Journal of Health Researches. 2012; 1(1): 26-33.
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Original

Determination of Relative Frequency of HBS Ag, HCV and HIV Antibodies Serum Markers among Admitted Intravenous Drug Users in Infectious Disease Ward of Razi Hospital in Ahvaz, 2004-2005

Abdolrasool Nikkhooy [1], Mohammad Nikkhooy [2], Nasrin Saadati [3*]

1 Department of Community Medicine, Ahvaz Jundishapur University of Medical Sciences, Jundishapur Infectious and Tropical Diseases Research Center, Ahvaz, Iran

2 General Physician, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

3 Department of Community Medicine, Fertility and Infertility Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Received:10/22/2011 Accepted: 4/3/2012

Abstract

Introduction: Intravenous drug users as a serious health problem in communities have economical and social effects as well as health and hygienic complications. Viral infections may be transmitted through drug injection by shared syringes among users. The aim of this study has been to determine the relative frequency of HBV, HCV and HIV infection's markers as epidemiological data in Ahvaz.

Materials & Methods: This retrospective cross sectional study was conducted on IV drug users (IVDUs) who were admitted in infectious diseases ward of Razi Ahvaz Hospital in 2004-2005. The collected data of serum markers of these patients were coded, and statistical analyses were conducted.

Results: 1890 patients were evaluated and 258 patients were IVDUs (14.6%). 154 patients (59.98%) were tested for anti HCV-Ab of whom 65 patients were HCV-Ab positive (42.2%). 205 patients (79.45%) were tested for anti HIV-Ab of whom 38 patients were HIV-Ab positive (18.53%). 67 patients (25.96%) were tested for HBs-Ag of whom 15 patients were HBs-Ag positive (22.67%). 12 patients (4.65%) were tested for anti HBc-Ab of whom 8 patients were HBc-Ab positive (66.66%).

Conclusion: In this study, high infection rate relates to different causes such as increasing consumes of opium substances and recent differences in fumigated opium substances pattern toward injecting drug use in society level, which increases the prevalence of these infections, The present study determined some critical information about the prevalence of serum markers HBS Ag, HCV and HIV antibodies among intravenous drug users in southwestern of Iran.

Keywords: Substance Abuse, Intravenous; Hepatitis B Surface Antigens; Hepatitis B Core Antigens; HIV; Hepatitis C

[*]**Corresponding author:** ***Tel:*** +98-6113361518 , ***Fax:***+98 6113332036, ***E-mail*****:** nsaadaty@ajums.ac.ir

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Introduction

About two million addicts and about eight hundred thousand people in Iran use the fancy of drug. It means that 4% of people in our community suffer from addiction [1]. The viruses, hepatitis C, hepatitis B and human immunodeficiency virus (HIV) are the most important infectious factors that transmitted through injection. The construction of viruses with a lipid coating that transmission through blood is common [2]. Consumption of shared needles is the most important risk factor as transmition of these infections among injecting drug users [3, 4, 5]

The prevalence of blood-borne hepatitis is usually higher in injecting drug users than the normal population. Epidemiological data show that in intravenous drug users the highest numbers of patients are hepatitis C positive. There is the likelihood of transmission of hepatitis B, C diseases through percutaneous, sexual contact and also mother to fetus and newborn. HBe-Ag has been identified in semen and saliva of infected persons [6,7].

Nowadays, hepatitis B and C are the priorities in public health and prevention of these diseases is considered an important issue. One of the important factors for transmission of disease among drug users is using shared syringes. Significant epidemics among injecting drug users, in about half of the countries of North Africa and the Middle East, including Iran, have been reported. About 65 percent of known cases of HIV infection in Iran are associated with intravenous drug abuse [8]. Mir Ahmadizade and colleagues in Gorgan studied 1,061 addicts in 2001. Blood samples of all studied patients, 0.76% of the total sample (1.2% of injecting drug users and 0.33% of non-injecting drug users) were HIV positive (by ELISA1-2 test and western blot). The high prevalence of infection in intravenous drug users could also be due to the interval time between last injection and investigation as well as unsafe injection method [9]. Masood *et al* studied 88 injecting drug users for HBs-Ag and HBe-Ag, anti-HBC and anti-HIV antibodies. Forty eight subjects were males. The age range was between 19 to 49 years and the duration of their addiction was between 6 months to 30 years. The results showed that 5.6% of patients were HBs-Ag positive in their serum and anti-HBe antibody positive was 40.9%. Anti-HIV antibodies were not observed in any individual [10].

Khodadadizadeh and colleagues randomly selected 180 addicts referred to Rafsanjan University of medical science - quit center at 2006. They took 10 cc blood samples after encodings confidential to identify anti-HCV. ELISA test was done and then the tests were confirmed by Iran blood transfusion organization. 17.21% were IV drug users. Thirteen patients (7.2%) of the investigated population were HCV-infected of which 5 were injecting drug users, 5 (2.7%) of the total population were HBV-infected and 3 of this group were injecting drug users, 3 patients (1.66%) of the total population were HIV-infected and all were injecting drug users [11]. Mohtasham Amiri and colleagues had conducted laboratory tests on 460 known cases who were intravenous drug addicts and 45.4% of patients suffered from HCV infection [12].

Crane and his colleagues in 2004 showed 27% anti-HBc positive and 23% anti-HCV positive cases of 135 injecting drug users[13]. In study of Salehi and colleagues in 2001 in Zahedan, 441 drug users were randomly selected. HBe-Ag and Anti HCV antibody were positive in 8.4% and 9.1% of subjects, respectively. However, 25.9% and 29.6% of them were intravenous drug users. Finally, this study showed that

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by increasing the age, frequency of HBe-Ag and hepatitis C infection were increased [14]. Li and colleagues had conducted a study in China in 2006 on 406 injecting drug users, including 383 males and 23 females. The results showed that 36.45% of them suffered from hepatitis B, and 69.7% from hepatitis C [15]. Spittal and colleagues studied 512 drug addicts in Vancouver and Prince George of Canada in 2007, of which 276 were injecting drug users. The prevalence of HIV infection in these patients was 17% and 7% in Vancouver and Prince George, respectively. The prevalence of HCV infection in these cities was 62% and 57%, respectively[16]. In a study of Burt and his colleagues in America in 2007, which was carried on injecting drug users, 15%, 32% and 2 to 3% of studied patients were HBcAb, HCV Ab and HIV Ab positive, respectively [17]. Imani, Karimi and Ksaiyan in a descriptive - analytical study in 2005 on 133 intravenous drug addicts showed 8(%6.2) HBV positive cases. They found a strong association between the use of shared needles and infection ($p < 0.05$). They concluded that intravenous drug users had higher rates of HBV infection than the general population [19]. Identification and education of these patients is very important.There are a few baseline data on the frequency distribution and details of HBV, HCV & HIV infection among intravenous drug users in Ahvaz, so the aim of in this retrospective study has been to determine the relative frequency of HBV, HCV & HIV infection's markers as epidemiological data in a southwestern province of Iran.

Materials & Methods

This study was a retrospective cross-sectional study, conducted on the medical files of the known cases of injecting drug users. As mentioned, in the medical file of these patients, known patients who were injecting drug users, were identified. After collecting the initial data set, they were analyzed using SPSS 15(SPSS Inc. Chicago, IL) software. Results of medical files of all hospitalized patients in infectious diseases ward of Razi Hospital in Ahvaz from 2004 till 2005 were investigated.

One hundred and twenty three cases were excluded from the study due to incomplete files. Finally 1767 patients were enrolled in the study. Additional cost was not imposed to these patients. Obviously, the size of the study population is equal to the number of injecting drug users who have been admitted to the infectious ward in the aforementioned time period. Then, according to the records of the evaluation of these patients, serum markers and information obtained from these patients were recorded. HBs -Ag (hepatitis B surface antigen), HBc-Ab (hepatitis B core antibody), HCV antibodies and anti-HIV antibody were assessed by ELISA test; Positive anti HIV-Ab was eventually confirmed by western blot. Blood samples for assessment of HIV infection were tested twice by ELISA test and then were documented by western blot. All tests were confirmed by blood transfusion organization. Confidential patient's information and the name of them remained secret.

Results

1767 patients entered the study. The information in the medical files of these patients showed that 473 patients (26.76%) were identified to be drug addicted. From these subjects 258(14.6%) patients were intravenous drug users (IVDUs) and 215 (12.16%) were inhaled drug users. Note that only 3 of these were women. So due to the low number of female cases, the statistical analysis of data between different sexes, was ignored.

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Table 1: The status of anti HCV-Ab among subjects

The number of cases	Frequency	Percent of patients tested	Percent of the tested injecting drug users in total patients
HCV Ab positive	65	42.21	25.19
HCV Ab negative	89	57.79	34.49
Not tested	104	-	40.32
Total	258	-	100

Table 2: The status of HBs-Ag among subjects

The number of cases	Frequency	Percent of tested patients	Percent of the tested injecting drug users in total patients
HBs Ag-positive	15	22.39	5.81
HBs Ag negative	52	77.61	20.16
Not tested	191	-	74.03
Total	258	-	100

Table 3: The status of HBc-Ab among subjects

The number of cases	Frequency	Percent of tested patients	Percent of the tested injecting drug users in total patients
HBc Ab positive	8	66.66	3.1
HBc Ab negative	4	33.33	1.55
Not tested	246	-	95.34
Total	258	-	100

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Table 4: The status of HIV-Ab among subject

The number of cases	Frequency	Percent of tested patients	Percent of the tested injecting drug users in total patients
HIV Ab positive	38	66.66	14.72
HIV Ab negative	167	33.34	64.73
Not tested	53	-	20.55
Total	258	-	100

Discussion

In this study, from the records of 258 patients, 67(15+52) injecting drug users admitted in Razi hospital were tested for HBs-Ag (25.96%) and 12 (8+4) cases were tested for HBc-Ab (4.65%),15 subjects of these patients were HBs-Ag positive(22.39%) and 8 patients were HBc-Ab positive(66.66%). 57% of injecting drug users inVitus and his colleague's study were HBc Ab positive [18]. Study of Crane and his colleagues showed that 27% of injecting drug users was anti-HBc positive and 23% anti-HCV positive [13]. The results of Li and colleagues study showed that 36.45% of injecting drug users had hepatitis B [15]. In study of Masood and his colleagues 5.6% of drug users showed HBs-Ag in their serum and anti-HBe antibody was positive in 40.9% of them [10]. In Khodadadizadeh and colleagues, s study 5 patients (2.7%) out of 180 subjects were HBV-infected from whom 3 subjects were injection drug users [11]. In a study conducted by Burt and his colleagues in America in 2007, which was carried on injecting drug users, 15% of cases were HBc -Ab positive [17]. Imani, Karimi and Ksaiyan in a descriptive - analytical study on 133 intravenous drug addicts showed 8 (6.2%) HBV positive cases. They found a strong association between the use of shared needles and infection ($p<0.05$). They concluded that intravenous drug users had higher rates of HBV infection than the general population [19]. In a prospective cross- sectional descriptive study, 250 hemodialysis patients were selected at least six months, from winter 2008 to spring 2009. Prevalence of HBV infection was high among the dialysis patients (20%), and frequency of occult hepatitis B was 4%. The dominant genotype of HBV was D2 (92%) followed by genotype B6 (4%) in hem dialysis patients in Khuzestan province [20].

The HBV infection prevalence in Iran is estimated to be 2.14 % (95%CI: 1.92-2.35), which is 2.55% (95%CI: 2.25-2.85) and 2.03% (95%CI: 1.6-2.46 percent) in men and women, respectively [21]. In the study of Vitus and his colleagues on 436 injecting drug users in 2007, 44% of them had acute viral hepatitis, 3% chronic hepatitis B, 1.6% fulminant hepatitis and 46 % hepatitis C. 71% were HCV Ab positive and 57% HBc Ab positive[18]. Hajiani, Hashemi and Jalali conducted a cross-sectional study on a total of 1,725 consecutive patients with HBV liver diseases attending Ahvaz Jundishapur University hospitals and hepatitis clinics from 2002

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to 2008. The results showed that 150 cases (11.5%) were found to be reactive for anti-delta antibodies. Anti-HDV was found in 3.59% of patients with inactive chronic hepatitis, 45.5% of patients with chronic active hepatitis, and 43.2% of cirrhotic and hepatocellular carcinoma patients ($P < 0.001$). They concluded that HDV infection was common in patients with HBV in our community and all HBV patients should be screened for HDV infection [22]. Prevalence of HBs Ag (26%) and HBc-Ab (66%) in our study was estimated to be higher than all domestic and international. In 154 patients (59.98% of 258 injecting drug users), serum marker of HCV-Ab has been investigated which was positive in 65 subjects (42.21%). Study of Crane and his colleagues showed that 23% of injecting drug users were anti-HCV positive [13]. Mohtasham Amiri and colleagues in a study on 460 known intravenous drug addicts in 2007 found that 45.4% of patients were HCV-Ab positive [12]. Li et al. in a study on 406 injecting drug users in China in 2006 showed that 69.7% suffered from hepatitis C. [15].

Intravenous drug abuse is a key factor affecting the transmission of blood-borne pathogens. In the study of Vitus and his colleagues on 436 injecting drug users in 2007, 44% of them had acute viral hepatitis, 1.6% fulminant hepatitis and 46 % hepatitis C [18]. In Khodadadizadeh and his colleagues study on 180 addicts referred to Rafsanjan university of medical sciences quit center in 2006, 13 patients (7.2%) of the total population were HCV-infected from whom 5 were injecting drug users [11].

In the study of Salehi and colleagues in 2001 in Zahedan on 441 drug users, anti HCV prevalence in the population studied was 9.1 percent. However, this ratio was 29.6 percent in intravenous drug users. Finally, this study showed that with increasing age, frequency of hepatitis C infection increases [14]. In the study of Spittal and colleagues on 512 drug addicts in Vancouver and Prince George, Canada in 2007, the prevalence of HCV infection was 62% and 57% in each city, respectively [16]. In the study of Burt and his colleagues 32% were HCV-Ab positive [17]. Alavian et al in descriptive and analytic cross-sectional studies and surveys on the prevalence of HCV infection in the Iranian general population between 2001 and 2008 found that the HCV infection prevalence rate in Iran is 0.16% (95% confidence interval [CI]: 0%-0.59%) [23].

Among 258 HIV tested patients, among whom 205 patients were injecting drug users, HIV-Ab serum markers were studied (79.45%), the test results in 38 patients, were positive (18.53%), or 14.72% of total population were infected by HIV.

In the study of Mir Ahmadizade and colleagues on 1,061 addicts, 0.76% of the total sample (1.2% of injecting drug users and 0.33% of non-injecting drug users) were infected by HIV. They concluded that the high prevalence of infection in intravenous drug users could also be due to the time of their arrest and prior to it unsafe injection method has been used [9].But all of the addicts of Masood and his colleague's study were anti-HIV antibody negative [10]. In Khodadadizadeh and his colleague's study 3 patients (1.66%) of the total (180) population were HIV-infected that all were injection drug users [11].

In the study of Burt and his colleagues in America in 2007, HIV Ab was positive in 2 to 3% [17]. About 7 percent of the population, were drug users, 5% were intravenous drug users and more than 10% to 50% used shared needles [24].

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Be noted, infection levels of serum markers for HIV and hepatitis B (HBs Ag and HBc Ab) in our study was much higher than other studies because these differences can be explained by the increasing use of injecting drugs in our country.

Relatively significant incidence of addiction in our country compared to some other countries and intravenous drug abuse can be the cause of hepatitis C transmission. Screening patients seem logical and statistical analysis for HIV in the larger sample size is recommended. More studies are needed to elucidate HBS-Ag, HCV and HIV antibodies among intravenous drug users.

Conclusion

We concluded that the relatively high rates of HBS-Ag, HCV and HIV antibodies among intravenous drug users in this study, makes the need for hazard reduction programs absolutely essential.

Two major strategies to achieve this goal are recommended: The centrality of education in a wide range of at risk populations and the need to perform studies in the wider population is quite tangible.

Acknowledgment

The authors would like to thank vice chancellor for research affairs of Ahvaz Jundishapur university of Medical Sciences. This paper is issued from thesis of and financial support was provided by Ahvaz Jundishapur university of Medical Sciences. The research protocol was approved by the Ethics Committee of the Ahvaz Jundishapur University of Medical Sciences.

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