Seroprevalence and risk factors of hepatitis B and hepatitis C virus infections among patients with chronic liver diseases

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ABSTRACT

Introduction & Objectives : Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections account for a substantial proportion of liver diseases worldwide. Because the two hepatotropic viruses share same modes of transmission, co-infection with the two viruses is not uncommon, especially in areas with a high prevalence of HBV infection and among people at high risk for parenteral infection.

Material & Methods: This study was conducted from January- December 2011 during which 170 blood samples were collected from patients suffering from chronic liver diseases (CLD) (chronic hepatitis or cirrhosis) admitted in Medicine Department. Five ml venous blood sample was collected and processed in Department of Microbiology. HBsAg was detected by using Hepacard Test and anti HCV was detected by using HCV Tridot - rapid visual test (J. Mitra & Co. Ltd.).

Results: Among 170 patients with CLD, HBsAg seropositivity was 28% (47/170) while anti-HCV seropositivity was 41% (70/170). Co-infection of HBsAg and anti-HCV was 3.5% (6/170). In patients with alcoholic hepatitis/ cirrhosis, seropositivity of HBsAg & anti-HCV was 19.4% & 29.0% respectively while in patients with non alcoholic chronic hepatitis/cirrhosis, it was 23.1% & 48.1% respectively.

Interpretation and Conclusion : Seroprevalence of HBsAg & anti-HCV in patients with CLD was 28% and 41% respectively whereas co-infection of HBsAg & anti-HCV was 3.5%.

Keywords: Hepatitis B virus, Hepatitis C virus, Hepatocellular carcinoma

INTRODUCTION

Viral hepatitis which causes acute and chronic sequlae, is an important problem world wide. About 1 million deaths per year are attributed to viral hepatitis infections. Nearly two billion people have been acutely infected and approximately 350 million people are chronically infected with hepatitis B virus (HBV) worldwide. At least 15-20% of chronically infected people die due to liver diseases caused by HBV.[1-3] In India alone, there are estimated 43 to 45 million HBsAg carriers and among them 10 to 12 million have HBeAg.[4]

World Health Organization (WHO) estimates that approximately 170 million people are infected with hepatitis C virus (HCV).[1] HCV accounts for 20% of cases of acute hepatitis, 70% cases of chronic hepatitis, 40% cases of end stage cirrhosis, 60% cases of hepatocellular carcinoma (HCC) and 30% cases of liver transplant.[5]

Together, HBV and HCV are the leading causes of liver cancer in the world, accounting for 78% of cases. Both viruses are hepatotrophic and cause progressive liver injuries resulting in the end-stage liver disease. Both share same route of transmission, co-infection with the two viruses is not uncommon, especially in areas with a high prevalence of HBV infection and among people at high risk for parenteral infection.[2]

MATERIAL AND METHODS

This study was conducted from January- December 2011, during which 170 blood samples were collected from patients suffering from chronic liver disorders (CLD) admitted in Medicine Department. Five ml venous blood sample was collected and processed in department of Microbiology. The blood was allowed to clot for 45 min

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at room temperature and the serum was separated after centrifugation at a low speed which was further used to perform requested tests. HBsAg was detected by using Hepacard Test (J. Mitra and Co. Ltd) and anti HCV was detected by using HCV Tridot rapid Visual Test (J. Mitra & Co. Ltd.). The tests were done according to the manufacturer's instructions.

OBSERVATIONS & RESULTS

The study included 170 cases with CLD. Maximum number of patients (n=70) were in the age group of 41-60 yrs while minimum (n=16) were in the age group of 0-20 yrs (Table-I). Mean age of the patients was 43.2. Male to female ratio was 4:1. Ninety five patients were from rural background while 75 were from urban background. Maximum patients were alcohol addicts (n=62) followed by, Injecting Drug User's (IDU's) (n=37), patients having multiple sexual contact (n=30), patients with h/o blood transfusion (n=26), history of surgical procedure (n=11) and perinatal transmission (n=4) (Table-II).

Among 170 patients with CLD, HBsAg seropositivity was 28% (47/170) while anti-HCV seropositivity was 41% (70/170). Co-infection of HBsAg and anti-HCV was 3.5% (6/170). In patients with alcoholic hepatitis/ cirrhosis, seropositivity of HBsAg & anti-HCV was 19.4% & 29.0% respectively while in patients with non alcoholic chronic hepatitis/cirrhosis, it was 23.1% & 48.1% respectively (Table -III).

DISCUSSION

HBV & HCV infections are responsible for liver diseases worldwide. Both share similar modes of transmission. Co-infection with two viruses can lead to severe liver disease and an increased risk of HCC.

The present study shows a high seroprevalence of HCV (41%;70/170) in patients with chronic liver disease as compared to HBsAg positive 28% (47/170). Similar findings were reported by Bukhtiari *et al*[6], Devi *et al*[7] & Singh *et al*[8] who reported anti- HCV in 61.1%, 46.6% & 48%, cases compared to HBsAg positive in 27.8%,

Table -I

Age wise distribution of cases

Age Group (yrs)	No. of cases (n = 170) (%age)
0-20	16 (9.4%)
21-40	55 (32.3%)
41-60	70 (41.2%)
61-80	29 (17.1%)

Table -II

Distribution of cases according to risk factors

Risk factor	No. of cases (n = 170) (%age)
Alcohol addiction	62 (36.5%)
IDUs	37 (21.8%)
H/O sexual contact with multiple partners	30 (17.6%)
H/O Blood transfusion	26 (15.3%)
H/O surgical procedure	11 (6.5%)
Perinatal transmission	4 (2.3%)

Table -III

HBsAg and anti-HCV positivity in relation to chronic liver disease

	HBsAg Positive (%age)	Anti-HCV Positive (%age)
Alcoholic hepatitis/ Cirrhosis (n=62)	12 (19.4)	18 (29.0)
Non Alcoholic Chronic Hepatitis/Cirrhosis (n=108)	25 (23.1)	52(48.1)

Table -IV

Comparison of HBsAg & Anti- HCV positivity by various workers in relation to chronic liver disease

Author	Year of study	Place	Prevalence (% age)		
			HBsAg	Anti -HCV	Co-infection of HBV & HCV
Bukhtiari *et al*[6]	2003	Pakistan	27.8	61.1	7.2
Devi *et al*[7]	2004	Manipur	42.3	46.6	3
Singh *et al*[8]	2004	Chandigarh	30	48	5
Chakravarti *et al*[4]	2005	Delhi	33.33	25.75	79.41
Present study	2012	Patiala	28	41	3.5

42.3% & 30% cases respectively. In contrast to our findings, Chakravarti *et al*[4] had reported a high prevalence of HBsAg (60.6%) as compared to HCV (25.75%) in their study.

The mean age of patients in our study was 43.2. These findings are almost similar to the studies conducted by Singh *et al*[8] and Chakravarti *et al*[4] who reported mean age of the patients 46.5 years and 43.5 yrs respectively.

In our study, maximum patients were alcoholics (36.5%), followed by IDUs (21.8%), had history of multiple sexual contact (17.6%), blood transfusion (15.3%), surgical procedure (6.5%) and perinatal transmission (2.3%). Similarly Devi *et al*[7] reported risk factors like history of blood transfusion (12%), IDUs (5%) and multiple sexual contacts (10%) in their study while Singh *et al*[8] reported history of alcohol abuse in 15% and blood transfusion in 30% of cases in their study.

In our study, co-infection of HBV and HCV was found to be 3.5% (6/170) cases. Devi *et al*[7], Singh *et al*[8] and Bukhtiari *et al*[6] have reported similar findings of co-infection of 3%, 5% and 7.2% in chronic liver diseases respectively. While Chakravarti *et al*[4] has reported a high prevalence of co-infection of 79.41% in their study.

CONCLUSION

HBV and HCV infections are the major factors in the development of chronic liver diseases worldwide. Because the two viruses share similar modes of transmission, co-infection with the two viruses is not uncommon especially in areas where they are more prevalent. The primary concern with HBV/HCV co-infection is that it can lead to more severe liver disease and an increased risk of progression to liver cancer.

Routine evaluation of viral markers should be carried out in acute cases to prevent them from becoming chronic. Great stress must be laid on proper preventive measures such as screening of blood and blood products, safe sexual practices, proper sterilization of instruments, proper disposal of contaminated material and immunization of people at risk, particularly health care workers. In addition, risk factor modification by creating awareness among the masses will help curtail the prevalence of infection.

Therefore we conclude that awareness, early diagnosis and treatment provide the best opportunity for effective medical support.

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