WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 8, Issue 12, 1354-1361. Research Article ISSN 2277– 7105

SEROPREVELANCE OF HEPATITIS B AND C VIRUSES AMONG BLOOD DONORS IN AL-QAAIM GENERAL HOSPITAL BLOOD BANK, IRAQ

Hamdi Khalaf Turki (M.D)*, Ismael Shallal Jubairr (FICMS, Medicine), Pharmacist Baraah Hamdi Khalaf* and Roaida Hamdi Khalaf (Laboratory Analyst)

Department of Medicine Al-Qaaim General Hospital.

Article Received on
16 Sept. 2019,
Revised on 07 Oct. 2019,
Accepted on 28 Oct. 2019
DOI: 10.20959/wjpr201912-16158

***Corresponding Author**
Hamdi Khalaf Turki (M.D)
Department of Medicine Al-Qaaim General Hospital.

ABSTRACT

A blood transfusion is transfer of blood or blood products from one person (donor) intoanotherperson (recipient). This usually done as lifesaving maneuver to replace blood cells or blood products lost through severe bleeding, during surgery when blood loss occurs or to increase the blood count in an anemic patients, but it is also have risk of transmitting infections to the recipients. The study object is to assess the infection that comes from blood donors specifically HBV, HCV and associated risk factors among blood donors in major blood bank of Al-Qaaim city hospital, Al-anbar, Iraq. As it is the first study in this region. The study had been done during the period from 25 January to 25 July 2019. Blood samples had been collected using cross sectional survey from blood donors of blood bank. All donors was males their age ranges among 18 to 52 years. All of them were investigated for HBsAg (hepatitis B surface antigen) and anti-HCV (hepatitis B virus antibodies) by ELISA test. We had 1320 donors. The test showed that (7) seven donors seems to be seropositive to HBV, and (3) three had anti-HC-antibody. If we compared these results with other governorates in Iraq it will be close to ours and frequent blood donation is the main risk factors for transmission.

KEYWORDS: Hepatitis B virus, Hepatitis C virus, Blood bank, AL-Qaaim city.

1-INTRODUCTION

Hepatitis B virus and hepatitis C virus (HBV&HCV) are worldwide health problems, especially in developing countries, that cause liver damage, both of viruses are sneaky that

patient may have no symptoms, both of them can be passed on in body fluids, particularly blood. It is usually body of someone who is not infected. It is most commonly transmitted through exposure to infected blood.[1],[2]

HBV&HCV have the potential to be transmitted through blood transfusions. Implementation of improved tests and stringent screening criteria for donors has helped dramatically reduce the risk of transfusion or transplantation transmission of the virus.[3] Public health interventions and strategies have been shown to be effective method of preventing such infection. Any strategies to prevent infections should be based on specific data, that is include information about risk factors and prevalence of these infections.[4],[5]

The aim of this study is to assess the prevalence of HBV&HCV and their associated risk factors among blood donors in Al-Qaaim. Information like this may help increase the awareness regarding the need for urgent action to prevent HBV&HCV transmission in Iraq.

2-Patients and method

This study has carried out in Al-Qaaim hospital, Anbar, Iraq. A total people 1320 who donated to hospital blood bank, the study and data collected from them during the period 25January-25 July 2019.the collection of data included two parts:

1-Part one: directed by second researcher this part including questionnaires-interview with donators. It was demographic data such as name, age, residence. Subjects were asked about risk factors such as previous surgical intervention, history of jaundice or hepatitis, family history about hepatitis, history of vaccination against HBV.

2-Part two: including blood tests. Blood samples have been collected from donors, each pint of blood get through test for HBsAg and anti-HCV antibody (for sight ELISA test kit, USA).

HBsAg by ELISA. aspirated 5 cc from donated pint blood, put it in white sterile tube then centrifuge for 5 min then added 50 micromil from the serum put on tested plate after that added 50 micromil enzyme conjugate working, put in incubator for 60 min at 37 centigrade, wash the sample five times, then add 50 ml B, C substrate solution, waiting for 15 min, then add 50 micromil of stop solution then read, the test (cut off=Nc+0.1). The test considered positive > cut off, the test considered negative< cut off, if on cut off repeat the test HCV-Ab by ELISA. aspirated 5 cc from donated pint blood, put in white sterile tube then centrifuge for 5 min, added 100 micromil from sample diluent's then add 10 micromil from serum, waiting for 30 min at 37 centigrade, wash the sample five times, then add 100

micromil(HRP-conjugate), then waiting for 30 min, re-wash five times, then add 50 micromil from(B,C substrate solution waiting for 15 min, then add 50 micromil of stop solution then on reader(cut off=Nc+0.12), the test considered positive> cut off. the test considered negative< cut off, if the test on cut off repeat the test if one or more of these tests are positive, the collected blood set is destroyed.

3. RESULT

In this study 1320 donors had enrolled. Their age between 18-52, all of them were males. The mean age 35, the seropositivity of HBsAg and anti-HCV in this study 7/1320 (0.53%) and 3/1320(0.22%) respectively as shown in table (1), high seropositive for both markers found in blood donors from center of Al-Qaaim city.

Table 1: HBsAg and Anti-HCV Prevalence Among Blood Donors N=1320.

Serological marker	Seropositive	Percentage
HBsAg	7	0.53
Anti-HCV	3	0.22

Most blood donors belong to 31-40 years old, high percent of HBsAg positive blood donors found among 41-50 years old group 4/7(57.14%) from positive cases and 1.29% from age group. while higher rate for anti-HCV reported among blood donors aged 21-30 years old 2/3(66.66%) from positive cases and 0.5% from age group.

Table 2: Frequency Distribution of Hepatitis Disease Among Blood Donors According to Age.

		Hepatitis B			Hepatitis C		
Age	Total donors	Numbers of +ve cases	Percent from+ve cases	Percent from age group	Number of +ve cases	Percent from+ve cases	Percent from age group
<20 y	50	Nil	0	0	0	0	0
21-30 y	400	1	14.28	0.25	2	66.66	0.5
31-40 y	441	1	14.28	0.25	1	33.33	0.22
41-50 y	310	4	57.14	1.29	0	0	0
>50 y	119	1	14.28	0.84	0	0	0
Total	1320	7	100		3	100	

Regarding risk factors which were considered in our study, frequent blood donation was reported among high percentage of HBsAg positive blood donors 3/7 (42.85%) and anti-HCV positive blood donors 2/3 (66.66%). while history of previous surgical operation has recorded in one donor who was positive for HBsAg 1/7 (14.28%), history of cupping found in two

donors who were positive for HBsAg 2/7 (28.57%) and another one who was positive for anti-HCV 1/3 (33.33%).

Table 3: The Frequency Distribution Hepatitis Infection Among Blood Donors According to Residence.

Residence	Hepatitis B		Hepatitis C	
	Number	Percent	Number	Percent
Qaaim	4	57.13	2	66.66
Karabla	1	14.28	1	33.33
Other rural	2	28.57	0	0
Total	7	100%	3	100%

Table 4: Seropositive of Hbsag and Anti-Hcv According To Risk Factors.

Risk factors	Seropositive HBsAg n = 7	Seropositive anti-HCV n = 3
Frequent donation	3	2
History of operation	1	0
History of cupping	2	1

DISCUSSION

Viral Hepatitis Type B&C is a serious public health challenge throughout the world.[6],[7] Hepatitis B virus (HBV), and hepatitis C virus (HCV) are among the leading causes of death by infectious diseases worldwide.[8] Hepatitis B and C viruses still remain to be the major causes of chronic hepatitis.[9]

It is estimated that around 350-400 million people in the world are chronic carriers of HBV, which represents approximately 7% of the total populationwhereas infection with HCV is found in approximately 3% of the world population, which represents 160 million people.[10],[11] Long-term complications of hepatitis B include cirrhosis, liver failure or hepatocellular carcinoma (HCC).[12]

World Health Organization estimated a prevalence rate for HCV infection of about 4.6% in Eastern Mediterranean in 1999.[13][14] In this study we believed, that it's the first study in Al-Qaaim, Iraq. The study showed that, infection rate of HBC and HCV among Iraqi blood donors in Al-Qaaim was 0.53% and 0.22% respectively, the low HCV seroprevalence might need to be confirmed using RP-PCR for HCV RNA determination as false negative cases might be found in immunological approach.[15] And may be because there are people had known that they have hepatitis so they will not donate. Testing for HbsAg may not identify donors with occult HBV infection who have isolated anti-HBc antibodies.[18] Anti-HBc

remains positive lifelong in all the donors with an HBV infection in the past. Therefore, most anti-HBc positives will have anti-HBs positive as a sign of infection in the past. The best reliable testing for HBV infection is the HBV DNA by PCR.[13] However, in countries with limited resources such as Iraq, testing for HBV DNA is not cost-effective. Since the 1970s, blood banks in Iraq have incorporated anti-HBc testing in their donor screening protocols.[14] In comparison the seroprevalence rate for HBsAg in our study with result of other studies used the blood donors as study sample carried out via other governorates in Iraq it appeared close to Babylon, Iraq (0.7%).[19] the prevalence of hepatitis B virus infection among blood donors groups in Diyala, The grand prevalence of HBV infection in blood donors was 1.5%.[20] In Baghdad, From the total blood donors(600) there were 37(6.2%) and 6(1.7%)positive for HBV &HCV respectively.[21] In comparison to neighboring Arab countries it appears close to Kuwait in 2002 found that the prevalence of HBsAg in Kuwaiti national donors was 1.1%[22] Jordan showed the prevalence of HBsAg to be 1.4%. The prevalence was higher in male than in female donors (1.5% vs. 0.5%).[23] Our study showed that the prevalence of HCV antibodies was 0.22% among blood donors, all of them were males. In Basra, The prevalence of anti-HCV was 0.1%.[24]

On comparison with other countries, the prevalence of anti-HCV among Kuwaiti national donors was found to be 0.8%.[25] In Jordan, a hospital-based study showed that the infection with HCV among blood donors was 0.9 %.[26] Increase frequency of donation associated with increased risk of seropositivity for both HBV and HCV this possibly because sometime inadequate sterile puncture and different staff for donation especially in emergency. However, our study shows some relationship to previous surgical intervention and cupping, most of risk factors are unknown,and this may not reflect the truth because few number of positive cases. Most of positive cases from Centre of Al-Qaaim city, There were some shortening in our study, one of these was lack of confirmation test ; other samples screening limited to Al-Qaaim hospital bank.

CONCLUSION

The seropositive of HBV and HCV, in blood donors 0.53% and 0.22% respectively, this study is the first one in Al-Qaaim city. The result would be close if compared with some Iraqigovernorates and other neighboringcountries, the main risk factor were the frequent donation.

There are some strategies we have to follow:

1. Expansion of HBVvaccinition.
2. Education public and give them background about the disease.
3. Strict selection of blood bank staff with good training.

ACKNOWLEDGEMENT

We wish to express our gratitude to the Chief Lab Assi. Hameed Mjwal. M and the staff in the blood bank for providing help in collection of data with our study.

6. REFERENCES

1. Thomson RA, et al. Retention of "safe" blood donors. The Retrovirus Epidemiology Donor Study. Transfusion, 1998; 38(4): 359–367.
2. Delaney MK, et al. Blood center practice and education for blood donors with anemia. Transfusion, 2011; 51(5): 929–936.
3. http://www.aabb.org/advocacy/regulatorygovernment/donoreligibility/hepatitis/Pages/default.aspx
4. (Allain JP, et al. Deferred donor care in a regional hospital blood center in Ghana. Transfusion, 2009; 49(4): 669–675.
5. Stewart KR, et al. Phlebotomist interpersonal skill predicts a reduction in reactions among volunteer blood donors. Transfusion, 2006; 46(8): 1394–1401.
6. Walsh K., Alexander G.J. Update on chronic viral hepatitis. Postgrad Med J., 2001; 77: 498-505.
7. Holmes-Mc Nary M. Impact factors on development of cirrhosis and subsequent hepatocellular carcinoma. Compend Contin Educ ent, 2001; 22: 19-33.
8. Dong Y, Qiu C, Xia X, Wang J, Zhang H, Zhang X, et al. Hepatitis B virus and hepatitis C virus infection among HIV-1-infected injection drug users in Dali, China: prevalence and infection status in a cross-sectional study. Arch Virol., 2015; 160(4): 929–936. pmid: 25616842
9. Walsh K., Alexander G.J. Update on chronic viral hepatitis. Postgrad Med J., 2001; 77: 498-505.
10. Holmes-Mc Nary M. Impact factors on development of cirrhosis and subsequent hepatocellular carcinoma. Compend Contin Educ ent, 2001; 22: 19-33.
11. Goh K., Doraisingham S., Tan K. The hepatitis B immunization programme in Singapore. Bulletin of the World Health Organization, 1989; 67: 65-70.

12. Lok AS, McMahon BJ., Practice Guidelines Committee, American Association for the Study of Liver Diseases. Chronic hepatitis B. *Hepatology*, 2001; 34: 1225–41. doi:10.1053/jhep.2001.29401
13. N. Previsani and D. Lavanchy, Hepatitis B. WHO/CDS/CSR/LYO/2002: Hepatitis B, World Health Organization, Geneva, 2002.
14. World Health Organization fact sheets, Hepatitis C, World Health Organization, Geneva (2000), Available at: http://www.who.int/mediacentre/factsheets/fs164/en/ (accessed August 2008).
15. Prieto M, Olaso V, Verdu C, et al. Does the healthy hepatitis C virus carrier state really exist? An analysis using polymerase chain reaction. Hepatology, 1995; 22(2): 413-7.
16. Gish RG, Given BD, Lai CL, et al. Chronic hepatitis B: virology, natural history, current management and a glimpse at future opportunities. *Antiviral Res*., 2015; 121: 47–58. doi:10.1016/j.antiviral.2015.06.008 [PubMed]
17. Kurdi M, Abughararah M, Mulike M. Molecular detection of hepatitis B virus (HBV) among voluntary ELISA positive blood donors in Almadinah Almunawwarah. *J Taibah Univ Med Sci*., 2014; 9: 166–70.
18. AL-Juboury AWF, Salih HA, AL-Assadi MK, et al. Seroprevelance of hepatitis B and C among blood donors in Babylon Governorate-Iraq. Med J Babylon, 2010; 7: 1-2.
19. Amer W.F.A L-Juboury, Hattem. AL.M. salih, Mohammed.K.AL-ASSADI, Ashraf. M. Ali; seroprevalence of hepatitis B and C among blood donors in in Babylon Govermorate-Iraq. Medical Journal of Babylon, 2010; 7: 1-2.
20. Seroepidemiological Study of Hepatitis B virus infection among Blood Donors and Risky Groups in Diyala IRAQI JOURNALOF COMMUNITY MEDICINE **ISSN**: 16845382 **Year**., 2006**;** 19(1)**:** 14-19.
21. Prevalence of hepatitis B and hepatitis C among blood donors in Baghdad, August 2007-December 2008 Journal of the Faculty of Medicine **ISSN**: 00419419 **Year**, 2009**;** 51(4): 419-422.
22. Prevalence of viral markers among first-time Arab blood donors in Kuwait. Ameen R, Sanad N, Al-Shemmari S, Siddique I, Chowdhury RI, Al-Hamdan S, Al-Bashir A Transfusion, 2005 Dec; 45(12): 1973-80.
23. Al-Gani EA. Prevalence of HBV, HCV and HIV-1, 2 infections among blood donors in Prince Rashed Ben Al-Hassan Hospital in North Region of Jordan. *Int J Biol Med Res*., 2011; 2: 912–16.

24. Prevalence of hepatitis B seromarkers and hepatitis C antibodies in blood donors in Basra, Iraq BMJ Open Gastroenterol, 2016; 3(1): e000067. Published online 2016 Jan 4. doi: 10.1136/bmjgast-2015-000067
25. Prevalence of viral markers among first-time Arab blood donors in Kuwait. Ameen R, Sanad N, Al-Shemmari S, Siddique I, Chowdhury RI, Al-Hamdan S, Al-Bashir A Transfusion, Dec, 2005; 45(12): 1973-80.
26. Al-Gani EA. Prevalence of HBV, HCV and HIV-1, 2 infections among blood donors in Prince Rashed Ben Al-Hassan Hospital in North Region of Jordan. *Int J Biol Med Res*., 2011; 2: 912–16.