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Prevalence of Hepatitis B Virus, Hepatitis C Virus, and HIV in Patients of Chronic Liver Disease: Study from a Tertiary Care Centre in North-West India

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Original Research Article

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Abstract: Worldwide more than 130 million people are chronically infected by hepatitis C virus (HCV) infection. Hepatitis B virus (HBV) and hepatitis (HCV) C virus are endemic in India and have an etiological role in acute hepatitis, 50 - 70% of which end up with chronic liver disease. As HIV also shares common transmission route, co-infection with hepatitis viruses appears to influence the natural history of the disease in these patient. A total of 210 patients diagnosed as chronic liver disease were screened for HBV, HCV, and HIV. Twenty-five health care workers without any evidence of chronic liver disease were also tested. Out of total 35 positive cases, 33(16.7%) of the samples were positive for HCV, 2(1%) were seropositive for Hepatitis B surface antigen and 1(0.5%) had concomitant HIV and HCV infection. In hepatitis B surface antigen positive cases, 1 (50%) had various risk factors whereas in HCV cases, 27(77%) had risk factors. The HIV seropositive case also had a risk factor. Males were more affected than females in all the infections. The most common age group involved for hepatitis b and c was between 41-60 and for HIV was between 21-30 years. The study helps us to predict the probable risk factors for Hepatitis C/hepatitis B and HIV infection in western Punjab.
Keywords: HCV, HbsAg, HIV, Chronic liver disease, Punjab.

INTRODUCTION

Liver disease has a worldwide distribution [1,2]. Chronic liver disease (CLD) results from an inflammatory injury to the liver, which has persisted for six or more months without complete resolution. CLD comprises of a spectrum of disease such as chronic hepatitis, liver cirrhosis, and Hepatocellular carcinoma [3]. Worldwide more than 130 million people are chronically infected by hepatitis C virus (HCV) infection [4]. Hepatitis B virus (HBV) and hepatitis (HCV) C virus are endemic in India and have an etiological role in acute hepatitis, 50 - 70% of which end up with chronic liver disease [5]. HBV is responsible for approximately 300 million cases of chronic liver infection worldwide. The total HBV virus carrier pool in India is around 43 million [6]. HCV is the major cause of transfusion transmitted non-non-B hepatitis and continues to be a major cause of human liver disease throughout the world. Among blood donors in India, seroprevalence rate varies from 0.48% in Vellore [7] to 1.85% in New Delhi[8] . Seroprevalence studies have also shown co-infection of HBV and HCV, although prevalence may vary from area to area and country to country [9]. Chronic HCV infection is often associated with the development of liver cirrhosis, hepato cellular cancer, liver failure, and death [10] It has been estimated that while the incidence of HCV infection seems to decrease in the developed world, mortality secondary related to HCV infection will continue to increase over the next 20 years[11].

The impact of this infection is also emerging in India due to flaws in India's blood-banking system and non-execution of international standards concerning blood transfusion, reuse of unsterilized needles, syringes and surgical instruments by quacks and intravenous drug abuse.[12] Punjab is a state in the northwest of the Republic of India with high occurrence of risk factors for HCV infection.[13]. As HIV also shares the common transmission route, co-infection with hepatitis viruses may alter the natural history and treatment response of both the diseases[14] . End-stage liver disease is now the leading cause of death in hospitalised HIV positive patients. The present study was conducted to find out the prevalence of these viruses in patients of chronic liver disease as no such data has been reported from this part of the country.

MATERIALS AND METHODS

The present study was conducted in the Department of Medicine, Adesh Institute of Medical Sciences and Research, between January 2017 upto December 2017. 210 clinically diagnosed cases of chronic liver disease(confirmed by Liver function tests/Transient Elastography test/Histo-pathology) with a 3 to 6 months history of liver disease were enrolled. Blood from 25 healthy, age matched health care workers (HCW) without any evidence of disease was also collected. Serum was separated and tested for the presence of hepatitis B surface antigen (HBsAg) and antibodies against HCV by ELISA. The tests were performed according to the manufacturer's instructions provided in the kit. HIV antibodies were detected as per the NACO guidelines. In all the positive cases associated risk factors and predominant signs and symptoms were noted.

RESULTS

A total of 210 diagnosed cases of chronic liver disease were screened for HBV, HCV, and HIV. Twenty-five health care workers without any evidence of chronic liver disease were also tested.

Among the HCV positive patients 24 (73%) were males while as 9(27%) were females. Among the hepatitis B positive patients both (n=2) were males and the HIV positive patient was also a male.

Table-1: Sex distribution of subjects (hcv)

SEX	NO.	%
MALE	24	73
FEMALE	9	27

Table-2: Sex distribution of subjects (hepatitis b)

SEX	NO.	%
MALE	2	100
FEMALE	0	0

Table-3: Sex distribution of subjects (HIV)

SEX	NO.	%
MALE	1	100
FEMALE	0	0

The most common age group of affected patients was 41-50 years for both Hepatitis C and B, and for HIV was between 21-30 years.

Out of total 210 cases, 35 were positive of one or more viruses. Of these positive cases, 33(16.7%) of the samples were positive for HCV. 2(1%) were seropositive for Hepatitis B surface antigen and 1(0.5%) had concomitant HIV and HCV infection. One patient with HCV was diagnosed to have hepatocellular cancer (HCC)

Table-4: Serological markers in patients with chronic liver disease

HbsAg	HCV	HIV	Total
2	--	--	2
--	32	--	32
--	1	1	1

Table-5: Distribution of subjects according to districts

DISTRICT	HCV	HbsAg	HIV
Bathinda	15	2	1
Mukhtasar	2	--	--
Fazilka	--	--	--
Mansa	5	--	--
Barnala	4	--	--
Sangrur	3	--	--
Moga	1	--	--
Faridkot	1	--	--
Gurdaspur	1	--	--

In hepatitis B surface antigen positive cases, 1 (50%) had various risk factors whereas in HCV cases, 27(77%) had risk factors. The HIV seropositive case also had a risk factor.

Table-6: Risk Factors (Probable mode of acquisition) in HbsAg positive, HCV and HIV seropositive patients

Risk Factor	HCV	HbsAg	HIV
Blood Transfusion	2	1	1
Parentral drug intake	15	--	--
Multiple sexual exposure	1	--	--
Multiple risk factors	9	--	--
No risk factor identified	6	1	--

DISCUSSION

The awareness and understanding of hepatitis C (HCV) has raised dramatically over the past decades. HCV is mostly transmitted through exposure to infective blood through transfusions of HCV-contaminated blood and blood products, contaminated injections during medical procedures, and through injection drug use. Sexual transmission is also possible [15]. Chronic infection by these viruses leads to slow progressive liver disease that result in cirrhosis, chronic liver failure and hepatocellular carcinoma (HCC).

In present study, Hepatitis C infection was found to be more than thrice as prevalent in males as compared to females, whereas the cases of hepatitis B and HIV were only males. This may be explained from the fact that males are more prone to harbor the risk factors for this infection like drug abuse and unprotected sex.

In our study, the prevalence of HCV/HbsAg infection was highest in age group of 41-60 years. This may be due to the long asymptomatic period of Hepatitis C infection with symptoms appearing after a long latent period. Moreover, the above age groups are most likely to indulge in risky behavior and practices such as unprotected sex and substance abuse. Predominant rural distribution of subjects is most likely due to lack of proper health care facilities in rural areas, reuse of unsterilized instruments and syringes by quacks, drug abuse and lack of awareness about the prevention and the treatment of this disease among rural people. Most of the cases (of all viruses)were from Bathinda district of Punjab , which may also be due to presence of our hospital in the said district.

In the present study conducted in 210 clinically diagnosed cases of chronic liver disease, 1% cases were positive for HBsAg. Whereas in some studies it has been reported to be as high as 40% and 43.7% [6, 16].The prevalence of hepatitis b may be less in our study due to the awareness and immunization campaign by the government in the region. HCV positivity in the present study was 16.7%. It has been reported to be 40.80% which is quite high in a study conducted in Pakistan [17]. It might be because the results vary from place to place and with the type of test used. Other authors [18, 6] have shown it to be 8.33%, 4.26% from cases of chronic active hepatitis respectively. One patient (0.5%) was positive for both HCV and HIV. Liver disease has become an important cause of morbidity and mortality in patients with HIV/AIDS due largely to complications derived from chronic active hepatitis involving co-infection with hepatitis B or C virus. HIV alone can also cause hepatic involvement with other systemic disease in advanced HIV stage[19]. It has been estimated that approximately one-third of the deaths of patients with HIV infection are in some way related to liver disease.

To summarize, our study is one of the first in this region to co-relate the prevalence of Hepatitis B Virus, Hepatitis C Virus, and HIV in patients of chronic liver disease. To prevent the spread of HCV/HbsAg/HIV, people must be educated about these infections and their mode of transmission. All the hospitals should implement proper infection control strategies. So, great stress must be laid on proper preventive measures such as screening of blood, safe sexual practices, proper sterilization of instruments, proper disposal of contaminated material, and immunization of people at risk particularly health care workers.

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