

*Report*

# Hepatitis B surface antigen and anti-hepatitis C antibodies among blood donors in the Islamic Republic of Iran

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**SUMMARY** We determined the prevalence rate of hepatitis B surface antigen (HBsAg) and anti-hepatitis C virus antibodies (anti-HCV) among 7897 healthy voluntary blood donors in Shiraz, Islamic Republic of Iran. Sera were examined for HBsAg and anti-HCV antibodies using a second-generation enzyme-linked immunosorbent assay. Positive sera for HBsAg were found in 85 (1.07%) of the individuals and anti-HCV antibodies were found in 47 (0.59%). We compared our results with those of other studies and conclude that the prevalence rate of HBsAg in our area has decreased in the last 2 decades; from being an area of high prevalence, it is now one with moderate-to-low prevalence. Since there are few reports on the seroepidemiology of hepatitis C in the Islamic Republic of Iran, we could not assess the changes in prevalence of hepatitis C.

## Introduction

The Islamic Republic of Iran has a large number of hepatitis B carriers. Hepatitis B surface antigen (HBsAg) is found frequently in this area as compared to the United States of America (USA) and Western Europe. Hepatitis C is also found in this area, but to a lesser degree. The carrier rate of HBsAg among the country's population has decreased in the past 2 decades, but data on hepatitis C are limited. The purpose of our study was to determine the prevalence of HBsAg and anti-hepatitis C virus (anti-HCV) antibodies among voluntary blood donors in Shiraz, Islamic Republic of Iran.

## Subjects and methods

We studied 7879 healthy blood donors in Shiraz. These were individuals who voluntarily came to the Shiraz blood transfusion centre in a 45-day period from 15 August to 30 September 1998. In the Islamic Republic of Iran, healthy relatives of patients needing a blood transfusion are asked to donate blood in order to replenish blood supplies. This guarantees a high number of blood donors in the city, which has a population of 2 000 000 people. A sample of the donated blood was examined in our study.

Sera were studied for HBsAg and anti-HCV antibodies using a second generation

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Received: 01/11/99; accepted: 27/04/00

enzyme-linked immunosorbent assay (ELISA). Positive samples were rechecked by Western blot. The results were compared with previous reports in the country that used similar methods, using a chi-squared test.

## Results

Positive sera for HBsAg were found in 85 (1.07%) individuals. Comparing the results to a report by Amini et al. (2.49%), the prevalence rate of HBsAg was significantly lower in our study ( $P < 0.001$ ) [1].

Anti-HCV antibodies were found in 47 people (0.59%) in the study group. Compared to the rate of anti-HCV antibodies among a control group in the study by Ebrahim-Pour et al. (0.97%), no significant difference was found ( $P = 0.62$ ) [2].

## Discussion

In 1977, Tabarestani et al. tested the sera of 100 asymptomatic healthy control individuals and 1400 asymptomatic professional blood donors in Teheran and Mashhad, Islamic Republic of Iran, and found a prevalence rate of HBsAg of 1.0% and 2.1% respectively [3]. They used the agar gel diffusion method, the use of which has since been discontinued due to its insensitivity. In 1978, Ilarbour et al. reported the incidence of HBsAg among voluntary and commercial blood donors in Teheran to be 3.3% and 6.0% using radioimmunoassay (RIA) [4]. A similar result was found by Farzadegan et al. in 1979 using RIA to test 16 890 voluntary blood donors in Teheran [5]. At the same time, Borhanmanesh et al. reported an HBsAg prevalence rate of 2.10% among males and 0.40% among females in Shiraz using the insensitive technique of counterimmunoelectrophoresis [6]. Farzadegan et al. reported a prevalence

rate of 3.5% of HBsAg among voluntary blood donors in 1980, again using RIA [7]. There was no new report until 1993 when Amini et al. using ELISA reported a 2.49% prevalence of HBsAg among 4930 healthy individuals in the general population of Hamadan province [1].

Our study showed a 1.07% rate of HBsAg among healthy voluntary blood donors in the Islamic Republic of Iran. Compared to the report by Amini et al. [1], which was the only study using a similar method, the prevalence rate of HBsAg was significantly lower ( $P < 0.001$ ). It was also lower than reports using other techniques except the reports of Tabarestani et al. [2] and Borhanmanesh et al. [6], who used techniques with low sensitivity. It seems that the prevalence rate of HBsAg carriers in the country has decreased over the past 2 decades, and from being an area with high prevalence, it is now an area with moderate-to-low prevalence. Hepatitis B vaccine is now being administered in this area at birth, 1.5 months and 9 months of age, but it is too soon to attribute these results to the vaccination programme [8].

Hepatitis C is common and affects approximately 1%–2% of people in the USA and 0.44% of the Iranian population [9–11]. In a recent study by Ebrahim-Pour et al., 76.7% of 103 Iranian haemophiliacs tested positive for the anti-HCV antibody [2]. They used the ELISA technique. Their control group consisted of 103 healthy individuals, 1 of whom (0.97%) was positive for anti-HCV antibodies. Our study shows a prevalence rate of 0.59% for anti-HCV antibodies among healthy voluntary blood donors in the Islamic Republic of Iran. Since there are few reports on the seroepidemiology of hepatitis C in the country, no accurate judgement can be made about the changes in its prevalence. The result of our study was not statistically different from

the prevalence rate of anti-HCV antibodies in the control group of the study by Ebrahim-Pour et al. [2]. However, their study was conducted recently and encompassed a very small number of participants.

## Conclusion

The number of HBsAg carriers appears to be declining in our area. However, blood transfusion safety measures must be strict-

ly adhered to since there is still a 1% risk of hepatitis B transmission in addition to hepatitis C, human immunodeficiency virus, and other microorganisms that are transmitted via blood transfusion.

## Acknowledgement

We would like to thank the Shiraz Blood Transfusion Centre for providing assistance to collect the data.

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