Abstract

Hepatitis B virus infection is a global health problem. About 350 to 400 million people are chronically infected with hepatitis B in the world. This is a retrospective study carried out in the department of transfusion medicine, Sher-E-Bangla Medical College Hospital, Barisal, during the period 1st January to 31st December 2007, among the blood donors who attended for blood donation. During this period 12,914 patients attended the department for transfusion. Among them 12,014 were male and 900 were female, age range was 18 to 60 years. Among them professional donors were 955, voluntary donors were 4494 and replacement donors were 7556 and HBsAg was positive in 0.42%, 0.87% and 1.11% respectively. Overall prevalence was 0.98%.

The aim of this study was to determine the prevalence of HBsAg among blood donors at Sher-E-Bangla Medical College, Barisal. Blood samples were collected from 12914 healthy donors. All donors were pre-screened by a questionnaire provided by the institution and passed the physical examination conducted by the medical officer in charge. Blood donors data and results of HBsAg were analyzed using the blood bank’s records. There was an overall prevalence of 0.98% of HBsAg(+) among all the tested blood donors. There was statistically significant difference between sexes. These results stress the importance of screening programs that must be implemented.

Introduction

Hepatitis has become an issue of global importance, and in Bangladesh, hepatitis B virus infections still remain a public health problem. Those who have the infection may develop chronic hepatitis eventually leading to cirrhosis and hepatocellular carcinoma. In a study done by Freeman, after 20 years of chronic hepatitis infection, an estimate of 5% of patients will develop cirrhosis if they are infected at an age younger than 40 years, and an estimate of 20% if infected at an age greater than 40 years. Several studies were conducted on the prevalence of hepatitis B and C in different regions. In a study conducted by the World Health Organization, an estimated 2 billion people have been infected with hepatitis B at some time in their life worldwide. The prevalence of hepatitis B infection varies in different regions. In Bangladesh, the prevalence of HBsAg(+) reported a value of 8% in IV drug users, and a value of 9.7% in commercial sex workers and 5.9% in truck drivers. In Mexico, a survey done showing a prevalence of hepatitis B virus to be 6.6% for the core antigen. In Taiwan, a community-based study conducted showed that 13% were HBsAg positive. Another study done among the residents in Tayside Scotland showed that 3.74% were HBsAg (+). This study aims to determine the prevalence of hepatitis B among healthy blood donors at Sher-E-Bangla Medical College. Values obtained will be compared with those previously reported local studies and with the prevalence rates of other countries. An estimated 350 – 400 million people in the World are chronically infected with hepatitis B virus. Approximately, 15-40% may develop serious sequelae, like cirrhosis and hepatocellular carcinoma within 5 years. Patients with hepatic inflammation and fibrosis are at the highest risk of complications. With a population of 150 million, Bangladesh has a high HBsAg positivity in adults (7.3-7.5%). Among patients with active viral replication, cirrhosis will develop in 15 to 20 within 5 years. For patients with cirrhosis, acute exacerbation can occur, the disease may progress and the incidence of hepatocellular carcinoma greatly increased. 70%–90% of hepatocellular carcinoma occur against background of cirrhosis. The yearly incidence of HCC in HBV injected persons without cirrhosis is 0.5%, whereas it is 2.5% in HBV infected patients with cirrhosis. The aim of treatment of cirrhotic patients is to stop the disease progression, hepatic decompensation hepatocellular carcinoma, spontaneous bacterial peritonitis and bleeding oesophageal varices. In Bangladesh most HBV infection occurs in childhood and younger populations with a high rate of inter familial HBV infection and the low rate of history of acute hepatitis. Chronic infection developed in 90% of neonates infected with hepatitis B, in 20% -50% of children below the age of 10 but in only 2%–7% of adults. At present, treatment option for CHB include antiviral agents and immunomod-
ulating agents. Antiviral agents include lamivudine, ade-
fovir, entecavir, telbivudine, tenofovir and immunomodu-
ating agents include IFN or peg IFN. This drugs not only
improves the clinical, biochemical and virological responses
but also improves the histological activity of liver.

Bangladesh is a densely populated country with about 150
million population were HBsAg positivity in healthy adult
population is 7.2–7.5%\(^1\). So, early detection of HBsAg
among the healthy population can save many lives from
dangerous complication of cirrhosis and hepatocellular car-
cinoma by proper treatment. The goal of this study was to
detect HBsAg positive donors and advised them for treat-
ment accordingly.

**Materials and methods**

This retrospective study was carried out in the department
of transfusion medicine, Sher-E-Bangla Medical College
Hospital, Barisal, during the period 1st January to 31st De-
cember 2007, among the blood donors who attended for
blood donation. During this period 12,914 patients attended
the department for transfusion. Among them 12,014 were
male and 900 were female, age range was 18 to 60 years.
Among them professional donors were 955, voluntary
donors were 4494 and family replacement donors were
7556. All donors were pre-screened by a questionnaire pro-
vided by the institution and passed the physical examina-
tion conducted by the medical officer. Blood donors data
and results of HBsAg were obtained using the blood bank’s
records of donors. The donors were stratified according to
gender and age groups. All of the 12914 population were
screened for HBsAg.

**Statistical tests**

The prevalence of HBsAg (+) were obtained. The data were
presented in percentages. Differences in prevalence be-
 tween gender were evaluated for significance using the stu-
dent’s t-test, while the analysis of variance was used in
evaluating significant difference among the age groups.

**Results**

From January 2007–31st December 2007 a total number of
12914 healthy blood donors at Sher-E-Bangla Medical Col-
lege, Barisal, Bangladesh were screened for HBsAg.
Among those screened for HBsAg, 12014 (93.04%) were
males and 900 (6.96%) were females. Among the 12914
donors, professional donors 955, voluntary donors 4494
and family replacement donors were 7556. HBsAg positiv-
ity was detected in 0.42%, 0.87% and 1.11%. The average
HBsAg positivity among the blood donors was 0.98%.
Among the male population, the prevalence was 1% while
that of the female population yielded 0.77%. Statistically,
there was significant difference on the prevalence of
HBsAg (+) according to gender. The female gender of
blood donors is only 6.96% of the total blood donors. Table
1 presents the prevalence of HBsAg (+). Among blood
donors according to gender.

**Discussion**

In this study, the prevalence of Hepatitis B infection ob-
tained was 0.98%. This is lower compared to the 7.2%–
7.5% HBsAg positivity in healthy adult population in
Bangladesh. There is decreasing trend of hepatitis B preva-
ience resulting from behavioral changes that have led to de-
creased transmission of infection. Due to public awareness
of HBV hepatitis known infected person did not participate
in the donation programme. Among the 12914 healthy
blood donors, only 900 (6.96%) were females compared to
12014 (93.04%). Males, statistical analysis showed signif-
ificant difference on hepatitis B prevalence according to gen-
der. Literature also mentions that hepatitis B infection is
more common in men than in women. Majority of the
donors who tested positive for hepatitis B were between
18-30 years old (60.23%) which is in keeping with the peak
prevalence occurring between ages 10 and 29. Prevalence
on the other hand was at 0.12%. From previous study done
in Cebu, reported prevalence was 10.38%\(^1\). Factors that
may contribute to the wide discrepancy include ethnic mix
of population, frequency of injection drug use and the pro-
portion of the population that engages in high risk behavior.
Infection is proportionally associated with high-risk sexual
behavior, taking into account the number of sexual part-
ners\(^3\). In other countries, several studies were also con-
ducted on the prevalence of hepatitis B in blood donors. In
Egypt, the prevalence of hepatitis B among blood donors
was 39.4%, while hepatitis C showed a value of 24.8%\(^20\).
These values were higher compared with the values ob-
tained in this study. A similar study was conducted in In-
doensia with a hepatitis B prevalence of 8.8%\(^18\), and in
Ghana, blood donor population showed that 15% were
chronic carriers of hepatitis B. The prevalence of HBsAg
positive among healthy blood donors is apparently high.
These results underlie the importance of screening pro-
grams in identifying blood-borne pathogens which pose a
threat to potential recipients. Most developing countries,
including Bangladesh are facing several threats to the safety
of their blood supply. Screening for hepatitis viruses should
be done most especially in high-prevalence areas, since up
to 20% of the collected blood might be unsafe\(^3\). Both hep-
atitis B and C are blood-borne pathogens which could be
transmitted by the parenteral route. Sometimes, infection
results in chronic asymptomatic carrier state for several
years before the development of symptoms. Hepatitis-in-
fected blood donors may not be aware of their condition and therefore, have the potential to infect patients. Follow up on blood donors who tested positive should also be done and if feasible to screen family members as they are at high risk for infection, due either to intrafamilial transmission or because they share risk factors for infection. Accurate identification and clinical management of both blood donors and family members would reduce the probability of transmission, preventing further dissemination in the community. In comparison to other studies, low prevalence rate in our study may be due to public awareness regarding hepatitis B virus and infected patients know that they showed not donate blood and did not participate in blood donation programme. Immunization against hepatitis B virus is currently included in the routine childhood immunization programme. This will eventually reduce the prevalence of viral hepatitis and its sequelae. Also, with the improvement of public health facilities, health education and safe blood transfusion prevalence of HBsAg will reduce further.

References


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<tr>
<td>HBsAge %</td>
<td>0.42%</td>
<td>0.87%</td>
<td>1.11%</td>
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Table 1. Prevalence of HBsAg (+) among the blood donors: