ORIGINAL ARTICLE

PREVALENCE OF HEPATITIS B IN TRIPURA: A COMMUNITY BASED STUDY

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ABSTRACT: INTRODUCTION: Hepatitis B is a global health problem. Among the South East Asian countries India is in intermediate zone of prevalence I.e. 2 to 5 %.[1] In the state of Tripura the prevalence of Hepatitis B among hemodialysis patients is 7.3%[2] and among voluntary blood donors it is 1.2%.[3] The present study is aimed to assess the prevalence of HBV infection in Tripura at community level in particular among the different ethnic communities prevailing in this region. **METHODS:** A cross sectional study at community level has been done. Total 6202 samples have been collected from healthy individual above 10 years of age and a 1:4 sampling of household done. Serological marker of HBs Ag was done by ELISA.**RESULTS:** Prevalence of HbsAg sero-positivity was 3.6% (95%CI 3.14 - 4.06) at community level of Tripura. A higher prevalence was found in males than females which was 4.5% (95%CI 3.77-5.23) & 2.65% (95%CI 2.08 – 3.22) respectively. The prevalence of Hepatitis B was found higher among tribal community than non-tribal community which was 5.3% (95%CI 4.49 – 6.10) and 1.97%(95%CI 1.49 – 2.45) respectively. Among tribal population highest prevalence was observed among Chakma community (11.41%) which was followed by Reang (7.69%), Noatia (6.09%), Jamatia (5.7%), Murasing (5.15%), Tripuri (4.95%), Halam(4.21%), and Lusai (2.7%) respectively. The study shows that HBsAgseropositivity increases with age in community level reaching peak between 61 to 80 years age group I.e. 4.8% which is statistically significant. **CONCLUSION:** Higher prevalence of Hepatitis B among tribal population is of paramount importance from public health point of view and early intervention by Hepatitis B vaccination will reduce the disease burden among Tribal population in Tripura.

KEYWORDS: Hepatitis B, Community prevalence.

INTRODUCTION: Hepatitis B is a global public health problem. It is estimated that there are approximately 2 billion people infected worldwide, and 350 million suffering from chronic HBV infection.[4] Among the South East Asian countries India is in intermediate zone of prevalence I.e. 2 to 5 %.[1] National center for disease control, India reported with 3.7% point prevalence, that is, over 40 million HBV carriers in India. Every year, one million Indians are at risk for HBV and about 100,000 die from HBV infection.[5] Another study by B.N. Tendon et al has stated that the average estimated carrier rate of hepatitis B virus (HBV) in India is 4%, with a total pool of approximately 36 million carriers.[6]Chowdhury A has reported that 3-4% of the Indian population are HBV infected (HBsAg positive).[7] A wide variation in Prevalence of hepatitis B is observed from country to country, region to region and community to community. It is not well understood whether this variation has got any relationship with the basic prevalence of disease in the community. But wide variations in social, economic, and health factors in different regions may

explain variations in carrier rates from one part of the country to another. In our state of Tripura the prevalence of Hepatitis B among hemodialysis patients is 7.3%[2] and among voluntary blood donors it is 1.2%.[3]

Tripura shares international border with Bangladesh on three sides (North, west and south) while the states of Mizoram and Assam lie in its East. It has a predominantly tribal population in the past but the huge wave of immigration from Bangladesh in post-independence era has resulted in its demographic transformation rendering its indigenous tribal population to a minority. We have initiated the present study to assess the prevalence of HBV infection in Tripura in particular among the different ethnic communities prevailing in this region.

AIMS OF STUDY:

1. To determine the prevalence of Hepatitis B in Tripura at community level.
2. To determine the prevalence of Hepatitis B Virus (HBV) infection in different ethnic groups of Tripura.

MATERIALS AND METHODS: To study the prevalence and genetic diversity of HBV in different ethnic communities residing in Tripura, blood samples were collected from individuals belonging to 13 different communities namely, Bengali Hindu, Bengali Muslim, Murasing, Debbarma, Lusai, Chakma, Jamatia, Noatia, Reang, Tripuri, Halam, Kuki and Bishnupriya Manipuri from the year 2011 to 2013. A 1: 4 sampling of the households were done in each community and all individuals between 10 to 90 years of age in each of these households were invited to participate in the study. A total of 6202 healthy subjects of both sexes belonging to different communities were included in the study. Each subject was informed about the study and written informed consent was obtained under a protocol approved by the Institutional Ethical Review Committee. From each participant, 5 ml blood was collected; the serum was isolated and stored in minus 80°C refrigerator until use. Serological markers for HBsAg were checked from each sample using commercially available ELISA kits from General Biologicals, Taiwan and Biomerieux, Boxtel, Netherlands.

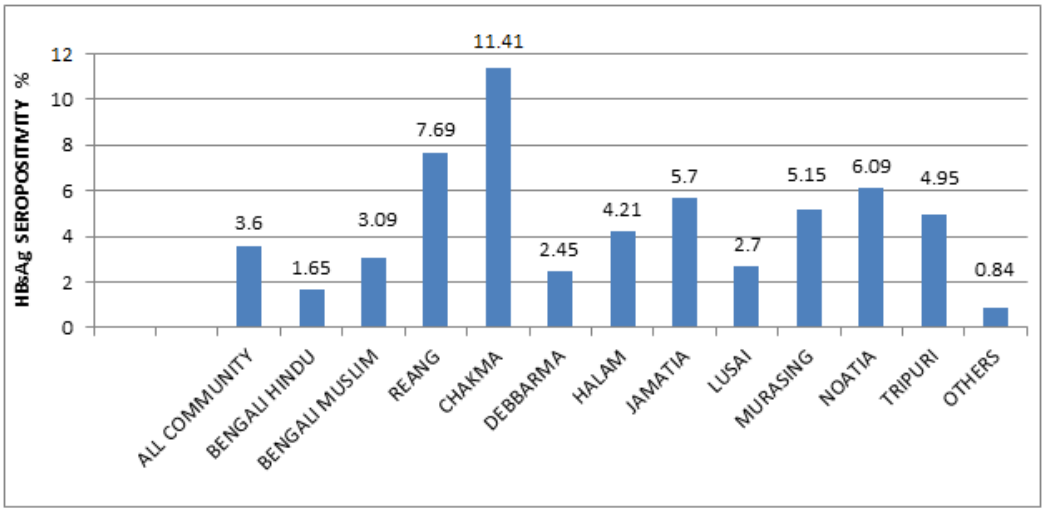
RESULTS:

1. **HbsAgsero-positivity with sex differentiation among different community has been shown in the following table:**

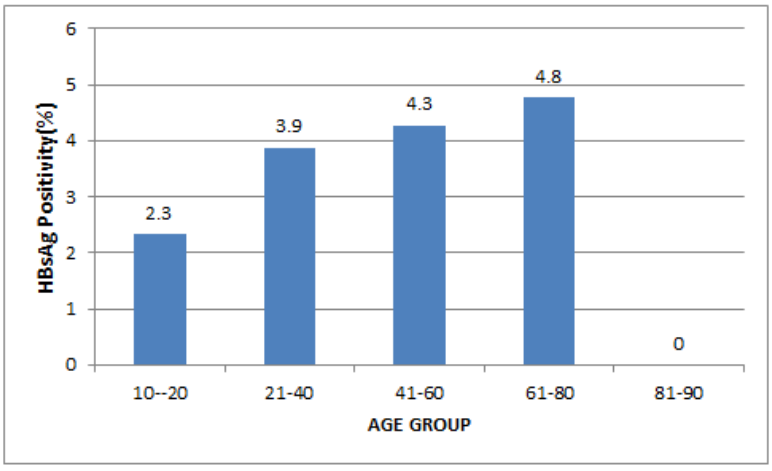
Types of community	Total sample collected	Total positive	% of positive	Total male	Total male positive	% of Male Positive	Total female	Total female positive	%of female positive
All community	6202	222	3.6	3110	140	4.5	3092	82	2.65
Bengali hindu	1759	29	1.65	1041	24	2.3	718	5	0.69
Bengali muslim	968	30	3.09	487	21	4.31	481	9	1.87

Reang	455	35	7.69	206	18	8.74	249	17	6.82
Chakma	184	21	11.41	74	9	12.16	110	12	10.9
Debbarma	531	13	2.45	262	10	3.82	269	3	1.12
Halam	522	22	4.21	213	12	5.63	309	10	3.24
Jamatia	526	30	5.7	212	18	8.49	314	12	3.82
Lusai	111	3	2.7	44	2	4.55	67	1	1.49
Murasing	272	14	5.15	162	10	6.17	110	4	3.64
Noatia	115	7	6.09	59	4	6.78	56	3	5.36
Tripuri	283	14	4.95	129	9	6.98	154	5	3.25
Others	476	4	0.84	221	3	1.36	255	1	0.39

Table 1



The prevalence of Hepatitis B among different community



HBsAgseropositivity in different age group in community

DISCUSSION: In the present study total 6202 samples was collected from different community of Tripura during the year 2011 to 2013. Samples were collected from 3110 males and 3092 females between the ages of 10 to 90 years.

Prevalence of HbsAgsero-positivity was 3.6% (95%CI 3.14 - 4.06) which is higher than that of the state like west Bengal (2.97%)[8] and Karnataka (1.63%)[9] and lower than Tamilnadu (5.7%).[10]

A higher prevalence was found in males than females which was 4.5% (95%CI 3.77-5.23) & 2.65% (95%CI 2.08 – 3.22) respectively. Higher HBsAg seropositivity among male persons also found in two community based studies from North east China (1.79% vs 1%) and Southeast China(12%, 95%CI 11.2-12.8 vs 8.8%, 95%CI 8.3-9.3).[11,12] The reason for the sex difference is unclear. It could have been due to differences in the immune response to the HBV infection.[13]

The prevalence of Hepatitis B was found higher among tribal community than non-tribal community which was 5.3% (95%CI 4.49 – 6.10) and 1.97% (95%CI 1.49 – 2.45) respectively. Batham A et al in their review on 54 studies of prevalence of Hepatitis B in India has reported that prevalence in non-tribal population was 2.4% whereas a higher prevalence was observed among tribal population I.e. 15.9%.[14] In Tripura among tribal population highest prevalence was observed among Chakma community (11.41%) which was followed by Reang (7.69%), Noatia (6.09%), Jamatia (5.7%), Murasing (5.15%), Tripuri (4.95%), Halam (4.21%), and Lusai (2.7%) respectively. The higher prevalence of Hepatitis B among tribal community may be due to migration from Indochina as this part belongs to high Hepatitis B endemicity region, which is around 8 to 20%.[15]

Among the non-Tribal population Bengali Muslim population has shown higher HBsAg seropositivity (3.09%) than Bengali Hindu (1.65%).Tribal male has got a higher prevalence than tribal females I.e. 6.76% and 4.09% respectively. Similar results were found between non-Tribal male (2.74%) and non-Tribal female (1.03%).

The study shows that highest HBsAg seropositivity among the 61 to 80 years age group I.e. 4.8%. High positivity of HBsAg among 61 to 80 years of age in the study might be due to cumulative effect. In the study reported by Chen P, Yu C, Ruan B, Yang S, Ren J et al from Southeast China where they have found that exposure increased with age both in males and in females, and reached a peak in the 40–49 years group, declining thereafter, indicating exposure to HBV had occurred in all age groups. But another study reported that People in the 18-29 age group had a greater likelihood of having been infected by hepatitis B [HBsAg(+)], and a negative trend was seen with age.[12] Low HBsAg positivity among the younger age group suggest decrease possibility of perinatal transmission.

Various risk factors have been evaluated but these are not statistically significant.

CONCLUSION: It has been observed that prevalence of Hepatitis B in community of Tripura is 3.6% (95%CI 3.14 - 4.06) with a higher prevalence in Tribal population than Non-Tribal Population. Highest Hepatitis B prevalence was found among Chakma community (11.41%) and lowest in Bengali Hindu community (1.65). Higher prevalence of Hepatitis B among Ethnic population is of paramount importance from public health point of view and early intervention by Hepatitis B vaccination will reduce the disease burden among Tribal population in Tripura.

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