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Research Article

Seroprevalence of hepatitis b in healthy blood donors at a teaching hospital of Kashmir (skims medical college and hospital Bemina, Srinagar): a restrospective study of five years

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ABSTRACT

Background: The study was conducted at the blood bank of the hospital. It was a retrospective analysis of blood donors over a period of five years from April 2008 to March 2013.
Methods: 5ml blood sample was collected from the blood bag of each donor. 2ml blood was kept for testing hepatitis B. Bioelisa HBsAg color (a 3rd generation ELISA kit) was used for the screening of donor blood for Hepatitis B. All reactive samples were tested again using the same ELISA kit. Samples showing repeat test reactivity on both methods were considered positive and were included for calculation of seroprevalence. Chi-square test was used to calculate the significance of difference between the groups.
Results: Total numbers of donors were 4880. Out of them, only 17 were Seropositive (Prevalence of 0.35% i.e. Low prevalence).
Conclusions: Kashmir region is one of the few regions from India where seroprevalence of HBsAg is low.

Keywords: Hepatitis B, Seroprevalence, SKIMS, Kashmir, Blood Donors, Five year study

INTRODUCTION

Hepatitis B is one of the commonest chronic infections in world population and a major public health problem, especially in developing countries, with approximately 30% of the world's population having serological evidence of either current or past infection with hepatitis B virus[1]. Countries are classified on the basis of endemicity of hepatitis B virus (HBV) infection using WHO guidelines into high (8% or more), intermediate (2-7%) or low (<2%) incidence countries.[1] While Western Developed nations have low prevalence of hepatitis B, affecting <1% of the population,[2] countries like Southeast Asia, China and Africa, have high prevalence of chronic Hepatitis B and over 10% of the population may be infected.[2] India comes under the intermediate to high endemicity category.

Among the five transfusions related infections, recommended for screening by WHO, Hepatitis B is the Commonest occurring infection in our set up, although Hepatitis C is common in western population. Hence all blood donors are screened for Hepatitis B world over. In India, the India's Drug and Cosmetics Act, mandates that every blood unit collected should be tested for hepatitis B virus infection.[1] Routine screening for this pathogen not only helps in determining the safety of blood and blood products, but also gives an idea of the prevalence of the disease in a given population.

Our study is aimed at determining the seroprevalence of Hepatitis B in the healthy blood donors from a teaching hospital in Kashmir.

METHODS

The retrospective study of five year (April 2008 to March 2013) was conducted at the blood bank of the hospital. During this five year we received 4880 donors. They were carefully selected for donation by trained Doctors according to AABB guidelines. Donors were divided into voluntary and replacement donors. The family members, friends or relatives of the patients were categorized as replacement donors. People who donated blood without expecting any favor in return were classified as voluntary blood donors. 5 ml blood sample was collected at the time of collection of blood from donor tubes of blood bag. 2 ml blood was kept for testing hepatitis B. Bioelisa HBsAg color (a 3rd generation ELISA kit) was used for the screening of donor blood for Hepatitis B. All reactive samples were tested again using the same ELISA kit. Samples which were positive on both tests were considered Hep B positive and were included for calculation of seroprevalence. Chi-square test was used to calculate the significance of difference between the groups.

RESULTS

Table 1: Seroprevalence of hepatitis B in blood donors according to age.

Age group in yrs	No. of donors	HBsAg positive	% age
18-25	844	3	0.36
26-35	2034	7	0.34
36-45	1054	3	0.28
>45	948	4	0.42
Total	4880	17	0.35

We recorded the following results.

Total number of people who attended as donors were 4880 (during five year study period). Maximum number of donors belonged to blood group O (40%) followed by blood group B (38%).

Majority (2034:- 41.7%) of donors belonged to the age group of 26-35 years.

Out of 4880 donors, only 10 of the seropositive donors were younger than 35 years (10 donors were 35 years of age or less, and 7 donors above 35 years) but this was not statistically significant (Table 1). All of the HBsAg positive donors were males, but statistically this was not significant.

4826 (98.9 %) were male, 54 (1.1%) were females (with male to female ratio of 92:1).

Literacy rate among donors was 85% and majority of them were from middle class (90%).

65% were government employees, 28% businessmen, and 7% were students.

10 out of 17 HBsAg positive donors were of low socioeconomic status. This difference was statistically significant (Table 2).

Table 2: Socioeconomic status in HBsAg positive donors.

Socioeconomic status	No. of donors	HBsAg positive	% age
Middle	4406	7	0.16
Low	474	10	2.11
Total	4880	17	0.35

DISCUSSION

The Prevalence of HBsAg (Hep B infection), varies from place to place.

In our study, among the 4880 blood donors screened, the seroprevalence of HBsAg in the valley of Kashmir was observed to be 0.35%. According to the WHO classification, this region of Kashmir qualifies as a low prevalence area (<2%). The lower prevalence may be a result of several factors. First, 85% of blood donors in our study were literate. The awareness about the disease and modes of prevention may be one reason for the low prevalence in HBV infection. Secondly, the implementation of strict pre-donation counselling and donor selection criteria help in excluding the possibly infected donors.

Table 3 shows the burden of hepatitis B in rest of India as found by the serp-prevalence studies. In comparison with the other parts of India, our study shows low seroprevalence of hepatitis B infection in Kashmir region. Gupta et al and Prakash Zacharias et al from India has also shown such low seroprevalence of HBsAg in blood donors.[3,4]

Table 3: Prevalance of HBsAg positive donors in different states of India.

Place	Prealence	References
New Delhi	2.23%, 2.76%	6,7
Kerala	3.1%	8
Mudarai	4%	9
Tamilnadu -Voluntary -Replacement	 1.37% 2.96%	10
Dehradun	0.99%	11
Kolkata	1.66	12
Kanpur	2.25%	13
Bangalore	1.86	14

The seroprevalence of HBV infection in this region of India could have been better studied in the non-prescreened samples and if more female donors had volunteered. There are chances of missing occult HBV infection, as some hepatitis B patients have absent HBsAg (escape mutants), which are identified by doing anti HBc.[5,6] These issues are the possible limitations of our study.

Although all the seropositive donors in our study were male but this predominance among males was no statistically significant because majority of our study population (blood donors) were male. However a significantly higher HBsAg seroprevalence in males is reported in other studies.[7,8]

In our study it was found that the majority of seropositive donors were younger than 35 years. Similar results were found in the study by Naila Kayani et al.[6]

However Rodenas et al and Patil AV et al reported the higher prevalence of HBsAg in donors older than 38 years.[9,10]

In our study, 10 of 17 HBsAg positive donors were of low socioeconomic status and 7 were from middle class. This predominance of seropositivity among low socioeconomic groups was statistically significant. Similar predominance among low socioeconomic groups was also seen by Nandi J et al.[6]

The higher prevalence of hepatitis B in lower socioeconomic groups may be due to poor hygienic status and lack of awareness about Hepatitis B infection and its spread.

Our study shows that the Kashmir region is one of the few regions from India where seroprevalence of HBsAg is low. Low socioeconomic groups and male donors showed a higher prevalence of Hepatitis B.

CONCLUSIONS

The conclusion of the study stresses on the importance of giving education of Hepatitis B infection and its spread through parenteral route to general population in order to curb this TTI. More important education of immunization is to be imparted to the population at risk in particular and general masses as well.

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