

## Prevalence of hepatitis B and hepatitis C among blood donors in Al-Anbar governorate

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### Summary:

**Background:** In Iraq many reports described the prevalence of HBsAg and anti-HCV among blood donors. No previous study was reported in Al-Anbar governorate. Therefore, this work was carried out to study the prevalence of HBsAg and anti-HCV among blood donors in Al-Anbar governorate.

**Materials and methods:** A total of 1978 healthy male blood donors attending blood bank at Al-Ramadi city were included in this study. They were screened by Enzyme Immunosorbent Assay for detection of HBsAg and anti-HCV. A questionnaire form was filled for each donor by direct interview. The information included, demographic data, history of previous jaundice, history of hepatitis and drug addiction.

**Results:** From the total donors there were 49 (2.48%) and nine (0.45%) positive for HBsAg and anti-HCV, respectively. Peak prevalence for HBsAg was noticed in the 20-29 years age group. A positive association between prevalence of anti-HCV with age was observed. Kurd donors had a higher prevalence of both viral markers than Arab donors.

**Conclusions:** Blood donors still represent a high risk group for HBV and anti-HCV in Al-Anbar governorate. Therefore, vaccination should be vigorously applied and dynamic application of screening tests for HBV and anti-HCV.

**Key words :** prevalence , HBV, HCV, blood donor , Al-Anbar .

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### Introduction:

Viral hepatitis caused by hepatitis B virus (HBV) and hepatitis C virus (HCV) constitutes a major economic and public health problem in the world due to the high rate of morbidity, mortality and development of chronic carrier states.<sup>1-3</sup>

In Iraq , some workers described the prevalence of HBsAg and anti-HCV among blood donors<sup>4,8</sup>. In Al-Anbar governorate, there was no previous attempt to study the prevalence HBV and HCV among blood donors. Therefore, this study was carried out to determine the prevalence of HBsAg and anti-HCV among blood donors in Al-Anbar governorate.

#### Materials and methods:

A total of 1978 blood donors attending blood bank in the period extending from first August 2004 to last July 2005 at central public health laboratory in Al-Ramadi city were included in this study. They were screened for HBsAg and anti-HCV by using a third generation enzyme immunosorbent assay (EIA), and a third generation recombinant immunoblot assay (RIA 111) for confirmation of the presence of HBsAg and anti-HCV using commercially available kits. All blood donors were healthy males with no history of previous jaundice, hepatitis and drug addiction and most of them were first time donors and 4.6% of them were Iranian Kurd donors living in Al-Ramadi city for the last 20 years. The blood donors age was 17-60 years with a mean of  $35.3 \pm 10.6$  years.

A questionnaire form was filled for each donor by a direct interview. The data requested included demographic data, history of previous jaundice, hepatitis and drug addiction.

Chi - square and Yate's correction were used to determine the association between the prevalence of HBsAg and anti-HCV and the independent variables. P value less than 0.05 was considered as statistically significant.

#### Results:

Out of the total sample, 49 (2.48%) donors were positive for HBsAg and nine (0.45%) donors were positive for anti-HCV. **Table 1** shows the age distribution of HBsAg and anti-HCV positive donors. The highest prevalence of HBsAg (3.4%) was seen in the age group 20-29 years and the lowest prevalence (1.1%) was found in the age group 40-49 years. The prevalence of anti-HCV increases with age. The highest prevalence of 1.6% was seen in the  $\geq 50$  age group.

**Table 2** shows the prevalence of HBsAg and anti-HCV among blood donors according to ethnicity. There was statistically significant higher prevalence of HBsAg (6.5%) and anti-HCV (3.3%) among Kurd donors than Arab donors (2.2% and 0.3%) for HBsAg and anti-HCV, respectively, ( $p < 0.05$ ).

#### Discussion:

This study revealed that the prevalence of HBsAg among blood donors was 2.48%. This finding was higher than that previously reported among blood donors at Baghdad<sup>6</sup> (1.59%) and Al-Tameem province<sup>7</sup> (1.76%) and was lower than that reported in Salahadeen province<sup>4</sup> (7.2%) and Kirkuk city<sup>5</sup> (3%). It is lower than that

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reported in neighboring countries, Saudi Arabia<sup>9</sup>, Jordan<sup>10</sup>, Syria<sup>11</sup>, Iran<sup>12</sup>, and in Turkey<sup>13</sup>, in which the rates of HBsAg were 3.4%, 4.3%, 5.5%, 4.7% and 6.9% respectively. On other hand the finding is similar to other studies<sup>14-16</sup>.

The rate of anti-HCV was 0.45%. It is similar to that reported in other studies<sup>17-19</sup>. It is higher than that reported previously in Baghdad<sup>6</sup> (0.27%) and Al-Tameem province<sup>7</sup> (0.07%), but was lower than that reported in Salahadeen province<sup>4</sup> (0.67%) and in Kirkuk city<sup>5</sup> (1.6%). Several preliminary studies indicate that the prevalence of anti-HCV among blood donors varies worldwide, being very low 0.04 - 0.09% in the UK and Scandinavia<sup>20</sup> to low 0.15 - 0.5% in the USA<sup>18</sup>, 2.3% in Korea<sup>21</sup> and 2.2% in Saudi Arabia<sup>22</sup>. A high prevalence of 3% in Indonesia<sup>23</sup>, 3.5% in Japan<sup>24</sup>, 4.1% in Pakistan<sup>25</sup> and 14% in Egypt<sup>26</sup>. The low prevalence rate for HBV and HCV reported in this study may be due to the control measures in Iraq (vaccination against HBV, routine screening tests for HBsAg and anti-HCV, disposable syringes and health education ...etc). Environmental, social, educational factors and life style play a major role in the variation in the prevalence of HBsAg and anti-HCV in blood donors of different countries<sup>2</sup>.

The finding that a peak in the age distribution of HBV prevalence at 20-29 years and a significant positive association between age with prevalence of HCV is similar to that other reports<sup>4,9,27</sup>. However, in Saudi Arabia a peak at fourth decades was reported<sup>22</sup>. The positive association of prevalence of anti-HCV with age may be due to multiple exposures during life.

In addition, this study revealed that the prevalence of HBsAg and anti-HCV was significantly higher among Kurd than Arab donors. It is consistent with that of Mehdi et al<sup>9</sup> who reported variations in prevalence rates among different nationalities. This variation may be due to the fact that immune response of Kurds to HBV and HCV differ from that of Arabs. Living conditions, socioeconomic circumstances, environmental, racial factors and genetic predisposition may affect the immune response.

It can be concluded from this study that blood donors represent a high risk group for HBV and HCV infection. Therefore, vaccination against HBV should be vigorously applied and enthusiastic application of screening tests for HBsAg and anti-HCV.

**Table 1 : Age distribution of HBsAg and anti-HCV positive blood donors.**

Age group	Total No. examined	HBsAg +ve		Anti-HCV +ve	
		No.	%	No.	%
<20	193	4	2.1	0	0.0
20-29	781	27	3.4	2	0.26
30-39	574	13	2.3	3	0.52
40-49	368	4	1.1	3	0.81
≥50	62	1	1.6	1	1.6
Total	1978	49	2.48	9	0.45

**Table 2 prevalence of HBsAg and anti-HCV among studied blood donors according to ethnic group.**

Group	Total examined	HBsAg +ve		Anti-HCV +ve	
		No.	%	No.	%
Kurd	92	6	6.5	3	3.3
Arab	1886	43	2.3	6	0.32
Total	1978	49	2.48	9	0.45

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