Preliminary Screening for Prevalence of Hepatitis B, C Viruses and their co-infection: A Hospital Based Study of North India

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ABSTRACT:

Background: *Viral hepatitis is a cause of considerable morbidity and mortality in human population worldwide due to acute infection and chronic sequelae. The high risk of chronicity of these blood borne infection and its association with hepatocellular carcinoma underscores its public health importance.*

Aim: *The present study is to determine the prevalence of HBV&HCV infection and their co-infection in patients attending our tertiary care hospital and screened for viral markers in the department of microbiology.*

Material and Method: *A screening study of one year duration was done in the department of microbiology at Dr RPGMC Tanda (Kangra) H.P. Total 5032 samples for HBV and 2208 samples for HCV infection were considered for the study. Serum sample were analysed for HBsAg as well as for antibodies to HCV using commercially available kits(HEPA SCAN) and(SD-BIOLINE HCV).*

Results: *1.41% patients were found to be positive for HBsAg and 1.49% patients were found positive for HCV infection. There was co-infection in 6 patients only. HBV was found more in males as compared to HCV infection which was more in females Age wise prevalence was found maximum in age group between15-60 years. No case was found positive below 5 years of age in our study.*

Conclusion: *Prevalence of HBV and HCV was below2% showing low endemicity inpopulation included in the study. HCV infection was found more in females in adult group. Co-infection was also found more in females.*

Keywords: *Acute viral hepatitis, Serum hepatitis, Prevalence, Screening.*

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INTRODUCTION

HBV and HCV together are estimated to have led to 500 million chronically infected persons and one million deaths annually. In south East Asia estimated burden of chronic HBV infection is 100 million and the estimated burden of chronic HCV infection in South Asia is 50 million. HBV is the second most common cause of acute viral hepatitis after HEV. In India with 3-7% point prevalence that is over 40 million HBV carrier. India is considered to have an intermediate level of HBV endemicity. The population prevalence of HCV infection in India is 1%[1]. Infection of HBV can be transmitted through all body fluids, through infected mothers, sexual contacts or injecting drugs. HBV is important medically and in public health not as a cause of acute liver disease but persons can serve as the reservoir of transmissible virus in population, because of this reason preliminary screening is required to identify such persons[2]. Similarly HCV was initially identified as a major cause of post transfusion hepatitis intravenous users and patients on haemodialysis or tattooing is also leading cause of HCV infection. The majority of infection with HCV is subclinical only 25% of infected individuals present with acute hepatitis[3]. Since detecting HBsAg in serum is indicative of either acute or chronic phase of HBV infection. This study was aimed at detecting the presence of HBsAg in sera of patients referred to diagnostic lab of our hospital. Age, sex wise data was analysed to find out the prevalence. Similarly HCV is identified by detection of antibodies to recombinant antigen. If on screening patients were found positive further they can be evaluated on the basis of clinical grounds coupled with biochemical tests, aminotransferases, bilirubin and further can be confirmed by ELISA, RT-PCR etc.

MATERIALS AND METHOD

Study design and population: It is a hospital based study included 5032 sera of patients for HBV and2208 sera of patients for HCV. Study population included sera of individuals from all age groups who were suspected of acute viral hepatitis or suffering from other ailments. Antibodies to recombinant antigen eg. core, NS3, NS4, and NS5 regions of HCV genome using commercially available kits(HEPA-SCAN HBsAg rapid card test) and(SD- BIOLINE

HCV) for HCV infection. **Both tests were immunochromatography based assay. HBsAg kit can detect up to0.5ng/ml of Ag in a sample. Sensitivity and specificity were100% and 99.5% respectively. Simmilarly HCV kit had high degree of sensitivity and specificity and had good correlation with other commercially available Anti HCV-ELISA kits.**

RESULTS

Over a period of one year study: Following results were found

HBV: 5032 samples were included out of which 71 samples were positive for HBsAg which is 1.41% of total population considered 56.33% Male were out numbering females which were 43.66%.

Table 1: Sex wise Prevalence of HBV & HCV

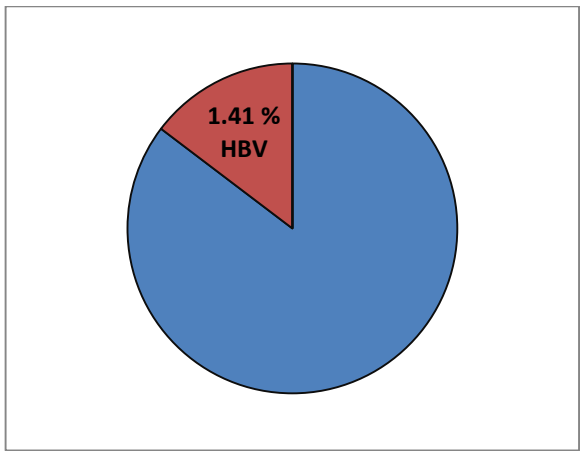
HBV NO = 5032 POSITIVE FOR HBsAg = 71 = 1.41%		**HCV = 2208** POSITIVE FOR HCV Ab = 33=1.49%	
MALE	**FEMALE**	**MALE**	**FEMALE**
40	31	12	21
56.33%	43.66%	36.36%	63.63%

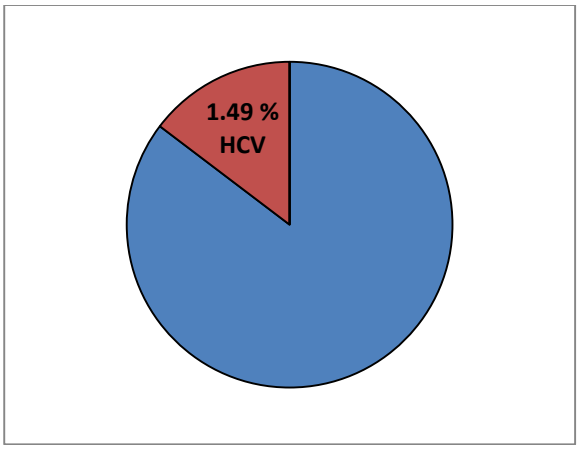
HCV: Total 2208 samples were included 33 patients were positive for HVC which is 1.49% of total population considered for study 63.63% of female were positive for HCV in contrary to HBV infection which was found more in males i.e. 56.33%.

Table 2: Age wise prevalence of HBV & HCV infection

HBV POSITIVE = 71			**HCV POSITIVE = 33**	
YEARS	NO.	%	NO.	%
< 5	-	-	-	-
5-15	4	5.6	2	6.06
15-60	58	81.69	20	60.60
> 60	9	12.67	11	33.33

Diagram showing percentage prevalence of HBV and HCV infection:





*** Co- infection was seen only in six patients**.

DISCUSSION

Our study was conducted mainly to determine the prevalence of HBV & HCV and their co-infection in this region. The epidemiology of hepatitis in India has not been studied systematically several studies have noted a prevalence of hepatitis < 2%. There are wide variation in social economic and health factor in regions of India which may explain the variation in carriers rate of HBV infection in different parts of the country. Lowest prevalence 0.97% has been reported in Chandigarh and highest 5.5% in Madras India [Tandon B.N et al)[4]. Batham A et al (2007) did a meta-analysis and systematic review of various states in which he recorded only 32 patients were positive for HBsAg out of 1274 in Himachal Pradesh, which makes 2.5% of study population [5]. Similarly there is a paucity of large population based studies, Studying the prevalence of hepatitis in general population. These study gives an accurate index of the health burden of hepatitis C in the country. They show 1.41% and 2.02% (Chandra et al 2003, Khaja et al 2006[6,7] in Andra Pradesh. Arunachal Pradesh showed a much higher hepatitis C prevalence of 7.89% (Phukan et al 2001)[8]. In Maharashtra study show very low prevalence 0.09% (Chadha et al[9]. In West Bengal Chowdhury et al[10] showed 0.71% prevalence. Maximum prevalence was found in older age > 60 years and lowest prevalence in age group < 10 years. **simillarly Das B.Ketal 2011(11) showed the prevalence of HBV 1. 55% whereas HCV 0.35% by using SD HBsAg ELISA kits and 3rd generation HCV Micro ELISA kits. when the study was done in indoor patients by using commercial ELISA assays overall 5.85% of patients were positive for HBV and 2.39% for HCV (Arif H.S etal 2015)[12].** Our study showed 1.49 % prevalence of HCV and in the age group is 15- 60 years. Intermediate prevalence in > 60 years and lowest in < 10 years and mostly in females.

CONCLUSION

Prevalence of HBV and HCV was found < 2% in our region which do not fall in high endemicity HCV infection is more in females may be due to more exposure to blood transfusion .Co-infection seen in 6 cases is also alarming because it can cause serious complication. The prevalence of HBV infection differs among various populations. As a result benefit of screening varies according to risk group.

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