

To Study of the Hepatitis B Virus Carrier Status in Health Care Workers at J.L.N. Medical College and Associated Group of Hospitals, Ajmer (Raj.)

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Abstract: ***Introduction:** Hepatitis B infection is a serious infectious disease of the liver which affects millions of people worldwide. Health care workers are at great risk. So, it is of immense significance to find out Hep.B carrier status among them. **Aims:** To determine of the Hepatitis B Virus carrier status in health care workers at J.L.N. Medical College and associated group of hospitals, Ajmer (raj.). **Material and methods:** This descriptive cross sectional study was conducted among health care workers employed at J.L.N. Medical College and associated group of hospitals Ajmer (Raj.). A total of 256 willing participants were randomly selected for this study. **Results and discussion:** The mean age of the studied participants was found to be 33.20 ± 8.82 yrs. 58.20 per cent were male and 41.80% were female in the studied population. 51.17% of the studied participants had been completely taken Hep. B vaccination. Needle stick injury was present in 41.80% participants. All participants were found to be negative for both HBs Ag and HBe Ag. 6.64% participants (N = 17) were positive in testing for Anti-HBc. Among these 6.64%, 58.52% (N = 10) were also positive for Anti-HBs Ag & 9 participants (3.51% of the total 256 participants) have completely taken Hep. B vaccination. 54.69% (N = 140) were found to be immune (positive Anti-HBs). **Conclusion-** From this study it can be concluded that only 51.17% of the HCWs had complete Hep. B vaccination; and because protective antibody level cannot be achieved with incomplete or no vaccination, awareness for vaccination and testing for Hep. B antibody titers among the HCWs is much needed. Every health care setting should introduce policies which would make it mandatory to check the Hepatitis B vaccination status, facility for HBV vaccination and their titre for all the staff. Also, at institute level, there must be well established policy for needle stick injury cases, to keep a record of them, treat them and follow up their antibody titer status.*

Keywords: Hepatitis B, vaccination, healthcare worker, antigen, antibody

1. Introduction

Hepatitis B infection is a serious infectious disease of the liver which affects millions of people worldwide. More than two billion people have been infected with Hepatitis B Virus (HBV) and about 350 million people are carriers of the virus.⁽¹⁻³⁾

According to the World health Organisation (WHO) approximately 257 million people are chronically infected with HBV infection and more than 7, 80,000 die every year due to its consequences.⁽⁴⁾

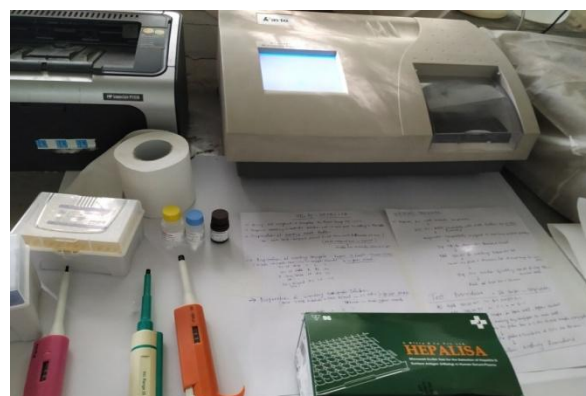
India is considered to have intermediate level of HBV endemicity with a prevalence rate of 2-8%.^(3,5) The number of HBsAg carriers in India has been estimated to be over 50 million.^(1,5)

Health care workers (HCWs) are at an increased risk of occupational exposure to HBV and the incidence is 2- 4 times higher than general population.

- Till date no data available on the HBV carrier status of HCWs in our hospital, hence this study is undertaken to estimate prevalence of HBV carrier status in HCWs in J.L.N. Medical College & associated group of hospitals.

2. Material and methods

- This descriptive cross sectional study was conducted among health care workers employed at J.L.N. Medical College and associated group of hospitals Ajmer (Raj.).
- Total 256 HCWs were included in this study. They belonged to the age group 20 – 60 years. Participants consisted of doctors, laboratory technicians, nursing staff and sanitary staff. 5 to 7 ml of blood sample was drawn by venepuncture from the median cubital vein from each participant under strict aseptic precaution in a plain vial. Serum was stored at -20 degree C for one month and for longer duration at -80 degree C until further testing. The sera were tested by ELISA method for the HBs Ag by using HEPALISA (J-Mitra) kits and HBe Ag, Anti-HBc, Anti-HBs by using BIONEOVAN ELISA kits made available by the department.



3. Observation & Results

The data were collected from 256 healthcare workers (HCWs). The mean age of the studied participants was 33.20 ± 8.82 years. The mean of their work duration was 7.87 ± 8.22 years. There were 58.20% male and 41.80% female. There were 45.70% doctors, 32.42% nursing staff, 18.36% lab technician and 3.52% ward sanitary staff among all studied participants. Needle stick injury was present in 41.80

percent participants and which was maximum among the nursing staff (50.5%) and minimum among the sanitization staff (4.6%). 51.17% of the studied participants have been completely taken Hepatitis B vaccination and 16.40% have incompletely taken Hepatitis B vaccination while 32.42% have no Hepatitis B vaccination at all. All 256 participants in this study were found to be negative for both HBs Ag and HBe Ag. For Anti-HBsAg 54.69% and Anti-HBc 6.64% were found positive.

Vaccination-Antibody status of the participants

		Anti-HBc (N=17)						Grand Total
		Positive			Negative			
		Anti-HBsAg positive	Anti-HBsAg negative	Total	Anti-HBsAg positive	Anti-HBsAg negative	Total	
Hep. B vaccination status	Yes	7	1	8	98	25	123	131
	No	2	5	7	10	66	76	83
	Incomplete	1	1	2	22	18	40	42
Grand Total		10	7	17	130	109	239	256

Interpretation of Hepatitis B serological tests of all Study Subjects

Serological test	Result	Number of study subjects (%)	Interpretation
HBsAg HBe Ag Anti-HBc Anti-HBs	Negative Negative Positive Positive	10 (3.91%) 7 (N) had complete vaccination	Immune due to Hepatitis B vaccination or remote infection
HBsAg HBe Ag Anti-HBc Anti-HBs	Negative Negative Positive Negative	7 (2.3%) 1 (N) had complete vaccination	1. False positive Anti-HBc, therefore susceptible 2. Window period 3. Resolved infection with low titer of Anti-HBs 4. Occult HBV infection (low levels of HBsAg)
HBsAg HBe Ag Anti-HBc Anti-HBs	Negative Negative Negative Positive	130 (50.78%) 98 (N) had complete vaccination	Immune due to Hepatitis B vaccination or remote infection
HBsAg HBe Ag Anti-HBc Anti-HBs	Negative Negative Negative Negative	109 (42.58%) 25 (N) had complete vaccination	1. All susceptible 2. Desired titer of Anti-HBs not achieved in vaccinated participants

4. Summary & Conclusion

- Since all participants were found to be negative for both HBs Ag and HBe Ag, so they are all non-carrier and non-infectious. 6.64% participants (N = 17) were positive in testing for Anti-HBc. Among these 17 participants, 10 were also positive for Anti-HBs Ag. Overall 54.69% (N = 140) HCWs were found to be positive for anti-HBs while 45.31% (N = 116) were found to be negative, so they (n=116) need for complete HBV vaccination
- In the present study, all participants were found to be negative for “both HBs Ag and HBe Ag”. So, we conclude that carrier status of Hepatitis B among HCWs at J.L.N. medical college was found nil at the time of study.
- From this study it can be concluded that only 51.17% of the HCWs had complete hepatitis B vaccination, so awareness for vaccination and testing for hepatitis B antibody titer among the HCWs is much needed.

5. Future Scope

Every health care setting should introduce policies which would make it mandatory to check the Hepatitis B vaccination status, facility for HBV vaccination and their titer for all the staff.

Also, at institute level, well established policy for needle stick injury cases, to keep a record of them, treat them and follow up their antibody titer status needs to be reviewed and strengthened.

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