

Absence of hepatitis C infection among illegal drug users in Bucaramanga, Colombia

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Abstract

The aim of this study was to estimate the prevalence of hepatitis C virus (HCV) and identify risk factors associated with the transmission this virus among drug users. In 2009 we performed a cross-sectional study at three facilities handling cases of drug addiction and in one prison. 259 participants were interviewed to collect socio-demographic information and determine risk factors. Anti-HCV antibodies were identified with two different immunoassays. HCV prevalence was 0%. 98% of participants used illegal drugs either orally or nasally while 4.2% injected drugs. 78% of participants reported marijuana consumption, 51% reported consumption of bazuco (Colombian variant of crack cocaine), 50.2% reported cocaine consumption and 22.8% reported amphetamine consumption. 59% had consumed drugs for more than 5 years, 60.2% had tattoos, 17.8% had piercings, and 84.9% have practiced unsafe sex. HCV prevalence was lower than reported in previous studies of drug users in Latin-America. However, we identified risk factors that would facilitate HCV infection once the virus is introduced in this population.

Key words

Hepatitis C, drug user, antibodies, prevalence, risk factors.

INTRODUCTION

The hepatitis C virus (HCV) is the leading cause of morbidity and mortality associated with chronic hepatic disease, cirrhosis and hepatocellular carcinoma (1). The World Health Organization (WHO) estimates that 3% of the world's population, approximately 170 million people, is chronically infected by HCV (2). The risk factors for HCV transmission have been studied extensively, allowing the categorization of the groups among which transmission occurs most frequently. IV drug users (IVDU) are most frequently infected, followed by hemophiliacs and then hemodialysis and poly transfused patients (3-6). Transmission is also related to intranasal cocaine use, tattoos, unprotected sex, accidents with contaminated needles and sharing per-

sonal hygiene elements such as razors and electric shavers machines (7,8).

HCV prevalence among non-intravenous drug users (NIVDUs) has been reported at 2%, 3% and 17% for frequent cocaine and crack users (9, 10). It has been said that upon ingesting these substances, lesions are produced in the oral and nasal mucous. These lesions favor transmission of the virus when inhalation devices contaminated with infected blood are used (11). On the other hand, IVDUs have a higher prevalence, ranging from 10% to 96%. In this group, sharing infected needles to administer IV drugs such as heroin is considered to be the main risk factor related to HCV transmission. Various epidemiologic studies conducted in Spain have found prevalences among IVDUs between 40% and 89.6% (12, 13) while a 66% prevalence

has been cited in Australia (14), and between prevalences of 12% and 70% has been reported in Thailand (15). In Latin America, Mexico has shown the highest rates with a seroprevalence of 96% (16), Argentina has reported 55% and reports from Brazil range between 53% and 75% (17, 18). In Venezuela, a study of at-risk groups in the city of Maracaibo found a very low rate (1%) among illegal drug users 90% of whom were NIVDUs while 11.8% were IVUDs (19).

Drug addiction is considered to be a public health problem in Colombia. Each year the number of users increases, primarily in the adolescent population (20). In the year 2006, an investigation in the city of Cali found that 10.9% of university students take illegal drugs of which the most frequently used was marijuana (89%) (21). However, the Colombian university population has the lowest percentage of consumers found among epidemiological studies in South America (10) allowing one to infer that the proportion of illegal drug users is higher than has been reported in Colombia.

Data regarding HCV prevalence reported to the health surveillance system in Colombia comes primarily from blood donors, which is close to 1%. Information regarding at-risk groups is scarce, and completely absent in the case of illegal drug users. One publication about seroprevalence among patients who have received multiple transfusion found anti-HCV antibodies in 9% of these cases, with the highest frequency among hemodialysis patients (6.1%) (22). An 0.8% prevalence of human immunodeficiency virus (HIV) and HCV co-infection was found among patients in the city of Medellin (23). Considering that 96% of HIV infections in Colombia occur through sexual encounters (24), these results confirm that HCV transmission through this medium is very low.

Hepatitis C is asymptomatic and chronic in about 80% of all cases (25). Taking HCV transmission among risk groups in Colombia as a reference, it is necessary to perform an active search for cases among other groups such as illegal drug users. Due to the high cost and frequent complications of treating chronic hepatitis C, infected individuals must be identified so that action can be taken to decrease the transmission and impact of the disease. Developing epidemiological knowledge of HCV infections among at-risk groups is critical for developing prevention programs and adequate care (26).

The present study's objective was to estimate the prevalence of HCV infection, and to identify risk factors related to transmission of the virus among illegal drug users in four rehabilitation centers and in one jail in the city of Bucaramanga, Colombia.

MATERIALS AND METHODS

A cross sectional study using a non-probability sample was conducted during the first semester of 2009. The study's population was illegal drug users from the Casa Shalom de Paz, Hogares Crea and Renovarse rehabilitation centers and the Palogordo prison, located in Bucaramanga and its metropolitan area. Patient and prisoner participation was voluntary through a signed informed consent form, previously approved by the ethics committee of the University of Santander UDES. Individuals of any gender or age, who mentioned parenteral, oral or nasal drug abuse for three months or more, were included.

Socio-demographic information including age, gender, level of education and health insurance and pension were obtained through interviews. Other additional risk factors associated with HCV transmission inquired about included specification of illegal drugs, duration of use, method of administration, sexual behavior, tattoos and piercings. Variables previously described by G. Quaglio *et al.* were taken into account for this purpose (27).

Once the interview was complete a 7ml blood sample was taken in tubes without anticoagulant. Serum obtained from these samples was tested by ELISA (Third generation kit from DAI (DAI HCV 3.0[®]) for the presence of anti-HCV antibodies. A second analysis of the samples was performed using chemiluminescence (VITROS[®] Anti-HCV Assay, Johnson and Johnson). For controls, 5 serums with anti-HCV antibodies and 5 serums which were negative for HCV were obtained from the Public Health Department Laboratory in Santander.

The size of the sample population was represented by 250 individuals. A 5% prevalence for a 5% alpha error and 90% power were assumed. Central tendency and dispersion measures were taken and position measurements or percentages were calculated according to the nature and distribution of the variables to characterize the population.

RESULTS

The final sample was composed of 259 individuals between 13 and 56 years of age (29.6 ± 8.6 years of age). 90 of them were contacted through Casa Shalom de Paz, Hogares Crea and Renovarse rehabilitation centers. 63 came from Casa Shalom de Paz which has a capacity for 200 patients, 21 came from Hogares Crea which has a 30 patient capacity, and 6 came from Renovarse (6 patient capacity). 169 out of the 1400 prisoners at the Palogordo Penitentiary Institute were included in the sample. 12.2% of the patients from the rehabilitation centers were female. The age group which

consumes illegal drugs the most, with a prevalence of 40.5 %, consists of people between the ages of 26 and 34 years old. They are followed by people between the ages of 19 and 25, with a prevalence of 25.9%. 47.1% had high school educations, and 39.4% had only primary education. 68.1% did not have health insurance (Table 1).

Table 1. Socio-demographic characteristics of the sample studied.

Variable	Frequency in percentages (n=259)
Age	
<18 years	6.5
19-25	25.9
26-34	40.5
35- 44	20.5
> 45	6.6
Level of education	
None	4.6
Primary School	39.4
High School	47.1
Superior	8.9
Type of health care	
None	68.7
Subsidized	15.4
Contributive	15.8

The 159 serum samples were processed by third generation ELISA from DAI [®], and all samples were negative. Afterwards, the chemiluminescence analysis gave the same results, which corresponds to 0% prevalence for HCV infections in the studied population.

The studied population had a wide range of risk factors associated with HCV transmission- 98% reported oral and nasal use of illegal drugs, while only 4.2% reported IV use. Most of the population said they consumed more than one type of drug. Marijuana consumption was reported by 78%, followed by bazuco consumption at 51%, cocaine consumption at 50.2% and amphetamine consumption at 22.8%. Heroin was used by 3.9%, and it was taken exclusively through IV. The frequency of other substances such as glue and hallucinatory mushrooms are shown in Table 2. Upon asking about how long they had been taking drugs, more than 59% said 5 years or more. Other important factors such as tattoos (60.2%), piercings (17.8%), sexual promiscuity (>45.2%), unprotected sex (84.9%) and homosexuality (19.7%) were also surveyed.

DISCUSSION

This is the first written seroprevalence study of HCV infection and risk factors associated with the virus's transmission among illegal drug users in Colombia. Despite using

a sample of convenience, the sample size used was representative if a prevalence among IVDUs and NIVDUs below that reported in nearby countries is assumed (10, 28).

Table 2. Risk factors for Hepatitis C Virus infection among illegal drug in the Bucaramanga metropolitan area.

Risk factors	Frequency in percentages (n=259)
Route of drug administration¹	
Oral or nasal	98
Intravenous ²	4.2
Type of illegal drug¹	
Marijuana	78.8
Bazuco	51
Cocaine	50.2
Amphetamines	22.8
Glue	11.6
Heroin	3.9
Hallucinogenic mushrooms	4.6
Duration of drug use	
>5 years	59.8
1-5 years	21.2
< 1 year	29.3
Tattoos	60.2
Piercings	17.8
Number of sexual partners in the last year	
None	10.4
Between 1 and 5	44.4
> 5	45.2
Does not use a condom	84.9
Homosexual relations	19.7

¹ More than one answer noted.

² 91% reported sharing needles more than once during the administration of substances intravenously.

Our findings of 0% prevalence do not concur with that described by other authors which range between 2% and 90% among IVDU and NIVDU populations (9, 10,12 ,14, 17). These results could be associated with the low frequency in our population of intravenous use of illegal drugs (4.2%). HCV transmission among IV drug addicts is still controversial. Among NIVDUs the greatest prevalences occur in cities such as Chicago and New York in which a high proportion of drug addicts (around 90%) are IVDUs infected with the virus (29 - 31). It has been stated that sharing non-injection devices is a possible channel for HCV transmission. Other studies suggest tattoos, age and having friends with HCV as important factors related to the transmission of the virus (32, 29, 33). A systematic review of the literature concluded that there is not enough evidence to relate behaviors associated with drug use among NIVDUs with HCV infection (11). Taking into account that most

publications on the subject are descriptive, it has not been possible to define the specific risk factors present among NIVDUs that facilitate HCV transmission. On the other hand, it has been proven that, because of sharing needles contaminated with the virus, intravenous use is the most efficient route for HCV transmission among drug users (17, 18, 34).

Despite the absence of HCV infection in the analyzed population, several risk factors were found which were previously described among illegal drug users. In a recent study by CL Lopez *et al.* there was a strong association between ages over 30 showed and HCV infection (OR= 16). This was apparently due to greater lifetime exposure to the virus (28). In the present study, 59.8% of the individuals had been taking illegal drugs for over five years, and 47.1% were 30 years old or older. Hepatitis C among male drug users is more frequent than among female drug users because of the higher proportion of drug users among males. In Colombia, according to a University study from Cali, 67.3% of marijuana consumers and 66.7% of cocaine users were male (21).

The type of illegal drug is an indicator for method of administration and thus for the risk associated with HCV transmission. Heroin is administered intravenously more than any other substance. In our population 3.9% used heroin. Similar results were described in Cali where the prevalence of heroin use was 4.3% (21). Marijuana, cocaine, bazuco and other substances reported in this study showed no associations with HCV infections when compared with the literature taking into account that these substances are mainly consumed by non-IV methods.

Whether tattoos and piercings are risk factors is controversial (35, 36). It is probable that a small amount of inoculated virus in the skin during these cosmetic procedures develops on an asymptomatic course that is hard to detect. Nonetheless, this association has been described (35, 9). In this study 60.2% of the illegal drug users had at least 1 tattoo and 17.8% had piercings.

84.9% of the participants did not use condoms and 45.2% had had more than five sexual partners in the last year. It is currently known that HCV transmission through sexual encounters is very unusual, and it is most often associated with drug use, especially intravenous drug use (37). In the city of Buenos Aires (Argentina), unprotected sexual relations among NIVDUs was associated with human immunodeficiency virus (HIV), hepatitis B virus (HBV) and syphilis, but not with HCV (10).

CONCLUSIONS

No HCV infections were found among the population of illegal drug users in Bucaramanga. This allows one to con-

clude that prevalence is lower than those reported in other Latin American countries except Venezuela.

Risk factors that could result in HCV transmission once it has been introduced into the population were found. These factors were tattoos, piercings, age of drug using population and intravenous drug use.

The possibility exists that other infectious agents such as HIV, HBV and syphilis that impact public health are circulating among drug users. Therefore new studies are required to look for these pathogens. Finally, it is suggested that public health programs be implemented and/ or promoted in order to decrease the risk factors that were found.

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