

ORIGINAL RESEARCH

Community based association of chronic hepatitis with special attention to tribals in Southern Rajasthan

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ABSTRACT

Background: The primitive tribal groups (PTGs) need special attention because of their low population growth: declining population size with high mortality rates. Scanty reports are available on the prevalence of hepatitis B virus (HBV) infection in primitive tribes of the country emphasizing their cultural and social practices associated with transmission of the disease.

Methodology: The study population consisted of 87600 patients from MG hospital, affiliated with RVRS Medical college Bhilwara, Rajasthan. A detailed demographic history was collected. Screening of HBsAg was performed by using rapid card test method. **Results:** The study included 87,600 participants, of which 301 patients (0.39%) were from tribal communities. Of the total sample, 3650 (4.1%) were found to be HBsAg positive. Among these HBsAg positive patients, 312 (8.54%) developed chronic hepatitis B. Out of 312 chronic hepatitis patients, the highest positivity was 28 (10.18%) in tribal community. 136 (58.6) were isolated in age group 21-30 years in rural and urban community. Instead, 18 (64.2%) of the 10-20 age group were segregated in the tribal community. There were 212/312 (67.9%) more male patients than females. In the tribal community, 50% (14/28) were in contact with sexual partners of people with hepatitis B. **Conclusions:** The present study documents the prevalence of HBsAg among the tribal population residing in the Southern Rajasthan. The study findings could be considered as an interim assessment of the status of Hepatitis B infection among the tribal communities in Southern Rajasthan.

Keywords: HBsAg sero-prevalence, chronic hepatitis, Hepatitis in tribal community.

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INTRODUCTION

A serious global health issue, Hepatitis B (HB) is a potentially fatal liver infection brought on by the Hepatitis B virus. It is the primary cause of chronic hepatitis, liver cirrhosis, and hepatocellular cancer. According to estimates from the World Health Organization (WHO), 1.5 million new cases of chronic Hepatitis B infection occur annually, affecting 296 million people worldwide. A meta-analysis indicates that there are 17 million chronic carriers of HB infection in India, where the incidence of HB infection is 1.46%.

[1,2] Chronic HBV infection is defined as persistence of HBsAg in serum for at least 6 months after acute infection.

Hepatitis-B (HB) virus infection have been divided into three groups (high, intermediate and low)

according to its endemicity. India falls in the intermediate endemicity zone (prevalence of 2–7%, with an average of 4%) [3]. The Primitive Tribal Groups (PTGs) are a particularly vulnerable segment of India's indigenous tribal population, facing either stagnant growth or decline [4]. This may be attributed to various health related events, including acute and chronic infections that escape early detection and management. Higher endemicity occurs in tribal areas because of inbreeding depression, inadequate knowledge regarding the spread of the disease, compromised living circumstances, intimate interpersonal contact, and specific sociocultural traditions such as tattooing and piercing of various body parts [5].

Initial symptoms are nonspecific and may include anorexia, nausea, vomiting, abdominal pain, and jaundice. Patients with severe liver impairment may develop jaundice, hepatic encephalopathy, ascites, gastrointestinal bleeding from esophageal varices, coagulopathy, or infections [6]. In India, chronic hepatitis B (CHB) is mostly acquired horizontally in early childhood and to a lesser extent perinatally. The exact mode of horizontal transmission has not yet been defined, but may occur through contact with intact skin or mucous membranes with tears, saliva or blood containing HBV-infected secretions, or by sharing toothbrushes [7].

The Age of HBV acquisition is an important determinant of outcome; The earlier the age, the greater the risk of chronicity (e.g. >90% in newborns (vertical transmission), 30% in children aged 2–5 years and <5% in adults). Another route is parental transmission at any age (ie transfusion of infected blood or blood products, intravenous drug use, unsafe therapeutic injections, occupational accidents or nosocomial infection during health care procedures such as surgery, hemodialysis, and organ transplantation) [7].

MATERIALS & METHODS

This study was conducted in the Department of Microbiology. It was done for 18 months, i.e 2021 to 2023, a total of 87,600 serum samples were collected from patients with different communities regardless of age. A detailed demographic history was collected in detail. Blood sample was taken from the patients and the sera were separated. Hepatitis B surface antigen (HBsAg) was detected by rapid card test (J.Mitra and Co. Pvt. Ltd Hepacard kit). All tests were performed according to the manufacturer's instructions with appropriate controls.

RESULTS

Blood samples (n=87,600) were collected from clinically suspected hepatitis B patients. Of the total sample majority 67,480 patients (77.03%) were from rural areas, while 19,819 patients (22.57%) lived in urban areas. A smaller proportion, namely 301 patients (0.39%) represented tribal communities. Of the total sample, 3650 (4.1%) were found to be HBsAg positive. Among these HBsAg positive patients, 312 (8.54%) developed chronic hepatitis B.

Table 1: Association of HBsAg positivity with place of residence or community

S.No	Community	HBsAg positive		Total
		Positive	Negative	
1	Rural (n=67480)	2790 (4.13%)	64690	67480 (100)
2	Urban (n=19775)	585 (2.95%)	19190	19775 (100)
3	Tribal (n=345)	275 (79.7%)	70	345 (100)

Table 1 shows that out of total 87600 patients, 3650 were HBsAg positive in which 2790 (4.13%) were from rural community, 585 (2.95%) were urban community and highest 275(79.7%) were from tribal community.

Table 2: Association of chronic hepatitis with place of residence

S.No	Community	Chronic hepatitis		Total
		Positive	Negative	
1	Rural (n=2790)	232 (8.31%)	2558	2790 (100)
2	Urban (n=585)	52 (8.88%)	533	585 (100)
3	Tribal (n=275)	28 (10.18%)	247	275 (100)

Table 2 illustrate that out of total 312 positive chronic hepatitis patients, highest positivity 28 (10.18%) was seen in tribal community, followed by rural 232 (8.31%) and urban 52(8.88%) respectively.

Table -3: Age wise seroprevalence of chronic hepatitis patients in different communities

S.No	Age (years)	Rural (n=232) (%)	Urban (n=52) (%)	Tribal (n=28) (%)
1.	10-20	65 (28.0%)	12 (23.0%)	18 (64.2%)
2.	21-30	136 (58.6%)	37 (71.15%)	7 (25%)
3.	31-40	27 (11.63%)	2 (3.84%)	2 (7.14%)
4.	41-50	2 (0.86%)	1 (1.92%)	1 (3.57%)
5.	51-60	1 (0.43%)	0 (0)	0 (0)
6.	>61	1 (0.43%)	0 (0)	0 (0)

Table 3 demonstrates that out of all chronic hepatitis patients highest 37(71.15%), 136 (58.6) were isolated from age group 21-30 years in rural and urban community. Whereas, in tribal community 18(64.2%) were isolated from age group 10-20 years followed by 7(25%) in 21-30 years respectively.

Table 4: Socio-demographic details of the chronic hepatitis patients in different communities

S.No	Demographic variables		Rural (n=232)(%)	Urban (n=52)(%)	Tribal (n=28)(%)
1.	Socioeconomic status	Below poverty line	140 (60.3%)	2 (3.84%)	28 (100%)
		Above poverty line	92 (39.6%)	50 (96.1%)	0 (0%)
2.	Literacy	Educated	212 (91.3%)	48 (92.3%)	0 (0%)
		Uneducated	20 (8.62%)	4 (7.69%)	28 (100%)
3.	Sex	Male	172 (74.1%)	39 (75%)	22 (78.5%)
		Female	60 (25.8%)	13 (25%)	6 (21.4%)

Table 4 shows that out of all chronic hepatitis patients, highest 28 (100%), 140 (60.3%) were belonging to below poverty line in tribal and rural area, 167/312 (53.5%) were educated, Male patients 212/312 (67.9%) were more than females.

Table-5: Assessment of risk factors in chronic hepatitis infection in different communities

S.No	Risk factors	Chronic Hepatitis		
		Rural (n=232) (%)	Urban (n=52) (%)	Tribal (n=28) (%)
1	Child born to HBV(+ve) mother	28 (12.06%)	2 (3.84)	2(7.14)
2	Living in a household with an infected person	0 (0)	0 (0)	6 (21.4)
3	People travelling to areas with high rates of hepatitis B without being immunized	0 (0)	0 (0)	0 (0)
4	History of surgery	0 (0)	2 (3.84)	0 (0)
5	People on Dialysis	0 (0)	0 (0)	0 (0)
6	History of alcohol consumption	124 (53.4)	28 (53.8)	2 (7.14)
7	History of blood transfusion	15(6.46%)	1 (1.92)	0 (0)
8	History of intravenous drug abuse	28 (12.06)	4 (7.69)	2(7.14)
9	Sex partners of people with hepatitis B	0 (0)	0 (0)	14 (50)
10	Needle stick injury	36 (15.51)	15 (28.8)	0 (0)
11	Tattooing	1(0.43)	0 (0)	2(7.14)

Table 5 demonstrates the risk factors associated with chronic hepatitis patients in different community. In rural and urban community, 53.8% (28/52) and 53.4% (124/232) were associated with the history of alcohol consumption, 28.8% (15/52) and 15.51% (36/232) were with the history of needle stick injury. Whereas in Tribal community 50% (14/28) were associated with sex partners of people with hepatitis B followed by 21.4% (6/28) Living in a household with an infected person.

DISCUSSION

Hepatitis B (HB) virus infection is a major public health problem worldwide, with an estimated 257 million people living with chronic HBV infection. India is an HBV-endemic region with 40 million asymptomatic hepatitis B virus (HBV) carriers. In 2015, there were approximately 887,000 deaths worldwide due to complications of chronic HBV infection (World Health Organization, 2017). The management of patients with chronic hepatitis B infection is quite complex because it requires an in-depth knowledge of the natural history of the disease [8].

This study was conducted on a total of 87,600 clinical samples, of which 3650 (4.1%) samples were HbsAg positive and 312 (8.54) were further positive for chronic hepatitis. Most patients were 275 (79.7%) and 28 (10.18%) from tribal community followed by 2790(4.13%) and 232 (8.31%) in rural community (Table 1 and 2). The result was in concordance with the study by Premkumar et.al who also showed that the point-prevalence of hepatitis B among non-tribal populations is 2.4% and among tribal populations it is 15.9%.⁸Barall D et al., also reported (98.5%)

belonged to Tribal category [9]. A study by Bhattacharya et al., also reported that in statewide representative serosurvey conducted in 7 districts of Odisha inhabited majorly by scheduled tribe. There is population heterogeneity with the point prevalence of HBV in India estimated to be 2.4% and in tribal areas as high as 15.9%. Clusters of HBV infection is noted in regions like Ladakh (12.7%), Arunachal Pradesh (21.2%), and the Nicobarese (23.3%), Shompen (37.8%), and Jarawa (65%) tribes of the Andaman and Nicobar Islands [10]. The higher rate of HBV infection among tribals can be explained by their lifestyle, behaviour and their association with several socio-cultural practices such as endogamy, bloodletting, scarification and tattooing in India and the association with low health awareness in communities.

The age of acquisition of HBV is an important determinant of outcome; the earlier the age, the higher the likelihood of chronicity. The risk of chronicity in HBV infection acquired at different ages ranges from >90% in newborns, 30% in children aged 2–5 years and <5% in adults. Neonates with vertically acquired HBV infection have a higher chance of chronicity and

serve as a reservoir of the infection. On the other hand, infection acquired in adulthood is more likely to present as acute hepatitis B and contribute less to the burden of chronic HBV [7].

Table 3 demonstrates that out of all chronic hepatitis patients highest 37(71.15%), 136 (58.6) were isolated from age group 21-30 years in rural and urban community. Whereas, in tribal community 18(64.2%) were isolated from age group 10-20 years. Studies by Vazhavandal G *et al.*, also documented very high infection rate of chronic hepatitis b in patients of 21-40 years of age. Bhattacharya *et.al* showed the prevalence of HBsAg was found highest in the age group of 16–49 years followed by 10–15 years in tribal population [10]. This study found that the prevalence of HBsAg is highest in the 21-30-year-old group, which may be because these people did not have the opportunity to be vaccinated during childhood or because of increased social activity, and occupational exposure, indicating that this group of people is at risk of hepatitis B infection. [11]. In tribal community the age group 10-20 year mainly isolated reason behind may be due to their association prevailing risk factors, such as body piercing, tattooing, sharing of razor, shaving by village barber, and history of multiple injections.

Demographic variables in Table 4 demonstrate that, 28 (100%), 140 (60.3%) were belonging to below poverty line in tribal and rural area. In contrast to our study Mukherjee P S *et.al.*, showed majority of the patients belonged to the above poverty line (APL) social class with regional variations [12]. In the present study, 212 (91.3%) were educated in rural area and 28(100%) were uneducated in tribal area. The results were in accordance with the study conducted by Barall D which revealed 60.1% were educated up to the middle and 18% were illiterate [9]. Moreover, In the present study, Male patients 172(74.1%), 39 (75%) 22(78.5%) were more than females in all communities. Several similar studies have also reported male predominance for chronic hepatitis infection Bhattacharyya G S *et.al.*, Vivekanandan P *et.al.*, Wong H *et.al.*, Mathai F *et.al.*, which may be associated with the fact that males are comparatively more exposed to environmental factors due to their family and social responsibilities that increases the chance of getting infection [10,13-15].Some studies have also shown that males are even more prone to liver disease complications when compared to females and this has nothing to do with behavioural or environmental risk factors.Certain hormones such as estrogen,whichisproduced primarily during women's reproductive years, have been suggested to protect women when they develop the disease or develop complications after the disease resolves [16,17]. In addition, some Chinese researchers have noticed that only men have abnormal liver apolipoprotein, which may contribute to shrinkage or complications after contracting the disease [18].

Table 5 reveals that majority of risk factors associated with chronic hepatitis patients were 53.8% (28/52) and 53.4% (124/232) with the history of alcohol consumption in rural and urban community. Whereas in Tribal community 50% (14/28) were associated with sex partners of people with hepatitis B followed by 21.4% (6/28) Living in a household with an infected person. This was comparable with the study done by Premashis Kar, and Mukherjee P S also reported alcohol consumption was the commonest risk factor of chronic hepatitis [19,12]. Long-term drinking stimulates increased activity of the inflammation-related tumor factor NF-kB, which in turn promotes the expression of cell adhesion molecules and other tumor-promoting and metastatic molecules. The study showed that there is little difference between light to moderate drinking and clinical outcome in patients with chronic HBV infection. Heavy drinking significantly accelerates the development of liver cancer and the risk increases 1.3-8.4 times [20].A study by Sharma *et.al* also shows similar result that close relations or an HBsAg positive person in the family was one of the important risk factors for HBV infection in tribal community. HBV is transmitted by body fluids, posing a serious threat of infection to close contacts, especially to sexual partners, and this could be a possible reason for significantly high positivity in this group [21].

CONCLUSIONS

The study documents high rates of HBV infection in some particularly vulnerable tribal communities in southern Rajasthan. The research findings can be considered as a provisional assessment of the status of hepatitis B infection in the tribal communities of southern Rajasthan. The study also highlights the need to conduct a nationwide survey on hepatitis B infection and risk factors and to spread awareness, prevalence and incidence. About Hepatitis B Vaccination program in Tribal Area.

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Conflict of Interest- NIL

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