The Frequency of HBsAg in Blood Donors in Tikrit City

Israa Hashim Saadoon
Department of Microbiology, College of Medicine, Tikrit University, Iraq.

Abstract

Hepatitis B virus (HBV) infection is one of the major global human health problems. The spectrum of HBV- related disease ranges from acute hepatitis B, asymptomatic HBV carrier, and chronic hepatitis to rarely fulminant hepatitis. Hepatitis B surface antigen (HBsAg) is often used as the serological marker to screen for HBV infection. This study was performed in the central blood bank in Tikrit city for the period from 1st July to 30th April 2002 and included 1300 blood donors to evaluate the prevalence of HBsAg and association of it with the age group and blood group. The study demonstrated that the overall prevalence of HBsAg was 2.6% (34 out of 1300). The highest frequency of HBsAg was found in the blood group O, followed by blood group B, AB and blood group A. Most cases of HBsAg accumulated at the age group 30- 39 year and the age group 20-29 year.

Key words: HBsAg, blood donors, ELISA.

Introduction

Hepatitis B virus (HBV) was recognized originally as the agent responsible for serum hepatitis. The incubation period is variable, ranging from 1- 6 months (1). In most instances, HBV is not cytopathic, the host immune response directed to infected hepatocyte is vital to produce liver damage and viral clearance (2).

The incubation period of hepatitis B is 50–180 days, with a mean between 60 and 90 days. It appears to vary with the dose of HBV administered and the route of administration, being prolonged in patients who receive a low dose of virus or who are infected by a nonpercutaneous route (1). Most adults who develop acute hepatitis B virus infection recover fully within 6 months. The mortality rate from hepatitis B has been reported to be as high as 10 % (3). Chronic infection with HBV estimated to affect 400 million persons and the WHO estimates that HBV results in 1-2 million death every year (4). Screening of blood donors has greatly reduced the occurrence of hepatitis B after blood transfusion (5). The aim of this study was to evaluate the frequency of HBsAg in blood donors in Tikrit city and its relation with blood group and age.

Materials and Methods

The study included 1300 blood donors who attended to the Central Blood Bank in General Teaching Hospital in Tikrit city for the period from 1st July to 30th April 2002. Blood sample (5 ml) was collected from each blood donor in separated plastic disposable tube; it was left to stand at room temperature (20- 25°C) to allow it to clot, then the serum was obtained by centrifugation 10000 rpm for 5 minutes and stored at -20°C until the time of test. Detection of HBsAg by ELISA test was done for all blood

donors. Each positive result was retested to exclude the possibility of false positivity.

Statistical Analysis

The statistical analysis was performed using chi-square test. P values less than 0.05 were considered statistically significant.

Results

The present investigation demonstrated that the overall of HBsAg in blood donors was 2.6% (34 out of 1300)...Table 1. Most blood donors were males so the difference in the frequency of HBsAg between males and females could not be evaluated.

The current work showed that the highest rate of HBsAg was found in blood donors with blood group O (3.1%), followed by those with blood group B (2.8%). X^2= 15.3621. The p-value is .001532. The result is significant at p< .05... Table 2.

Concerning HBsAg and age group, the highest frequency of HBsAg was found in blood donors within the age group 30-39 yr.(3.3%), followed by those within the age group 20-29 yr. (2.4%). X^2= 1.8446. The p-value is .764308. The result is not significant at p < .05... Table 3.

Discussion

The current study revealed that HBsAg was found in 2.6% (34 out of 1300) of blood donors. This result is slightly fewer than that in Mosul where the overall prevalence rate of HBsAg was found to be 3.9% among healthy blood donors (6).

In Saudi Arabia, HBsAg was found in 6.62 % of blood donors (7) and 31 % in hospital health care workers (8). The prevalence of hepatitis viruses causing clinical hepatitis in children showed 21 % for hepatitis B virus, 2 % for double infection of hepatitis B and hepatitis C virus (9).

In Japan, HBsAg was found in 1 % of voluntary blood donors (10), while in China; it was found in 4.6 % of them (11). In the southern Brazilian Amazon, HBsAg was found in 3.9 % (12). In Russia, the prevalence of HBsAg was 11.8 % in Saberian Natives (13). In Thailand, the occurrence of HBV was 0.5 % in blood donors (14). In healthy Nepales males, HBsAg was detected in 4 % of subject studied (15). The prevalence of chronic HBV infection is lowest 1 % in North America, Australia and New Zealand (16).

The present study showed that the highest frequency of HBsAg was found in persons with blood group O followed by those with blood group B, blood group AB, and blood group A. The relation was significant (P< 0.05). A previous study was done in Salahdeen province showed that hepatitis B was the highest among those who were of blood group O followed by group A, group B and blood group AB (17). A study was performed in Mosul demonstrated that HBsAg was detected in individuals with blood group A or O more than in individuals with blood group B or AB (6).

The present study showed that the highest rate of HBsAg was found in the age group 30- 39 years followed by 20 29 years, less than 20 years and more than 49 years. However the result

was non-significant (P> 0.05).This result is in agreement with a previous study was carried out by Kaitano *et al* (17) which revealed that the peak incidence of hepatitis B and hepatitis C occurred at ages 20- 40 years. Another study was performed in Mosul confirmed that most positive cases for hepatitis B virus accumulated at persons of ages between 18- 38 years. Zuckerman (18) mentioned that individuals who aged 15- 24 years are at the highest risk of HBV infection.

In German population, the percentage of HBsAg carriers showed a maximum of 1.12 % in the 41-50 years- old individuals and decreased significantly in the older age group (19).

However Ohba *et al* (13) found that the prevalence of HBsAg in subjects under 50 years of age was significantly higher than that in those over 50 years old. A comparable result was obtained by Kalinin *et al* (20) who reported a decrease in HBV infection in the age group older than 50 years.

Conclusion

The current study revealed that HBsAg was found in 2.6% (34 out of 1300) of blood donors. The highest frequency of HBsAg was found in the blood group O, followed by blood group B, AB and blood group A. The relation between HBsAg-seropositivity and blood group was significant at P< 0.05. Most cases of HBsAg accumulated at the age group 30- 39 year and the age group 20-29 year. The relation was non-significant (P> 0.05) regarding HBsAg-seropositivity and age.

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Table 1: Frequency of HBsAg among Blood Donors.

No. of blood donors	HBsAg +ve	
	No.	%
1300	34	2.6

Table 2: Distribution of HBsAg According to Blood Group.

Blood group	No. of blood donors	HBsAg +ve	
		No.	%
A	302	5	1.6
AB	106	2	1.8
B	574	9	2.8
O	318	18	3.1
Total	1300	34	2.6

X^2= 15.3621. The p-value is .001532. The result is significant at p< .05.

Table 3: Distribution of HBsAg According to Age Group.

Age group (yr.)	No. of blood donors	HBsAg +ve	
		No.	%
< 20	94	2	2.1
20- 29	504	12	2.4
30- 39	518	17	3.3
40- 49	109	2	1.8
49<	75	1	1.3
Total	1300	34	2.6

X^2= 1.8446. The p-value is .764308. The result is not significant at p < .05.