Journal of AIDS and HIV Research Vol. 4(6), pp. 152-158, June 2012
Available online at http://www.academicjournals.org/JAHR
DOI: 10.5897/JAHR11.039
ISSN 2141-2359 ©2012 Academic Journals

Full Length Research Paper

Prevalence of hepatitis B virus (HBV), hepatitis C virus (HCV) and human immune-deficiency virus (HIV) infections among intravenous drug users (IDUs) in the MAH-o-MEHR Harm Reduction Center of Tehran, Iran

Ali Majidpour M. D.[1]*, Maryam Majidpour D. D. S.[2] and Mozhgan Quassemi Motlag M. D.[1]

[1]Department of Infectious Diseases, Tehran University of Medical Sciences, Tehran, Iran.
[2]Jahrom University of Medical Sciences, Jahrom, Iran.

Accepted 24 November, 2011

Intravenous drug users are considered to be at high risk of having the infections, hepatitis B virus (BBV), hepatitis C (HCV) and human immune-deficiency virus (HIV), because of their high risky behaviours especially of sharing of syringes. The objective of this study was to estimate the prevalence of BBV, HCV and HIV in intravenous drug users in a harm reduction center. A cross-sectional study was conducted in a sample of 118 cases of IDUs who were referred to Mah-o-Mehr Harm Reduction Center in Southern of Tehran in 2008. Information on sexual behaviour, socio-demographic and drug use variables were collected by means of a check list from their medical records. SPSS-15 software was used for data analysis and *p-value<0.05* was considered significant. From the total of 118 IDU users, 91.5% were males. Mean age of them was 33.52(SD=8.25). Abused substances were crack (60.2%), heroin (31.4%) and Norgezik (8.5%). Prevalence of total infections was 32.2% and prevalence of HIV, HBV and HCV were 10.2, 5.1 and 26.3% respectively. Eleven patients (9.32%) had two co-infection: One HIV and HBV, one HBV and HCV, 9 HIV and HCV. All 38 infected IVD users were males. Sexual contact in infected group was significantly higher than non-infected (47.4 vs. 15%; p<0.001). Frequencies of heroin abuse, homelessness and singles in infected group were significantly higher than non-infected group. The prevalence of HBV, HCV and HIV was higher among intravenous drug users in this center than general population. Risk reduction programs are required for this group.

Key words: Hepatitis B virus, hepatitis C virus, HIV, intravenous drug user, harm reduction, Iran.

INTRODUCTION

Intravenous drug users are a group of people who are at an increased risk of having infection with blood borne viruses like hepatitis B virus, hepatitis C virus and human immunodeficiency virus. Sharing of injecting equipment like needles and syringes is considered the major reason for the extent of HBV, HCV and HIV among the drug using population (Tahmina et al., 2000; Burattini et al., 2000). Use of sharing syringe is the most important risk factor in this group (Samuel et al., 2001; Stark et al., 1997). Additionally studies have reported high rates of commercial and unprotected sex among drug users.

*Corresponding author. E-mail: a-majidpour@tums.ac.ir.

Prevalence of blood-borne hepatitis in IDUsers is higher than general population (Estrada, 2002). And most studies agree that there is a higher prevalence of anti HCV among intravenous drug users (Alter et al., 1999; Van Beek et al., 1998).

Nowadays, HBV, HCV are priority health problems in the world and prevention of these infections are very important because 5 to 10% of HBV and >50% HCV lead to chronic liver disease. These infections can be transmitted by sexually contact and mother to newborn which is higher in HBV (Ichimura et al., 1995; Saha et al., 2000).

There are documents that blood-borne infection is increasing in intravenous drug users in all parts of the world (Zhang et al., 2002).

Table 1. Frequency of HCV, HBC, HIV in subjects in MAH-o-MEHR Harm Reduction Center.

Disease	Abundance	Percentage
No disease	80	67.8
HIV	2	1.7
HBV	4	3.4
HCV	21	17.8
HIV and HBV	1	0.8
HIV and HCV	9	7.6
HBV and HCV	1	0.8
Total	118	100

Table 2. Distribution of HIV, HBV and HCV in MAH-o-MEHR Harm Reduction Center.

Disease		Number	Percentage
	+	12	10.2
HIV	-	106	89.8
	Total	118	100
	+	6	5.1
HBV	-	112	94.9
	Total	118	100
	+	31	26.3
HCV	-	87	73.7
	Total	118	100

HIV infection is one of the important health problems worldwide and common use of syringe is a very important factor in increasing of HIV in IDUser. 65% of confirmed HIV infections in Iran are in intravenous drug users (The Ministry of Health and Medical Education of Iran, 2002). Unger et al. (2006) showed that the length of substance used and sharing of syringes and sexual contact are factors which have relations with transmission of blood-borne viral diseases. In study of Cappola et al. (1996) in 155 cases of intravenous drug users, 81.1% were infected with HCV; 32.9%, HIV, and 7.4%, HBV. Eight percent of them were negative and 20.6% were infected with one, 39.9% with two, and 28.7% with three of them (Coppola et al., 1994). In a study in China, 37.8% of IDUsers were infected with HCV, 50.6% with HBV, and 22.7% with two of them at the same time (Baozhang et al., 1997).

Haj et al. (2005) study on 65 cases of IDUsers in Logman Hakim Hospital of Tehran showed that 17, 14 and 4% of them were positive for HCV, HIV and HBV respectively.

In Mohammad et al. ‘s (2002) study on 479 IDUsers in Hamadan prison, the prevalence of HIV, HbsAg and HCV were 10.4, 46 and 41.54% respectively.

Based on the increase of IDUs, the prevalence of HBV, HCV, and HIV was done in MAH-O-MEHR Harm Reduction Center in Southern Tehran.

MATERIALS AND METHODS

This cross-sectional study was conducted in Mah-o-Mehr Harm Reduction Center in Tehran, Iran from 2005 to 2008. The study subjects included those intravenous drug users who were referred to this center. Mah-o-Mehr center is one of the harm reduction centers in Southern Tehran, where IDUs are referred to for consultation and methadone therapy.

A total of 118 cases of IDUs attended the harm reduction center and were enrolled into the study and data were collected from records of cases by check list .Data regarding socio-demographic characteristics, types of drugs used with duration and sexual practices and situation of HBV, HCV, HIV, occupation and residence of cases and marital situation were studied.

Ethical issues were considered for long in the study and all investigations were done, with information obtained about cases strictly considered.

Statistical analysis

SPSS-15 software was used for data analysis and p value <0.05 was considered as significant.

RESULTS

One hundred and eighteen cases of intravenous drug users were studied. Mean age of them was 33.52 (SD=8.25) and spectrum of ages was from 15 to 52 years. 42.4% were less than 30 years; 44.1%, 30-45, and 13.6% were more than 45 years. 108 cases were males (91.5%) and 10(8.5%) were females. Length of addiction was from 2 to 32 years with mean time 11.6 (SD=6.7) years. 47.5% were single and 52.5% married. 36.4% of them had permanent home, 10.2% were messengers and 53.4% did not have any resident home and they were homeless.

25.4% had extramarital sexual contact. Crack (60.2%), heroin (31.4%) and norgezik (8.5%) were substances that were used.

HIV, HBV, HCV prevalences were 10.2, 5.1 and 26.3%. 11 cases (9.32%) had co-infection: 1 case HBV+HIV, 1 case HCV+HBV, and 9 cases HCV+HIV. Prevalence of 3 infections was not different in age groups (p>0.05). All 38 cases were males and the prevalence of infection was more significantly in male (p=0.02) (Tables 1 and 2).

Length of substance use, homelessness, marital status had significant relationship with prevalence of these infections. Sexually contact in infected cases were significantly higher than non- infected (47.4 vs. 15%, OR= 2.64, p<0.001). Sexually contact had significant relationship with every of these infectious agents (Table 3).

Heroin abuse was significantly high in infected group (55.3 vs. 20%, p<0.001). Frequency use of heroin, crack, and norgezik in infected group was 55.3, 42.1, 2.6% and 20, 77.5, 11.3% in non- infected. Homelessness was

Table 3. Distribution of HIV, HBV and HCV in subgroups of IVDUs in MAH-o-MEHR Harm Reduction Center.

IVDU subgroups		Infection status		P value
		Infected	Non-infected	
Age range	15-29	21(42%)	29(58%)	>0.05
	30-44	12(23.1%)	40(76.9%)	
	>=45	5(31.3%)	11(68.8%)	
Gender	Male	38(35.2%)	70(64.8%)	0.02
	Female	0(0%)	10(100%)	
Substance	Heroin	21(56.8%)	16(43.2%)	<0.001
	Crack	16(22.5%)	55(77.5%)	
	Norgezik	1(10%)	9(90%)	
Illegal sexual contact	+	18(60%)	12(40%)	<0.001
	-	20(22.7%)	68(77.3%)	
Residency	Permanent	8(18.6%)	35(81.4%)	0.02
	Temporary	3(25%)	9(75%)	
	Homeless	27(42.9%)	36(57.1%)	
Marital status	Single	24(42.9%)	32(57.1%)	0.019
	Married	14(22.6%)	48(77.4%)	

significantly higher in infected group than non-infected (71.1 vs. 45%, p=0.02) and homelessness had specific relation with HCV (77.4% were HCV positive).

Frequency of single was higher in infected group than non-infected (63.2 vs. 40%, p=0.019) (Tables 4 to 6).

DISCUSSION

This study was carried out in intravenous drug users who were referred to a harm reduction center from 2005 to 2008.

Hepatitis B infection was 5.1% in this study, similar to previous studies of Shahrekord (Imani et al., 2006), Esfahan (Rostami et al., 2006) and other studies that hace reported from 1.04 to 11% (Haj et al., 2005; Mohammad et al., 2002; Rostami et al., 2006); and it was higher than general population in Iran. But the prevalence of HBV in IDUs in Delhi was 39.5% (Bastos et al., 2000); Brasilia, 15% (Oliveira et al., 1999) and in other studies it was 50.6% (Baozhang et al., 1997), 40% (Panda et al., 1998), 55.8% (Taeri et al., 2008), and 25% (Zakizadeh and Sadeghian, 2002), which are very high from our study.

The measurement of HBsAg for diagnosis of HBV and instead of HBsAb and HBcAb may be the important reason for this significant difference.

The prevalence of HCV was 26.3%, lower than the study of Taeri et al. (2008) which was 75.5% in HIV positive IDUs (Mir et al., 2005); and similar to study of Zakizadeh and Sadeghian (2002) which was 30.8% in IDUs prisoners in 2001(De Jesus-Caraballo et al., 2008) in Iran. In different studies, it was reported from 17 to 66% (Haj et al., 2005; Mohammad et al., 2002; Sandesh et al., 2006).

HCV prevalence in IDUs was from 4.8 to 70% in different countries (Estrada, 2002; Gerard et al., 2005; Chang et al., 1999; Marranconi et al., 1994; Hayashi et al., 1991; Patti et al., 1993; Haley and Fischer, 2001).

In most studies HCV infection was more prevalent than HBV and HIV in IDUs. Studies in the past 10 years in Iran showed that the prevalence of HCV has increased (Zali et al., 2000, Ridzon et al., 1997) and it was more common in prisoners than non-prisoners and in intravenous drug users more than non drug users (Corny-Cantilena et al., 1996; Mirahmadizadeh et al., 2001; Celentano et al., 1999).

Prevalence of HIV was 10.2% higher than previous studies in Iran. Imani et al. (2006) reported 0.75% in 133 IDUs in Shahrekord in 2004 and Mohammad et al.(2002) reported that it was 1.04% in 479 addicted prisoners in Hamadan in western of Iran in 1998 and in study of Mir Ahmadi it was 1.2% in 1061 addicted cases in Shiraz in 1999 (Kumar, 1999). Haj et al. (2005) reported that HIV was 14% in addicted patients who were admitted in Loghman Hakim Hospital because of soft tissue infection.

The prevalence of HIV in this study was less than the study of Valhov and Junge (1998) where one third of IDUs were infected with HIV/AIDS, and sharing of syringe and injection was the most important route of transmission

Table 4. Frequency of HIV in subgroups of IVDUs in MAH-o-MEHR Harm Reduction Center.

IVDU s subgroups		HIV		P value
		+	-	
Age range	15-29	7(14%)	43(86%)	>0.05
	30-44	3(5.8%)	49(94.2%)	
	>=45	2(12.5%)	14(87.5%)	
Gender	Male	12(11.1%)	96(89.9%)	>0.05
	Female	0(0%)	10(100%)	
Substance	Heroin	8(21.6%)	29(78.4%)	0.018
	Crack	4(5.6%)	67(94.4%)	
	Norgezik	0(0%)	10(100%)	
Illegal sexual contact	+	6(20%)	24(80%)	0.04
	-	6(6.8%)	82(93.2%)	
Residency	Permanent	2(4.7%)	41(95.3%)	>0.05
	Temporary	2(16.7%)	10(83.3%)	
	Homeless	8(12.7%)	55(87.3%)	
Marital status	Single	9(16.1%)	47(83.9%)	0.04
	Married	3(4.8%)	59(95.2%)	

Table 5. Frequency of HBV in subgroups of IVDUs in MAH-o-MEHR Harm Reduction Center.

IVDU s subgroups		HBV		P value
		+	-	
Age range	15-29	3(6%)	47(94%)	>0.05
	30-44	2(3.8%)	50(95.2%)	
	>=45	1(6.3%)	15(93.7%)	
Gender	Male	6(5.6%)	102(94.4%)	>0.05
	Female	0(0%)	10(100%)	
Substance	Heroin	3(8.1%)	34(91.9%)	>0.05
	Crack	2(2.8%)	69(97.2%)	
	Norgezik	1(10%)	9(90%)	
Illegal sexual Contact	+	4(13.3%)	26(86.7%)	0.017
	-	2 (2.3%)	86(97.7%)	
Residency	Permanent	1(2.3%)	42(97.7%)	>0.05
	Temporary	2(16.7%)	10(83.3%)	
	Homeless	3(4.8%)	60(95.2%)	
Marital status	Single	3(5.4%)	53(94.6%)	>0.05
	Married	3(4.8%)	59(95.2%)	

Table 6. Frequency of HCV in subgroups of IVDUs in MAH-o-MEHR Harm Reduction Center.

IVDU s subgroups		HCV		P value
		+	-	
Age range	15-29	18(36%)	32(64%)	>0.05
	30-44	9(17.3%)	43(82.7%)	
	>=45	4(25%)	12(75%)	
Gender	Male	31(28.7%)	77(71.3%)	0.04
	Female	0(0%)	10(100%)	
Substance	Heroin	17(45.9%)	20(54.1%)	0.002
	Crack	14(19.7%)	57(80.3%)	
	Norgezik	0(0%)	10(100%)	
Illegal sexual Contact	+	14(46.7%)	16(53.3%)	0.003
	-	17(19.3%)	71(80.7%)	
Residency	Permanent	7(16.3%)	36(83.7%)	0.004
	Temporary	0(0%)	12(100%)	
	Homeless	24(38.1%)	39(61.9%)	
Marital status	Single	20(35.7%)	36(64.3%)	0.03
	Married	11(17.7%)	51(82.3%)	

of infection (Valhov and Junge, 1998). In a study of Cappola et al. (1996) in 155 cases IDUs, the prevalence of HCV, HIV and HBV was 81.1, 32.9 and 7.4% (Coppola et al., 1994), more than that of this study. Also, Celentano (1999) reported HIV prevalence of 31% in IDUs in Thailand which was higher than that of this study (Guadagnino et al., 1995). The prevalence of HIV was 55.8% in IDUs in India which is much more than that of our study and others (Thomas et al., 1995).

In this study HCV was more prevalent than HBV and HIV (26.3 vs. 5.1% and 10.2%) which is the same for other studies from Iran and other countries (Haj et al., 2005; Mohammad et al., 2002; Mirahmadizadeh et al., 2001; Imani et al., 2006; Rostami et al., 2006; Kumar, 1999; Oliveira et al., 1999; Valhov and Junge, 1998; Ahmadi and Jamali, 2006; Panda et al., 1998; Celentano et al., 1999).

Extramarital sexual contact and IDU users sharing common syringes increase the risk of transmission. HCV prevalence had direct relation with duration of intravenous drug use (Asadi and Marjani, 2004).

Education of high risk groups, distribution of sterile syringes among IVD users, diagnosis and treatment of infected IVD users are mainstays in harm reduction. Knowledge of these groups about transmission of these viruses is not usually enough and the amount of knowledge of these groups about HIV and its prevention has direct correlation with the degree of study, amount of income, sexual habit, length of addiction and prisoner. Attitude about HIV and its prevention also has direct relationship with degree of study (Talaei et al., 2007). This study showed that, in extramarital sex contact, homelessness, and singles these viral infections were higher. In this study 91.5% of subjects were males, which may be due to lower prevalence of drug abuse in females and limitation of them for coming to related center. Mean age of our study was 33.5 year which is similar to that of other studies (Ahmadi and Jamali, 2006; Asadi and Marjani, 2004; Talaei et al., 2007; Baveja et al., 2003).

It is suggested the study should be done with a large sample and by using all of serologic tests of HBV and HCV.

Conclusion

This study showed that HBV, HCV, and HIV were higher in IVD users and HCV was most prevalent of them all. And it is suggested that it the following be done:

1. Education of addicts about routes of transmission of these viruses.
2. Distribution of disposable syringe among IVD users.
3. Referring and encouraging IVD users to methadone clinics.
4. Treatment of sex partner of drug users

ACKNOWLEDGMENT

The authors wish to thank the staff of Mah-o-Mehr Center for helping us to collect data, and also subjects who

participated in this study.

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