

Prevalence of Hepatitis B Virus Infection among Non-Vaccinated Health Care Workers of Cachar region of North East India

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ABSTRACT

Hepatitis B infection is one of the major public health problems globally and is the tenth leading cause of death. Transmission of HBV occurs through percutaneous or permucosal exposure to infective body fluids and hence it is a well-recognized occupational risk for the health care workers. Therefore, the present study was performed to determine the seroprevalence of HBsAg among non-vaccinated HCWs of Cachar region of North east India as well as to increase the awareness about the importance of hepatitis B vaccination.

Overall 553 non-vaccinated health care workers (HCWs) of age ranging from 18- 65 years from seven different hospitals of Cachar district were voluntarily enrolled in the study. Serum samples were collected and tested for the presence of HBsAg by ELISA.

Among the 553 samples tested, one sample was found to be positive for HBsAg which was obtained from the Grade IV staff of Silchar Medical College & Hospital, Silchar, who is cleaner in the surgery department. He reported the complication of persistent fever and was later diagnosed with acute hepatitis. While other 552 samples were found to be negative.

Although the incidence of HBV infection was low but this study surely depicts the low awareness of vaccination against HBV among the HCWs of this region, thus a lot of effort is required to spread the awareness regarding importance of vaccination and to get them vaccinated as well. All healthcare workers must undergo for HBV vaccination and should thoroughly follow the universal prophylactic measures to prevent exposure to HBV.

Keywords: Virus, Hepatitis, HBsAg, Vaccine, Healthcare workers

INTRODUCTION

Hepatitis B is a viral infection that attacks the liver and can cause both acute and chronic life threatening liver infection with high risk of cirrhosis and liver cancer. ⁽¹⁾ WHO has estimated around 2 billion people are affected worldwide with hepatitis B virus while 257 million people are living with hepatitis B surface antigen positive (<https://www.who.int/news-room/fact-sheets/detail/hepatitis-b>). The virus is transmitted through contact with the blood or other body fluids of an infected person, thus the health care workers (HCWs) deals with the 'high risk' for contracting the disease due to their occupation. HBsAg is found in several body fluids; amongst them the blood contains the highest HBV titers of all body fluids and is the most important vehicle for transmission in the healthcare setting. The probability of getting HBV infection is four times higher in HCWs as compared to general population and the risk of acquisition of HBV infection in non-vaccinated person after single exposure is 6-30%. ^(2,3) Interestingly, HBV is more infectious than HIV and can survive in dry blood for at least one week ⁽⁴⁾ which makes the situation worse by putting other personnel's at risk who are even not in direct contact with patients.

In most of the developing countries, despite the availability of Hepatitis B vaccination since 1981, large proportions of

Health Care Workers still remains non-vaccinated or are not aware of their vaccination status. (5) In India, about 1-10% of the healthcare workers are HBsAg positive, still there is low awareness among healthcare personnel about Hepatitis B vaccination and insufficient data is available on vaccination status of HCWs. Thus, the present study was performed to determine the seroprevalence of HBsAg among non-vaccinated HCWs of Cachar region of North east India and to provide data that might help to improve awareness of proper vaccination and preventive measures as well as in surveillance.

MATERIALS & METHODS

The present study was carried out between May 2016 - April 2017 by Department of Microbiology, Silchar Medical College & Hospital, Silchar. A total of 553 non vaccinated health care workers (HCWs) of age ranging from 18- 65 years from seven different hospitals of Cachar district were voluntarily enrolled in the study. Most of the health care workers and physicians are either exposed to HBV positive blood samples or to the patients due to their occupation and are thus in high risk zone. The samples were collected from the following seven different hospitals of Cachar district – Silchar Medical College & Hospital, Katigorah Modal Hospital, Fulbari M.P.H.C, S.M. Dev Civil Hospital, Red Cross Hospital, Medinova Hospital, Sonai Hospital.

The study was initiated after the approval from the Institutional Ethics Committee. Doctors/Medical students, nursing students, laboratory technician, laboratory attendant, Grade IV employees and office staff were included in the study. After written consent, participating health care workers were explained about the

objective of the study and a standardized questionnaire was used to collect information on demographics, medical history, profession and the HBV immunization status of all the participants.

From each participant, 10 ml of whole blood sample was collected using aseptic technique into sampling tubes for serological analysis. The samples were centrifuged for 3 min at 1650 g and the serum was stored in cryovials at -20°C . Seroprevalence of HBsAg was done by enzyme linked immune-sorbant assay (ELISA) using commercial kit (ErbaLisa Hepatitis B kit manufactured by Transasia Biomedicals LTD) according to the manufacturer's protocol. Tests were carried out by an ELISA reader (Robonik, India).

The test results were provided to each HCW which also included the interpretation of results. Microbiologists from SMCH were available to sort out the doubts and queries of the participants as well as to direct them in their treatment if required.

RESULTS

A total of 553 non-vaccinated HCWs from seven different hospitals of Cachar region actively participated in the study and were tested for HBV positivity. Majority of these participants were female 377/553 (68.1%) while male participants were 176/553 (31.8%). Among the 553 samples tested, only one sample was found to be positive for HBsAg (Table 1). The positive sample was obtained from the Grade IV staff who is 40 years old male and is cleaner in the surgery department of SMCH. All other samples showed negative results for HBV and results were given to each participant with the directions to get HBV vaccination at the earliest.

Table 1: HBsAg positivity among HCWs of Cachar, Assam

S.No.	Hospital	No. of non-reactive samples	No. of reactive sample	Total Sample
1	Silchar Medical College & Hospital	310	01	311
2	Katigorah Modal Hospital	25	-	25
3	Fulbari M.P.H.C	14	-	14
4	S.M. Dev Civil Hospital	40	-	40
5	Red Cross Hospital	64	-	64
6	Medinova Hospital	32	-	32
7	Sonai Hospital	67	-	67
		552	01	553

DISCUSSION & CONCLUSION

Despite the implementation of best infection control practices protocol (effective vaccine coverage, hand hygiene compliance, increased awareness of HCWs and more sensitive diagnostic techniques) HBV infection remains a significant occupational risk among HCWs. The present study targeted the detection of seroprevalence of HBsAg among non-vaccinated HCWs of Cachar region of northeast India. Since there is not much data available on the vaccination status of HCWs in India, this study might serve to improve awareness of proper vaccination and preventive measures.

This study reported that only one health care worker (0.18%) out of 553 tested, showed positivity for HBsAg. On further investigation with that individual, it was found that there was no evidence of blood transfusion or family history of HBV positive cases. But he admitted for certain needle prick injuries which he accidentally received while handling the hospital wastes, which were completely ignored by him due to lack of awareness. Similar to our study a study from Ethiopia reported 6% of medical waste handlers to be carrying Hepatitis B in their blood. ⁽⁶⁾ The prevalence of HBsAg among the HCWs in Indian studies has ranged from 1 to 10% ⁽⁷⁻¹⁰⁾ but our study shows that despite of low vaccine coverage the incidence of HBV infection was very low (0.18%) which could be due to good hygiene practices, highly sensitive testing of blood or other infective fluids.

We have encountered very low vaccine coverage among the HCWs depicting the poor awareness of HBV vaccination among the population of this region. Thus apart from our surveillance, microbiologists/technical staff from department of microbiology SMCH has also explained these HCWs about the role and importance of HBV vaccination as well as directed them for vaccination.

At present, there is an urgent need for well-planned and clear policies for HBV screening and vaccination in healthcare

workers, especially those who are at a greater risk of exposure to blood or other potentially infectious material. The National Viral Hepatitis Control Program launched by, Government of India on the occasion of the World Hepatitis Day, 28th July 2018 is one such initiative for the prevention and control of viral hepatitis in India by 2030. This program will also ensure the standard vaccination of health care workers and high-risk population against Hepatitis B.

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