

# Prevalence of Hepatitis B and C among blood donors

Syed R. Mehdi, MD, Avinash Pophali, MD, Khalid A. Al-Abdul Rahim, DCP.

## ABSTRACT

**Objective:** Screening for hepatitis B and C is routinely carried out in the blood banks. The purpose of this study is to compare the prevalence of hepatitis B surface antigen and anti hepatitis C among Saudi and non-Saudi blood donors.

**Methods:** All the blood donors visiting King Fahad Specialist Hospital were screened by Enzyme Linked Immunosorbent Assay technique for hepatitis B surface antigen and anti hepatitis C. Donors with any history of jaundice in the past were eliminated from the study.

**Results:** Egyptians showed a very high prevalence of Hepatitis C. Saudis had a higher prevalence of hepatitis B compared to hepatitis C.

**Conclusion:** The prevalence of hepatitis B and C among Saudis of Qaseem region is low, while for Egyptians the results correspond to previous studies.

**Keywords:** Prevalence, hepatitis B surface antigen, anti hepatitis C.

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Hepatitis B (HBV) and C (HCV) are important public health problems involving 250 million (HBV) and 150 million (HCV) people worldwide. Hepatitis B is a DNA virus consisting of 3 particles, spherical, tubular and a dome particle.<sup>1</sup> Hepatitis C is an RNA virus which belongs to Flavivirus and Pestivirus<sup>2</sup> groups known to previously cause known Non-A Non-B Hepatitis (NANBH). Serological testing by Enzyme Linked Immunosorbent Assay (ELISA) and Radio Immuno Assay has revealed the presence of hepatitis B surface antigen (HBsAg) and anti HCV in patients developing chronic active hepatitis, cirrhosis of the liver and hepatocellular carcinoma (HCC).<sup>3</sup> The mode of transmission for both types of hepatitis is mainly parenteral. The transfusion recipients of blood and blood-products<sup>4</sup> and intravenous drug abusers are at high risk. Nosocomial transmission<sup>5</sup> is another established mode of parenteral transmission. Non parenteral transmission has been reported in perinatal, sexual and sporadic forms.<sup>6</sup> The prevalence of HBsAg among blood donors ranges from near zero in some

of the western world to as high as 15% in some Asian and African Countries. In India it is reported as 3%.<sup>7</sup> Among Saudi blood donors, HBsAg prevalence was found to be 5% and in Filipinos 12%, in 1986,<sup>8</sup> but it has gradually reduced since then. Anti HCV prevalence has been recorded as very low 0.04 - 0.09% in the United Kingdom<sup>9</sup> and Scandinavia, to low 0.15 - 0.5% in the United States of America,<sup>10</sup> a high prevalence of 1% and 2% in Saudi Arabia,<sup>11,12</sup> 3% in Indonesia<sup>13</sup> and the Middle East,<sup>14</sup> and 3.5% in Japan.<sup>15</sup> A very high prevalence of 14% in Egypt,<sup>16</sup> and 26% from Cairo<sup>17</sup> has been reported.

**Methods.** The present study was conducted on healthy blood donors visiting the King Fahad Specialist Hospital, Buraidah, Kingdom of Saudi Arabia, from February 1995 to December 1997. Eleven thousand and seven male blood donors were screened for HBsAg by ELISA Technique using Antibody to HBsAg (Mouse Monoclonal), in a

From the Department of Laboratory Medicine, King Fahad Specialist Hospital, Buraidah, Qaseem, Kingdom of Saudi Arabia.

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Address correspondence and reprint request to: Dr. S. Riaz Mehdi, C-28, Medical Enclave, AMU, Aligarh 202002, India. Tel/Fax. +91 571 704149. E-mail: riaz\_mehdi@hotmail.com

peroxides (Horseradish) conjugate. It was a third generation kit obtained from ABBOTT Laboratories. Anti HCV was detected by ABBOTT HCV Enzyme Immuno Assay second generation kit. Both the tests were performed on the ABBOTT Quantum II ELISA Reader. The other serological tests carried out on the sera of the blood donors were Human Immunodeficiency Virus (HIV) 1 & 2, Trepanoma Pallidum Hemagglutination Assay and Human T Cell Lymphotropic Virus - Type 1. All the donors were screened thoroughly on the basis of history and physical examination. Donors with any history of jaundice in the past were totally deferred. All the blood donors in our study were healthy males with no signs and symptoms of any illness and no history of drug intake in the recent past. Many of them were first time donors. The age criteria of 18-60 years for blood donors were routinely followed. The donors were classified according to age into 5 groups starting from 2nd decade of life to the 6th decade. The age groups were <20; 21-30; 31-40; 41-50; and >50. Apart from local Saudis, 8 other nationalities were included in the study, whose numbers were significant. These were Egyptians, Sudanese, Syrians, Turkish, Filipinos, Indians, Pakistanis and Bangladeshis.

**Results.** The total number of cases found positive for HBsAg was 378 and for anti HCV was 403. The number of positive cases in each age group and their percentage is presented in Table 1. The prevalence of hepatitis B increases with age. The lowest prevalence of 2% was recorded in the <20 age group and the highest prevalence of 5% was seen in the >50 age group. The lowest prevalence of anti HCV (0.5%) was found in the <20 age group and the highest prevalence (8%) in the 41-50 age group.

For nationality the distribution and percentage of positive cases for HBsAg and anti-HCV are shown in

**Table 1** - Number of HBsAg and Anti HCV positive cases - Age distribution.

Age Groups	No. of donors	HBsAg Positive	Percentage (HBsAg)	Anti HCV Positive	Percentage (HCV)
<20	1403	25	2.0	07	0.5
21 - 30	5746	203	3.5	144	2.5
31 - 40	3115	113	4.0	190	6.0
41 - 50	724	36	5.0	61	8.0
>50	19	01	5.0	01	5.0
<b>TOTAL</b>	<b>11007</b>	<b>378</b>	--	<b>403</b>	--
No. - number; HBsAg - Hepatitis B surface antigen; HCV - Hepatitis C virus.					

**Table 2** - Number of HBsAg and Anti HCV positive cases - Nationality distribution.

Nationality	No. of donors	HBsAg Positive	Percentage (HBsAg)	Anti HCV Positive	Percentage (HCV)
Saudi	8003	296	4.0	108	1.0
Egyptians	1609	37	2.0	265	16.0
Sudanese	288	10	3.0	07	2.0
Syrians	52	04	8.0	01	2.0
Turkish	28	02	7.0	0	--
Filipinos	128	06	5.0	02	1.5
Indians	391	08	2.0	07	2.0
Pakistanis	406	12	3.0	10	2.0
Bangladeshis	102	03	3.0	03	3.0
No. - number; HBsAg - Hepatitis B surface antigen; HCV - Hepatitis C virus.					

Table 2. In the present study, a very high prevalence of HBsAg was found among Syrians, Turkish and Filipinos. A high prevalence was observed among Saudis, Sudanese, Pakistanis and Bangladeshis. The nationalities which showed a low prevalence of HBsAg were Egyptians and Indians. A reversal of this trend was seen in the case of hepatitis C. The Egyptians showed the highest prevalence of anti HCV. A high prevalence was recorded in Bangladeshis, Pakistanis and Sudanese. Low prevalence in Indians and Filipinos was recorded. The Saudis showed the lowest prevalence and no anti HCV positive case was found in people of Turkish origin. All the other nationalities showed a lower positivity for anti HCV compared to HBsAg. Saudi blood donors reported a high positivity for HBsAg and a moderate positivity of anti HCV. Though the total number of donors of Syrians and Turkish origin were low, they showed a very high positivity for HBsAg and a low for anti HCV. Indians, Pakistanis and Bangladeshis reported a moderate positivity for anti HCV. The positivity of HBsAg in the people of the subcontinent almost matched that of anti HCV.

**Discussion.** The age group distribution in our study shows a peak for anti HCV prevalence in the 5th decade of life (41-50), while in a similar study Abdelaal et al<sup>12</sup> reported a peak in the 4th decade of life (30-39). The prevalence of HBsAg among Saudis and Filipinos in our study is lower compared to the prevalence reported by Ramia et al.<sup>8</sup> This can be attributed to the fact that a high awareness of hepatitis B & C has developed and a comprehensive vaccination program against hepatitis B has been implemented in Saudi Arabia. In the present study,

the Syrians and Turkish people show a higher prevalence of HBsAg in contrast to previous studies. The prevalence of HBsAg among Indian blood donors corresponds well with the observations of Chaudhri et al.<sup>7</sup> In case of anti HCV, the Saudis showed a lower prevalence in contrast with the findings of Abdelaal et al,<sup>12</sup> but only little higher than the overall prevalence mentioned by Faleh et al.<sup>11</sup>

In Saudi Arabia the prevalence of hepatitis B and C varies from region to region.<sup>8,11,12</sup> An extremely high prevalence of 16% of anti HCV amongst Egyptians in our study is in accordance with all the previous studies.<sup>11,12,16,17</sup> The prevalence of anti HCV among the blood donors of the Indian subcontinent in this study corresponds well with the observations of Narang et al.<sup>18</sup> It was observed that the immigrants from the Indian subcontinent are equally affected by both hepatitis B and C.

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