

Prevalence of hepatitis B and hepatitis C among blood donors in Baghdad, August 2007-December 2008.

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Summary:

Background: Hepatitis is a disease of the liver caused by the infectious and non-infectious agents.

Patients & methods: A total of 600 blood donors attending blood bank at Baghdad city were included in this study, they were screened by Enzyme Immune sorbent Assay for detection of HBs Ag and anti-HCV, that confirmed by recombinant immunoblot assay. The possible influence of the various factors on the prevalence was analyzed too.

Results: From the total donors there were 37(6.2%) and 6(1.7%) positive for HBV & HCV respectively. Peak prevalence for HBs Ag was noticed in age groups (20-29) years.

Conclusion: Screening blood donors for both HBV and HCV is indispensable for safe blood transfusion. In general, formulation of safe blood transfusion policy and implementation of standard screening protocols should be practiced.

Keywords: Prevalence of hepatitis B, C.

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Introduction:

Hepatitis is a term used to describe a nonspecific liver inflammation [1,2]. Until now, eight types of hepatitis are known: A, B, C, D, E, F, G and TT. Hepatitis B and C caused similar types of liver infection, which are mostly spread through blood and blood products. The possibility of hepatitis transmission through blood and blood products was known since 1950 [3,4]. Hepatitis B virus is a DNA virus from the Hepadnaviridae family. Hepatitis C virus is an RNA virus with a lipid coat similar to the Flaviviridae family. Infected persons or asymptomatic carriers with viral hepatitis B and C are only reservoirs of infection [5,6]. Researches have shown that the world prevalence of HBs Ag carriers is from 0.1% to 20% with a high percentage in tropical countries [2,6]. The prevalence of anti-HCV antibody is variable in different world countries, with a high number reported from Egypt.

Patients and methods:

A total of 600 blood donors attending the blood bank and center of Gastrointestinal Hepatic Disease in the period extending from August 2007-December 2008. They were screened for HBs Ag and anti-HCV by using a third-generation enzyme immunoassay (EIA) and a third-generation recombinant immunoblot assay (RIBA) for confirmation of the presence of anti-HCV using commercially available kits (IHBSG u301, USA, 2003). The donor age range was from 17-60 years (568 males, 22 females). The socio-demographic characteristics, age, sex, marital status, history of hepatitis, history of repeated blood donation, and the life-time number of sexual partners were assessed using a structured questionnaire. Odds ratio and P-value were used to assess the strength of the association and significance.

Results:

Table 1 shows the characteristics of the study subjects in which 568 blood donors were males and 22 of them were females. The median age of the blood donors was 25 years, and the highest blood donation age group was between 19 to 28 years (357/600 (59.5%)) followed by 29 to 38 years of age (113/600 (18.8%)). One hundred ninety-six (32.7%) blood donors were married, 374 (62.3%) single, and 30 (5%) divorced. Daily laborers accounted for 54.2% (271/600) followed by farmers 24.5% (145/600), students 21.8% (131/600) and merchant 3.3% (20/600), other 5.5% (33/600).

Table 1: Socio-demographic characteristics of blood donors in Baghdad.

Variable	Frequency	
	Number(n)	Percent (%)
sex		
Male	568	96.3
Female	22	3.7
Total	600	100
Age group		
>18	64	10.7
19-28	357	59.5
29-38	113	18.8
39-48	49	8.2
59-68	11	1.8
69+	1	0.2
Total	600	100
Marital status		
Married	196	32.7
Single	374	62.3
Divorced	30	5.0
Total	600	100
Occupation		
Student	131	21.8
Farmer	145	24.5
Daily laborer	271	54.2
Merchant	20	3.3
Other	33	5.5

The overall prevalence of HBs Ag, HCV anti-body among the blood donors was 6.2% (37/600), 1.7% (10/600) respectively (Table 2)

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Table 2: Prevalence of HBV, HCV among blood donors in Baghdad.

Hepatitis Markers*	Positive No%	Negative No%	Total
Hepatitis B	37(6.2%)	563(93.83%)	600
Hepatitis C	10(1.7%)	590(98.33%)	600

*: Hepatitis markers

HBs-antigen

HCV-antibody

P<0.05 significant

Table (3) shows that the age distribution of HBs Ag and anti-HCV among blood donors. The highest prevalence of HBs Ag was seen in the age group (19-28)years 23/37 (62.2%) and lowest prevalence 2/37 (5.4%) was found in the age group of (39-48)years. Anti-HCV was detected in

5/10(50%), of age group (19-28), while in the age group 29-38 it was only 2/10(20%). Single blood donors were more positive for HBs Ag (75.7%) (28/37) compared to the married ones (21.6%)(OR=1.9; 95% CI=0.8-4.6). However, anti-HCV positivity was higher for the married blood donors (6/10)50% compared to the single and the divorced blood donors (3/10)30% and (1/10)10% respectively. Daily laborers accounted for 62.2% (23/37) for the HBs Ag positivity followed by farmers and students 13.5% (5/37) for each. Anti-HCV prevalence for farmers was (7/10)70% followed by daily laborers (3/10)30%, merchants and other occupational groups were negative for HCV anti-body (Table4).

Table3: HBV and HCV prevalence among different age groups of blood donors in Baghdad

Age Group	HBV			HCV		
	Positives No%	Negatives No%	[OR(95%CI)]	Positives No%	Negative No%	[OR(95%CI)]
<18	3(8.1%)	61(10.83%)	1.00	0	64(10.84%)	1.00
19-28	23(62.2%)	334(59.32%)	42.0 (0.38-6.05)	5(50%)	352(59.7%)	0.89 (0.1-20)
29-38	9(24.3%)	104(18.5%)	5.11 (0.41-8.6)	2(20%)	111(18.81%)	1.14 (0.08-32)
39-48	2(5.4%)	47(6.35%)	0.87 (0.1-6.7)	1(10%)	48(18.14%)	1.3 (0.0-49)
49-58	0	11(1.95%)	1.85 (0.0-24)	2(20%)	9(1.5%)	14 (0.8-439)
59-68	0	1(0.18%)	20.33 (0.0-10.7)	0	1(0.17%)	63 (0.0-15148)
Total	37 (6.2%)	563 (93.8%)		10 (1.7%)	590 (98.3%)	

Table 4: Marital status and occupation versus HBV and HCV prevalence among blood donors in Baghdad

Variables	HBV		OR (95% CI)	HCV		OR (95%ci)
	Positives No%	Negatives NO%		Positives NO%	Negatives NO%	
Marital Status	8(21.6)	188 (33.4)	1.00	6 (50)	190 (32.2)	1.00
Married						
Single	28(75.7)	34 (61.5)	1.90 (0.81-4.63)	3 (30)	371 (62.9)	0.26 (0.05-1.16)
Divorced	1 (2.7)	29 (5.2)	0.81 (0.07-1.42)	1 (10)	29 (4.9)	1.09 (0.03-1.13)
Total	37 (6.2)	563 (93.8)		10 (1.7)	590 (98.3)	
Occupation						
Student	5 (13.5)	126 (22.4)	1.00	0 (0.0)	131 (22.2)	1.00
Farmer	5 (13.5)	140 (24.6)	0.9 (0.22-3.69)	7 (70)	138 (23.4)	6.64 (0.81-1.45)
Daily worker	23 (62.2)	248 (44.0)	2.34 (0.82-7.19)	3 (30)	268 (45.4)	1.47(0.13-37)
Merchant	3 (8.1)	17 (3.0)	4.45 (0.76-24.4)	0 (0.0)	20 (3.4)	6.55(0.2-52)
Others	1 (2.7)	36 (6.0)	0.7 (0.03-6.52)	0 (0.0)	33 (5.6)	3.4 (0-150)
Total	37 (6.2%)	563 (93.8%)		10 (1.7%)	590(98.3%)	

(Or) odd ratio

P<0.05 significant (S)

p>0.05 Non significant (NS)

Discussion:

The overall prevalence of HBs Ag and anti-HCV among blood banks was 6.2%,1.7% respectively. This finding was higher than that previously reported among blood donors at Baghdad (2000) 2.48% [24], Al-Tameem (2001) 1.76% [12], Kirkuk city (1996) 3% [6] and was lower than that reported in Salahadeen province (1996) 7.2% (7). The finding is comparable with other studies in neighboring countries, Saudi Arabia (2000) [8], Jordan (1986) [9], Syria (1984) [11], Iran (1975) [12] and in Turkey (1996) [18], in which the rate of HBs Ag were 3.4%, 4.3%, 5.5%, 4.7%, 6.9% respectively. The rate of anti-HCV was 10 (1.7%). It is higher than that reported previously in Baghdad (2000) 1.2% [24], Al-Tameem (2001) 0.7% [12]. It is similar to that reported in Kirkuk city (1996) (1.6%) [6], several preliminary studies indicate that the prevalence of anti HCV among blood donors varies world wide, being very low 0.04 – 0.09% [14]; in the UK & Scandinavia to low 0.15-0.5% in the USA. [15]. A high prevalence of 8.8% in Indonesia [16], 4.1% Pakistan [17] and 14% in Egypt [18]. In this study we found that the peak incidence of HBV prevalence at age group 20-29 years, a significant positive association between age with prevalence of HCV is similar to the that other reports. [7,8]. However in Saudi Arabia a peak at fourth decades was reported [9]. The positive association of prevalence of anti-HCV with age may be due to multiple exposures during life. The anti-HCV anti-body prevalence was higher in farmers and daily-based workers in Baghdad blood donors (7/10) and (3/10) respectively. This is supported by a study conducted earlier among 238 patients [19] with HBV-infection; in which anti-HCV anti-bodies were present in only one patient. Thus, HCV infection was uncommon compared to HBsAg positive blood donors. Some authors found an inhibition of hepatitis B virus by hepatitis C virus [20,27]. Household or sexual exposure to a contact who had hepatitis were found as a significant risk factors for acquiring HBV, HCV [25]. A prevalence of 6.2% HBs Ag and 1.7% anti-HCV might warrant the introduction of screening of all blood donors for hepatitis viral markers (HBV and HCV). The main route of HCV transmission is parenteral and most infected individuals are either blood recipients or intravenous drug users [26]. Transfused blood is now screened for HCV in most countries, this has virtually eliminated post-transfusion of HCV [25,26]. Further studies of the prevalence of other parenteral risk factor such as frequent past-injection treatment among blood donors are needed, in addition there is an obvious need for sensitive screening tests for every blood-borne virus that threatens the safety of blood, especially screening, to identify carriers of HCV, and the increased awareness of medical and paramedical personnel regarding the risk of transmitting the disease iatrogenic ally. Furthermore the need to document

the risk of nosocomial transmission and the importance of control procedures, and highlights the crucial role of molecular sequence based phylogenetic analysis of cloned viral isolates in the investigation of HCV infection. known to contribute considerably to the spread of HBV infection.

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