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Seroprevalence of hepatitis B surface antigen and anti-hepatitis C virus antibody in a hospital-based population in Bikaner, Rajasthan, India

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Abstract
Hepatitis B and hepatitis C infection is endemic throughout the world especially in tropical and developing countries. Clinical data collected in the hospital gives the estimation of burden of disease in the community as patients with different background attend the hospital. With this background the present study was designed. The study was undertaken to estimate the seroprevalence of hepatitis B surface antigen (HBsAg) and antibodies to hepatitis C (anti-HCV Ab) in both the sexes and different age groups in a hospital-based population in Bikaner, Rajasthan. Serum samples collected over a period of 11 months from May 2017 to March 2018, of patients attending OPDs and admitted to various IPDs of SP Medical college & attached group of Hospitals, Bikaner, were subjected within the hospital-based lab for the detection of HBsAg and anti-HCV Ab using rapid card tests. The seroprevalence of HBsAg was found to be 1.04%, of anti-HCV Ab as 0.33%. The 21-40 age group was affected the most. Males were affected more than females. The regular surveillance & determination of magnitude of seroprevalence of viral transmission in the community is important for its prevention and control. The study throws light on the magnitude of viral transmission in the community in the state of Rajasthan and provides a reference for future studies.

Keywords: hepatitis B, hepatitis C, seroprevalence, hospital-based population, Rajasthan

Introduction
Hepatitis B and C infections are a serious global and public health problem. Hepatitis B virus (HBV) is highly infectious and can be transmitted covertly by percutaneous routes and overtly by blood transfusion. The hepatitis B surface antigen (HBsAg) in serum is the first seromarker to indicate active HBV infection, either acute or chronic [1]. Worldwide over 2 billion people have been infected with HBV and more than 350 million have chronic HBV infection [2]. India has been placed into the intermediate zone of prevalence of hepatitis B (2-7% prevalence rates by WHO) [3]. This infection is a leading cause of morbidity and mortality, not only because of the acute illness but also due to its chronic sequelae like chronic hepatitis, cirrhosis, and hepatocellular carcinoma, accounting for more than a million deaths worldwide [4]. An effective vaccine is available for over two decades and has brought about remarkable changes in the global epidemiology of HBV infection.
Among the viral hepatitis strains, hepatitis C virus (HCV) is especially dangerous in that its morbidity rate is high as it establishes a state of chronic infection in as many as 85% of acutely infected patients, whereas about 15% of acutely infected patients spontaneously clear the infection [5]. Chronic hepatitis C is a ubiquitous disease affecting around 200 million people worldwide [6]. The major channels of HCV transmission are all related to exposure to blood and blood products. The presence of anti-hepatitis C virus antibody (anti-HCV Ab) indicates previous exposure to hepatitis C virus. This antibody is present in only 40% of acute infections but in more than 95% of chronic infections [7]. In India, antibodies against HCV are present in approximately 15 million people with a prevalence rate of 2% [8].
To understand and assess the magnitude and dynamics of transmission of a disease in a community and for its control and prevention, the assessment and study of its prevalence is very important. The present study was undertaken to estimate the seroprevalence of HBs Ag

and antibodies to hepatitis C in both the sexes and different age groups in a hospital-based population in Bikaner, Rajasthan.

Material & Method: This study was carried out in the Serology Laboratory, Department of Microbiology, Sardar Patel Medical College & Attached group of Hospitals, Bikaner, Rajasthan. Patients who registered at the OPDs or were admitted to the IPDs of the hospital and were advised to undergo hepatitis B screening and HCV antibody testing were included in the study. The study was extended over a period of 11 months from May 2017 to March 2018. A 5-ml venous blood sample was collected from all the patients who came with lab requisitions for the testing of HBsAg and anti-HCV Ab. The blood was allowed to clot for 45 min at room temperature and the serum was separated after centrifugation at low speed. The serum sample obtained was then tested for HBsAg and anti-HCV antibodies. HBsAg and anti- HCV antibodies were determined using a rapid card method-Alere Trueline, Alere Medical Pvt. Ltd, Gurgaon, Haryana, India. Both tests were performed in accordance with the manufacturer's instructions with adequate controls.

Results: In the present study, to assess the prevalence of HBsAg and anti-HCV ab. among the hospital based population in a tertiary care hospital of Bikaner, Rajasthan, a total of 28021serum samples were processed for HBs Ag and 25319 serum samples were tested for anti-hepatitis C antibody over the 11 month study from May 2017 to March 2018. The seroprevalence of HBs Ag was found to be 1.04%, and anti-HCV Ab as 0.33%. The seroprevalence for HBs Ag among males and females was 1.16% and 0.79% respectively. The seroprevalence of anti-HCV was found in males and females was 0.35% and 0.30% respectively. According to age and sex distribution of the hospital-based population with hepatitis B and Hepatitis C highest seropositivity found in male of age group 21-40 years as 44.38% and 38.97% respectively.

Table 1: Showing prevalence of HBV and HCV infection in general population

S. No	Viral Marker	Total No. Screened	Seropositivity (%)
1.	HbsAg	28021	293(1.04%)
2.	Anti HCV ab.	25319	85 (0.33%)

Table 2: Gender wise distribution of HBsAg positive patients

Gender	All cases	Seropositive cases	Rate of seropositivity (%)
Male	19253	223(68.71%)	1.16
Female	8768	70(31.29%)	0.79
Total	28021	293(100%)	1.04

Table 3: Gender wise distribution of HCV positive patients

Gender	All cases	Seropositive cases	Rate of seropositivity (%)
Male	16716	59(66.02%)	0.35
Female	8603	26(33.98%)	0.30
Total	25319	85(100%)	0.33

Table 4: Age & sex wise distribution of patients tested for HBsAg

Age in years	Male		Female		Total	
	No.	%	No.	%	No.	%
01-20	2498	12.97	1050	11.98	3548	12.66
21-40	8544	44.38	3855	43.97	12399	44.25
41-60	6210	32.25	3006	34.28	9216	32.89
61-80	2001	10.39	857	9.77	2858	10.20
Total	19253	100	8768	100	28021	100

Table 5: Age & sex wise distribution of patients tested for HCV

Age in years	Male		Female		Total	
	No.	%	No.	%	No.	%
01-20	2430	14.54	1204	14.00	3634	14.35
21-40	6514	38.97	3300	38.36	9814	38.76
41-60	6094	36.45	3106	36.10	9200	36.34
61-80	1678	10.04	993	11.54	2671	10.55
Total	16716	100	8603	100	25319	100

Discussion: The seroprevalence of hepatitis B surface antigen of 1.04% was noted in our hospital-based population. Mathur P *et al.* (2018) [9], Naik T. B *et al.* (2018) [10], Atray D. *et al.* (2016) [11], in their article on hepatitis B in hospital-based population, the prevalence rate was 0.94%, 0.56%, 0.75%. Respectively. Lodha *et al*. (2001) in their review article on hepatitis B epidemiology have suggested the true prevalence rate in India is 1-2% [12]. There is a wide variation in the prevalence in different regions of our country, and the highest prevalence has been reported among the aborigines of Andaman as well as from Arunachal Pradesh [2]. The prevalence of hepatitis B varies from country to country and depends upon a complex mix of behavioral, environmental, and host factors. In general, it is lowest in countries or areas with high standards of living

and highest in countries or areas with low socioeconomic levels.

The seroprevalence of hepatitis B among males and females in our study was 1.16% and 0.79%, respectively. In a study on hospitalized patients in Manipal, Dutta *et al.* observed HBsAg positivity of 35.3% in males versus 19.3% in females [13]. No plausible explanation has been given for the higher prevalence in males in the general population but probably females clear the HBV more efficiently as compared to males [3].

The seroprevalence of HCV among our hospital-based population was found to be 0.33%. The similar study of Mathur P *et al.* (2018) [9] showed the prevalence rate of Hepatitis C was 0.17%. This seroprevalence is much lower than the seroprevalence (1.7%) reported in a study from Jaipur (Rajasthan) in 2007 by Sharma *et al* [14]. In India, the seroprevalence of HCV varies among hospital-based populations with 1.57% reported from Cuttack (Orissa) [6], 4.8% from Pondicherry [15], and 2.46% from Jodhpur (Rajasthan) [7].

Geographical variation in the seroprevalence of HCV has also been documented by Sun *et al* [16]. In Taiwan. Hospital-based studies from Mauritius [17] and Ethiopia [18] have showed a seroprevalence of HCV of 5.9% and 6% respectively.

Conclusion: In conclusion, our study emphasizes on the present prevalence of HBsAg and anti-HCV ab. among the hospital-based population of Bikaner, Rajasthan and extrapolates the data to estimate the disease burden of HBsAg and anti-HCV ab. in both the sexes and of different age groups. The study indicates that HBV infection is still a public health problem which should be among the prioritized health problems in the country. It is necessary that medical and health-care personnel are educated about the dangers and consequences of HCV infections. Considering the asymptomatic nature of the infection and its potentially lethal consequences, all blood donors and blood-product recipients must be screened for anti-HCV Ab. In the present scenario, a large amount of population infected with the disease in acute or chronic stage and is potent in transmission of the disease. Various measures to create awareness among general population should be taken along with the vaccination. The scarcity of data and the degree to which they are out of date were the main reasons behind this survey, aimed to determine the prevalence of HCV and HBV infections to unravel the true status of viral hepatitis and thus provide valuable information about surveillance and estimation.

References

1. Horvat RT, Tegtmeier GE. Hepatitis B, viruses D. Manual of Clinical Microbiology. In: Murray PR, Baron EJ, Jorgensen JH, Pfaller MA and Yolken RH. editors. Washington D.C: ASM Press. 2003, 464-78.
2. Chaudhary A. Epidemiology of hepatitis B virus in India. Hep B Annual. 2004; 1:17-24.
3. Qamer S, Shahab T, Alam S, Malik A, Afzal K. Age specific prevalence of Hepatitis B surface antigen in pediatric population of Aligarh, North India. Indian J Pediatr. 2004; 71:965-7.
4. Cariappa MP, Jayaram J, Bhalwar R, Praharaj AK, Mehta VK, Kapur LK. Epidemiological differentials of Hepatitis B carrier state in the army: A community based seroepidemiological study. Med J Armed Forces India 2004; 60:251-4.
5. Karki S, Ghimire P, Tiwari BR, Maharjan A, Rajkarnikar M. Trends in hepatitis B and hepatitis C seroprevalence among Nepalese blood donors. Jpn J Infect Dis. 2008; 61:324-6.
6. Mishra S, Chayani N, Sarangi G, Mallick B, Pati SB. Seroprevalence of anti HCV antibody in and around Cuttack, Orissa. Indian J Med Microbiol 2002; 20:40-1.
7. Baheti R, Gehlot RS, Baheti R. Seroprevalence of Anti HCV Ab in healthy voluntary blood donors and in high risk individuals. J Indian Assoc Community Med 2000; 1:230-2
8. Tandon BN, Hepatitis BC. A holistic approach. Gastroenterol Today. 2002 ;6:168-9
9. Mathur P, Gupta PS, Singh R, Parihar G. Seroprevalence of Hepatitis B Surface Antigen and Anti-hepatitis C Virus Antibody in a Hospital-Based Population in Ajmer, Rajasthan, India. Int. J Curr. Microbiol. App. Sci. 2016; 5(10):1023-1029.
10. Naik TB, Sathish JV, Wadekar MD. Seroprevalence of Hepatitis B Surface Antigen (HBsAg) among Patients Attending a Tertiary Care Hospital at Chamarajanagar, Karnataka, India. Int. J Curr. Microbiol. App. Sci. 2018; 7(1):1279-1284.
11. Atray D, Sharma A, Atray M. Seroprevelance of Hepatitis B Surface Antigen in Hospital based Population in Southern Rajasthan, India. Int. J Curr. Microbiol. App. Sci. 2016; 5(6):466-469.
12. Lodha R, Jain Y, Anand K, Kabra SK, Pandav CS. Hepatitis B in India: A review of disease epidemiology. Indian Pediatr. 2001; 38:1318-22.
13. Dutta S, Shivananda PG, Chatterjee A. Prevalence of hepatitis B surface antigen and antibody among hospital admitted patients in Manipal. Indian J Public Health. 1994; 38:108-12. .
14. Sharma R, Sinha P, Bachiwal R, Rishi S. Seroprevalence of Anti hepatitis C virus antibodies in a hospital based population in Jaipur, Rajasthan. Indian J Community Med 2007; 32:158-9
15. Bhattacharya S, Badrinath S, Hamide A, Sujatha S. Seroprevalence of hepatitis C virus in a hospital based general population in South India. Indian J Med Microbiol. 2003; 21:43-5.
16. Sun CA, Chen HC, Lu SN, Chen CJ, Lu CF, You SL. Persistent hyperendemicity of hepatitis C virus infection in Taiwan: The important role of iatrogenic risk factors. J Med Virol. 2001; 65:30-4.
17. Schwarz TF, Dobler G, Gilch S, Jδger G. Hepatitis C and arboviral antibodies in the isolated population of Mauritius and Rodrigues. J Med Virol. 1994; 44:379-84
18. Frommel D, Tekle-Haimanot R, Berhe N, Aussel L, Verdier M, Preux PM. A survey of antibodies to hepatitis C virus in ethiopia. Am J Trop Med Hyg 1993; 49:435-9.