used disposable syringes, this in agreement with other study that was done in Baghdad [19].

5 TABLES

Table 1A. The distribution of hepatitis B and C virus according to the year of registry, 2010-2012

Year	Blood donors (test)					
	Normal		Hepatitis (B and C)		Total	
	N	%	N	%	N	%
2010	11901	99.7	36	0.3	11937	32.6
2011	11363	99.8	22	0.2	11385	31.1
2012	13278	99.8	20	0.2	13298	36.3
Total	36542	99.79	78	0.21	36620	100
P < 0.029						

Table 1B. The distribution of hepatitis virus type during year 2010-2012

Year	Blood donors (test)							
	Normal		Hepatitis B		Hepatitis C		Total	
	N	%	N	%	N	%	N	%
2010	11901	99.70	17	0.14	19	0.16	11937	32.6
2011	11363	99.80	13	0.12	9	0.08	11385	31.1
2012	13278	99.85	14	0.10	6	0.05	13298	36.3
Total	36542	99.79	44	0.12	34	0.09	36620	100
P < 0.041								

Table 2. Distribution of disease according to the sex of patients

Sex	Disease					
	Hepatitis B virus		Hepatitis C virus		Total	
	N	%	N	%	N	%
Male	43	55.8	34	44.2	77	98.7
Female	1	100	0	0.0	1	1.3
Total	44	56.4	34	43.6	78	100
P < 0.376						

Table 3. Distribution of disease according to the age of patients

Age (year)	Disease					
	Hepatitis B virus		Hepatitis C virus		Total	
	N	%	N	%	N	%
20-24	2	28.6	5	71.4	7	8.9
25-29	15	60.0	10	40.0	25	32.1
30-34	12	52.2	11	47.8	23	29.5
35-39	3	37.5	5	62.5	8	10.3
40-44	5	83.3	1	16.7	6	7.7
45-49	6	85.7	1	14.3	7	8.9
50 +	1	50.0	1	50.0	2	2.6
Total	44	56.4	34	43.6	78	100
P < 0.244						

Table 4. Distribution of disease according to the residency of patients

Residency	Disease					
	Hepatitis B virus		Hepatitis C virus		Total	
	N	%	N	%	N	%
Urban	35	52.2	32	47.8	67	85.9
Rural	9	81.8	2	18.2	11	14.1
Total	44	56.4	34	43.6	78	100
P < 0.067						

6 CONCLUSION

The prevalence of hepatitis B virus was 0.12% and hepatitis C virus was 0.09%. There is association between type of hepatitis (HBV and HCV) and time of registry. Most of blood donors were male and most of them from urban area. Most of cases of HBV and HCV were found in age group 25-29 year and 30-34 year respectively. There is declining in trend of disease over 2010, 2011 and 2012.

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