

Original Research Article

Prevalence of hepatitis-C viral infection among opioid dependent injectable drug users: a study conducted at regional hospital drug addiction and treatment centre, Solan, Himachal Pradesh, India

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ABSTRACT

Background: There are a limited number of studies regarding the prevalence of hepatitis B, hepatitis C and HIV infections among the drug addicts in Himachal Pradesh; C virus (HCV) infection in north India especially Himachal with very high rates of substance abuse. The present study was attempted to study the prevalence of hepatitis C among the injectable drug users, which is more important in a country like India where viral hepatitis is estimated to be among the top ten causes of deaths.

Methods: A study was conducted in 2019-2020 (July-April). HBsAg, anti-HBs, anti-HCV and anti-HIV tests in 235 drug addicts were studied. Urine samples obtained from drug addicts were analyzed for cannabis, opiate and cocaine metabolites.

Results: The subjects included were 235 IDUs who were opioid dependent. All the 235 drug users were males, and their mean age was 30.69±9.494 years; 112 (47.7%) of them were in the age group ranging 20 - 29 years ($p < 0.05$). Of 235 drug addicts, 113 (48.1%) and 115 (48.9%) were only cannabis and opiate users, respectively. The frequencies of HBsAg, anti-HBs and anti-HCV among drug addicts were 2.6%, 38.3%, and 9.4%, respectively.

Conclusions: The obtained results showed that HCV infection was an alarming problem among opiate users in this part of Himachal. It is suggested to rapidly diagnose the infected persons; thus preventive measures and appropriate control may limit further transmission of these infections.

Keywords: Cannabis, Cocaine, Drug users, Intravenous drug user, Hepatitis B, Hepatitis C, Opioid-related disorders

INTRODUCTION

It is estimated that 170 million people worldwide are infected with the hepatitis C virus (HCV). HCV is a single stranded RNA flavivirus, originally identified in 1989 as the major cause of non-A and non-B hepatitis.¹ Although only a small proportion of acute HCV infections are symptomatic, HCV progresses to chronic infection in approximately 80% of cases and is an important cause of chronic liver disease worldwide.^{2,3}

Approximately 15 to 20% of persons who acquire HCV infection progress to potentially serious cirrhosis and end-stage liver disease.⁴

The prevalence of blood-borne hepatitis is usually higher among injection drug users than in the other population. These individuals play a role as a reservoir and source of viral transmission.⁵ The most important route in transmission of these viruses among drug users is the use of drug in injectable form. Among drug users, risky

sexual behavior and sharing contaminated drug preparation equipment are common; thus, viral transmission is facilitated by either parenteral or sexual route.⁶

Additionally, a study carried out on chronic intranasal drug users showed that it has implications for potential transmission of HCV through contact with contaminated nasal secretions.⁷ Drug users are a potential source of infection, and represent a serious threat for their environment. Therefore, it is extremely important to investigate infected persons to prevent further transmission of these infections by preventive measures and appropriate control.

Injection drug use is the main mode of transmission of HCV in developed countries, transmitted through blood-to blood contact, either via direct or indirect sharing of injecting equipment. In India, blood transfusions and unsafe therapeutic injections were the predominant modalities of transmission of HCV.

However, after HCV screening of blood products was made mandatory in India, injection drug use is gradually becoming the major route of HCV infection. Indian studies have reported HCV seropositivity in IDUs to be in the range of 20 to 90 percent; there are pockets of very high HCV seroprevalence in India, otherwise the range is moderate (30-50%) compared to western studies (40 - 90%).⁸ In Manipur, various studies have shown a very high prevalence (90.4-98%) of HCV in IDUs. Chelleng et al. in 2008 studied the risk behaviours of IDUs for HCV in Mizoram and showed that the prevalence of HCV antibodies was 71.2 per cent among the active IDUs.⁹⁻¹¹

So from the above mentioned studies we conclude that there is a paucity of published data on seroprevalence and epidemiology of Hepatitis C infection in Himachal.

The specific objectives of the present study were to find out the seroprevalence of anti-HCV antibody in IDUs attending a deaddiction centre in north India, and to study the risk estimates for HCV seropositivity in the total sample of opioid users with regard to various demographic, clinical, behavioural and personality factors.

METHODS

The current retrospective study was conducted in the Regional hospital and Deaddiction center from July 2019 to April 2020 in solan hospital. Two hundred-thirty-five drug addicts treated at the drug addiction treatment centre were included in this study.

Serological analysis

Five mL blood samples were collected from drug users, and centrifuged at 5000 rpm for five minutes at clinical laboratory of the hospital. HBsAg, anti-HBs, anti-HCV and anti-HIV tests were conducted based on enzyme linked immunosorbent assay (ELISA) technique. The positive and negative controls were included in each run. Specimens with cutoff index <1 were considered as negative; cutoff index ≥ 1 were considered as positive for HBsAg, anti-HCV and anti-HIV tests. Samples less than 10 mLU/mL were considered as negative, and values above 10 mLU/mL were considered as positive for anti-HBs. Initially reactive assays were repeated in duplicate. If HIV tests were repeatedly positive, they were confirmed by Western blot test.

Drug analysis

Urine samples obtained from drug users were analyzed for cannabis, opiate and cocaine metabolites in the clinical laboratory of the hospital.

Statistical analysis

Statistical analyses were conducted using the SPSS version 21 (SPSS Inc, Chicago, IL, USA). The differences in susceptibility results were evaluated by the Chi-square test. $p < 0.05$ was considered statistically significant.

RESULTS

All the 235 drug users were male, and their mean age was 30.69 ± 9.494 years (range 15 - 58 years). As shown in Table 1, 47.7% of them were in the age group ranging 20 - 29 years ($p < 0.05$).

Table 1: Distribution of HBV, HCV markers, cannabis and opiate users regarding the age^a.

Characteristics	No tested	HBsAg positive	Anti-HBs positive	Anti-HCV positive	Cannabis positive	Opiate positive
Overall	235	6 (2.6)	90 (38.3)	22 (9.4)	113 (48.1)	115 (48.9)
Age	<20	14 (6)	0	10 (11.1)	0	10 (8.7)
	20 - 29	112 (47.7)	2 (33.3)	35 (38.9)	5 (22.7)	42 (36.5)
	30 - 39	68 (28.9)	2 (33.3)	25 (27.8)	7 (31.8)	38 (33)
	40 - 49	26 (11.1)	1 (16.7)	13 (14.4)	5 (22.7)	7 (6.2)
	50 - 59	15 (6.4)	1 (16.7)	7 (7.8)	5 (22.7)	5 (4.4)

^a Data are presented as No (%).

Table 2: Frequency of HBV and HCV markers in cannabis and opiate users.

HBV and HCV markers		Cannabis users, n= 113	Opiate users, n= 115	p value
HBsAg	Negative	109 (96.5)	113 (98.3)	>0.05
	Positive	4 (3.5)	2 (1.7)	
Anti-HBs	Negative	68 (60.2)	74 (64.3)	>0.05
	Positive	45 (39.8)	41 (35.7)	
Anti-HCV	Negative	111 (98.2)	97 (84.3)	<0.001
	Positive	2 (1.8)	18 (15.7)	

Of 235 drug addicts, 113 and 115 were only cannabis and opiate users, respectively. In urine samples of seven drug addicts both cannabis and opiate metabolites were detected. Cocaine was detected in none of the urine samples. A high proportion (58.7%) of the cannabis users were younger than 30 years ($p < 0.001$), while 57.8% of the opiate users were older than 30 years ($p < 0.01$). The frequencies of HBsAg, anti-HBs and anti-HCV among drug addicts were 2.6%, 38.3%, and 9.4%, respectively. None of the drug addicts was positive for HIV. Among the drug addicts with HBsAg positive, anti-HBs was negative.

The frequency of HBV and HCV markers in cannabis and opiate users is shown in Table 2. Of the 20 patients with anti-HCV positive, 18 were opiate users, and two were cannabis users. Anti-HCV was more prevalent in opiate users than in cannabis users: 15.7% vs. 1.8% ($p < 0.001$). However, there was no significant difference in the positive test results of HBsAg and anti-HBs between opiate and cannabis users.

DISCUSSION

It is estimated that there are 161 million cannabis, 16 million opiate and 16 - 21 million cocaine users in the worldwide. The most widely consumed drug in the world is cannabis.^{12,13} The majority of injection drug users constitute opiate users, and opiate use may be associated with prevalence of HCV and HIV infection. Earlier studies from PGI, a premier institute of north India too have reported high prevalence rates of anti-HCV antibody among IDUs. In studies from Kolkata and Delhi, anti-HCV prevalence in IDUs was also found to be quite high (42.96 and 36.45% respectively).^{14,15} High anti-HCV seroprevalence of 80 per cent has been reported among a cohort of IDUs from Kolkata, India.¹⁶ We can interpret from the above literature that the prevalence of HCV among IDUs is on the rise in India particularly North India. The present study was aimed at studying the prevalence in our area where research is lacking. It was observed that majority of the HCV positive IDUs were in their youthful years of life with males getting the predominant share. This is alarming as young people are the main force for any economy and if they are lost that means progress shall hamper. This entire drug menace has created a drug dependent

population and left the majority as unemployed further adding to the burden.

The current study was the first hepatitis and HIV prevalence study conducted among cannabis and opiate users in this part of Himachal. The frequency of HBsAg among opiate users was not higher than that of the cannabis users in this part. However, the frequency of HCV marker was higher among opiate users. In the current study, the opiate group presented a relatively low frequency of HBsAg positivity when compared to the studies carried out in other countries. As expected, the frequency of anti-HCV (15.7%) was high in the opiate group, but the global prevalence of this infection among drug addicts is higher.^{17,18} One of the reasons why HCV is common among drug addicts could be that HCV infection becomes chronic in about 75%-85% of cases, whereas HBV infection becomes chronic in only 5%. Thus, people infected by HCV may transmit the infection over a long period. In the current study, HIV antibody was detected in none of the 235 drug addicts. The current study findings showed that HCV infection is an alarming problem among opiate users in this part of Himachal. Therefore, rapid diagnosis of infected persons is suggested to prevent further transmission of these infections by adopting preventive and appropriate control measures.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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