Original Article

HIV/HBV, HIV/HCV AND HIV/HTLV-1 CO INFECTION AMONG INJECTING DRUG USER PATIENTS HOSPITALIZED AT THE INFECTIOUS DISEASE WARD OF A TRAINING HOSPITAL IN IRAN

Seyed Mohammad Alavi[1], Arash Etemadi[2]

ABSTRACT

Objectives: To assess the prevalence and risk factors for HBV, HCV and HTLV-I co infection in the Iranian HIV positive Injecting Drug Users (IDU) patients admitted in hospital.

Methodology: Analyses were based on 154 male IDU patients admitted in Infectious disease ward of Razi Hospital, Ahwaz, Iran, from April 2001 to March 2003. All of them had been tested for HIV infection (Elisa-antibody &Western blot), HBV surface antigen, HCV antibody and HTLV-1 antibody.

Results: One hundred and four patients (67.53%) were identified as HIV infected. Among HIV infected, HB surface antigen, HCV antibody and HTLV-I antibody were positive in 44.23% and 74.04% and 16.33% patients respectively. HCV/HBV/HIV and HCV/HBV/HIV/HTLV-1 co infection were 20.20% and 8.65% respectively.

Conclusions: Co infection with HBV or HCV or HTLV-1 is common among hospitalized HIV-infected IDU patients in the region of study. HIV disease outcomes appear to be adversely affected by HBV/HCV/HTLV-I co infection, so identification of these viral infections is recommended as routine tests for this population.

KEY WORDS: Co-infection, Injecting drug user (IDU), Hepatitis B virus, Hepatitis C virus, HTLV-1, HIV.

Pak J Med Sci July - September 2007 Vol. 23 No. 4 510-513

INTRODUCTION

Human immune deficiency virus (HIV) has spread considerably among injection-drug users (IDU) in parts of the world, especially in Asia and Iran. In Iran, there are an estimated 200,000 injecting drug users (IDUs). HIV/AIDS in Iran is associated with the injection of drugs, accounting for transmission of more than two-thirds of HIV infections.[1] Sharing of injection equipment and imprisonment are the strongest predictors of HIV infection in Iran.[2]

Injection drug users are among the high risk groups for acquisition of viral infection such as HIV, hepatitis B virus (HBV), hepatitis C virus (HCV) and HTLV-I/II.[3] Hepatitis B and C viral infections are highly prevalent among HIV-infected persons, generally as a result of shared transmission routes.[4] HIV modifies the natural history of HBV, with higher rates of chronic HBV infection and progression to advanced liver disease among persons with HIV/HBV co infection.[5] The impact of HBV on HIV natural history is less certain.[4,6] HIV also modifies the natural history of HCV infection, with clear evidence of higher HCV viral load and

1. Dr. Seyed Mohammad Alavi, MD
2. Dr. Arash Etemadi, MD
1-2: Infectious Disease Ward,
Razi Hospital,
Jundi Shapour University of Medical Sciences,
Ahwaz – Iran.

Correspondence

Dr. Seyed Mohammad Alavi,
No. 52, West 11 Avenue,
Kianabad,
Ahwaz – Iran.
Email: alavi1329dr@yahoo.com

* Received for Publication: December 6, 2006

* Accepted: April 2, 2007

accelerated liver disease progression in persons with HIV/HCV co infection.[7] As with HBV, there is contradictory evidence on the effects of HCV on HIV disease progression.[8] Several studies suggested accelerated HIV disease progression.[9,10] With careful management, most people with HIV/HCV or HIV/HBV co infection can be successfully treated for both diseases.[11]

We found no reports about the impact of HTLV-1 on HIV natural history. There is no valid data about impact of this viral co infection on HIV disease progression in Iranian IDU patients. Further studies are, therefore, required to assess the impact of viral infection on HIV disease progression. This study aimed to assess the frequency of HIV, HTLV-1, HBV and HCV within the IDU patients, to identify characteristics associated with co infection with chronic viral infections, and for better management.

PATIENTS AND METHODS

All the IDUs patients admitted in Razi hospital from April 2001 to March 2003 in Ahwaz city in south western region of Iran were studied. Core data variables collected on patients included gender, date of birth, date of most recent visit, HIV exposure category, HBV status, HCV status, and risk factors for HIV, HTLV-1, HBV and HCV co-infection.

HBV infection was defined by a positive HBV surface antigen (HBsAg) and HCV infection by a positive anti-HCVantibody and HIV infection, HTLV-1 infection by positive antibody and western blot tests.[3,4] Frequency of this co infection was calculated for those with recorded test results. Risk factors for co infection with viral agents were determined by taking past medical history during first visit after admission.

RESULTS

Frequency and risk factors of HBV/HIV and HCV/HIV and HTLV-1/HIVcoinfection are shown in Tables-I & II. Of the one hundred and fifty four IDU admitted patients, all were male in 22-46 years age range with 28 years as mean age. 132(86.5%) had imprisonment history, 146 (95%) used heroin, 132(86.5%) shared injection equipment. One hundred and four patients (60.52%) had a HIV positive result. Of HIV positive IDU patients, forty six patients (44.23%) had HBsAg, seventy seven patients (74.04%) had anti-HCV antibody result, and seventeen patients (16.33%) were infected with HTLV-1. HCV/HBV/HIV co-infection and HCV/HBV/HIV/HTLV-1 co-infection were 20.20% and 8.65% respectively.

DISCUSSION

HIV Prevalence in the general population is believed to be still at a low level. In 2004/2005

Table-I: Factors associated with HBV infection among HIV infected IDUs

		HBV–	*HBV+*	
		No and %	*No and %*	*P value*
Sex	Male	58 (100)	46 (100)	-
	Female	0 (0.00)	0 (0.00)	-
Exposure	IDU	33 (56.90)	42 (91.32)	-
	MSM&IDU	1 (1.72)	2 (4.34)	0.597
	MSW&IDU	22 (37.93)	1 (2.17)	<0.001
	BLOOD&IDU	2 (3.45)	1 (2.17)	0.422
Age	<30	26 (44.83)	22 (47.73)	0.224
	30-39	20 (34.49)	20 (43.38)	
	+40	12 (20.68)	4 (8.89)	
Co infected	No	2 (3.44)	25 (54.35)	
with HCV	Yes	56(96.56)	21 (45.65)	<0.001
Co infected	No	50 (86.20)	37 (80.43)	
withHTLV-1	Yes	8 (13.80)	9 (19.57)	0.429
TOTAL		58 (55.77)	46(44.23)	

P Value < 0.05 is considered significant

Table-II: Factors associated with HCV infection among HIV infected IDUs

		HCV– *No and %*	*HCV+* *No and %*	*P value*
Sex	Male	27 (100)	77 (100)	-
	Female	0 (0.00)	0 (0.00)	-
Exposure	IDU	21 (77.78)	68 (88.32)	
	MSM&IDU	0 (0.00)	1 (1.30)	0.767
	MSW&IDU	4 (14.81)	4 (5.19)	0.102
	BLOOD&IDU	2 (7.41)	4 (5.19)	0.450
Age	<30	4 (14.81)	9 (11.68)	0.908
	30-39	18 (66.67)	54 (70.13)	
	+40	5 (18.52)	14 (18.19)	
Co infected	No	2 (7.40)	56 (72.72)	
with HBV	Yes	25 (92.60)	21 (27.28)	<0.001
Co infected	No	19 (70.37)	68 (88.32)	
with HTLV-1	Yes	8 (29.63)	9 (11.68)	0.030
TOTAL		27 (25.96)	77(74.04)	

P Value < 0.05 is considered significant

Persian year, prevalence of HIV among blood donors was 0.005%; while that of HBV was 0.7% and HCV 0.1%.[12] Approximately 65% of people diagnosed with HIV in Iran have reported injecting drug use. Prevalence of HIV among IDUs varies in the different provinces and settings. It varies from as low as 6.1% to as high as 23% among community IDUs in Tehran city and 25% in the Shiraz Prison.[12,13] In one study in Iran (Zanjan prison) prevalence of HIV, HBVand HCV infections were 1.2%, 3.8% and 47.4%, respectively, and there was a significant association between HIV and HCV infections.[14] The results of our study about the impact of imprisonment on HIV prevalence among IDU patients is in agreement with Vazirian and et al.[2] The frequency of HIV, HBV, HCV and HTLV-1in this study is considerably higher than the general Iranian population. The corresponding figures among HIV-infected IDU patients in our study reflect overlapping modes of transmission for these three blood-borne viruses. The prevalence of HBV co-infection among Iranian HIV-infected patients is similar to countries, where injecting drug use contributes a larger proportion of HIV infection,[15] but in our study it was considerably higher (44.23% vs. 25%). In contrast, the frequency of HCV co infection among Iranian HIV-infected is similar to countries such as the USA, Spain and Italy,[16-18] but in our study it was considerably higher (74.04% vs. 47.4%). An association between HBV infection and HCV infection indicates shared transmission routes, in particular parenteral exposure.[19]

The major determinant of HCV co infection in this study was route of HIV transmission, with more than 70% of patients who acquired HIV through parenteral routes found to have HCV co-infection. HCV/HBV co-infection in HIV infected IDU patients was 20.20%.This study showed that HIV infected IDU patients who reported both male homosexual contact and injecting drug use had a very low HCVorHBV co-infection frequency, because homosexuality is not a common route of HIV transmission in Iran.

There are several limitations to our study that should be considered in relation to the findings. First, HBV and HCV status was based on admitted patients rather than through a standardized serological survey. Second, HCV co infection status was based on antibody rather than HCV RNA detection, and HBV co infection status in some cases may have been based on a single positive HBsAg result.Third, nearly more than half of HIV infected IDU patients were in the end stage of their disease.

Although in contrast to other countries[3] prevalence of HTLV-I infection is very low in

general population (0.02%) in Iran, but HTLV-I infection is highly prevalent among HIV infected IDU patients (16.33%) in Ahwaz, Iran. Frequency of HTLV-1 infection in HIV positive IDUs is higher than HIV negative ones. HTLV-1/ HCV/HBV co infection in HIV infected IDU patients was 8.65%.

CONCLUSION

As survival for patients with HIV infection continues to improve, co morbid conditions, such as chronic viral hepatitis and HTLV-1 infection will be major management issues. Thus, routine screening for HCV, HBV and HTLV-I should be considered in this population.

ACKNOWLEDGEMENTS

We wish to thank CDC staff of Khuzestan Health Center particularly Dr Tarahhomi for his collaboration. We thank infectious ward personnel and Pasteur laboratory particularly Dr. Moradzadegan for their cooperation and technical assistance in conducting diagnostic tests.

REFERENCES

1. Razzaghi EM, Movaghar AR, Green TC, Khoshnood K. A qualitative study of injecting drug users in Tehran, Iran. Harm Reduct J 2006;18, 3:12.
2. Vazirian M, Nassirimanesh B, Zamani S, Ono-Kihara M, Kihara M, Ravari SM, et al. Needle and syringe sharing practices of injecting drug users participating in an outreach HIV prevention program in Tehran, Iran: A cross-sectional study. Harm Reduct J 2005;7:2:19.
3. Pando MA, Bautista CT, Maulen S, Duranti R, Marone R, Rey J. Epidemiology of human immunodeficiency virus, viral hepatitis (B and C), treponema pallidum, and human T-cell lymphotropic I/II virus among men who have sex with men in Buenos Aires, Argentina. Sex Transm Dis 2006;33(5):307-13.
4. Polsky B, Kim AY, Chung RT. Human immunodeficiency virus and hepatitis B and C co infection: Pathogenic interactions, natural history and therapy. AIDS Clin Rev 2000-2001;263-306.
5. Dore GJ, Cooper DA. The impact of HIV therapy on co infection with hepatitis B and hepatitis C viruses. Curr Opin Infect Dis 2001;14:749-55.
6. Puoti M, Airoldi M, Bruno R. Hepatitis B co-infection in human immunodeficiency virus-infected subjects. AIDS Rev 2002;4:27-35.
7. Benhamou Y, Bochet M, Di Martino V. Liver fibrosis progression in human immunodeficiency virus and hepatitis-C virus co infected patients. Hepatology 1999;30:1054-8.
8. Pol S, Vallet-Pritchard A, Fontaine H. Hepatitis C and human immune deficiency co infection at the era of highly active antiretroviral therapy. J Viral Hepatitis 2002;9:1-8.
9. Sulkowski MS, Moore RD, Mehta SH, Chiasson RE, Thomas DL. Hepatitis C and progression of HIV disease. JAMA 2002;288:199-206.
10. Sabin CA, Telfer P, Phillips AN, Bhagani S, Lee CA. The association between hepatitis C virus genotype and human immunodeficiency virus. Disease progression in a cohort of hemophilic men. J Infect Dis 1997;175:164-8.
11. Highleyman L. HIV and hepatitis C co infection. BETA. 2003;15(4):32-44.
12. Setayesh HR. Country assesments, Islamic Republic of Iran, UNAIDS/WHO report, 2006.
13. Gezairy HA. WHO Eastern Mediterranean region report. Geneca WHO, 2000.
14. Khani M, Vakili MM. Prevalence and risk factors of HIV, Hepatitis B virus and Hepatitis C virus infections in drug addicts among Zanjan prisoners. Arch Iranian Med 2003;6(1):1-4.
15. Kaldor J. Prevalence of hepatitis B in Australia. St Vincent's Hospital Melbourne. 9th National Symposium on Hepatitis B and C. Melbourne, Australia. November 2002.
16. Thomas DL. Hepatitis C and human immunodeficiency virus infection. Hepatology 2002;36(Suppl. 1):S20–S9.
17. Francisci D, Baldelli F, Papili R, Stagni G, Pauluzzi S. Prevalence of HBV, HDV and HCV hepatitis markers in HIVpositivepatients. Eur J Epidemiol 1995;11:123-6.
18. Puig-Basagoiti F, Cabana M, Guilera M. Prevalence and route of transmission of infection with a novel DNA virus(TTV), hepatitis C virus, and hepatitis G virus in patients infected with HIV. J AIDS 2000;23:89-94.
19. Dai CYYuML, Chuang WL, Lin ZY. Influence of hepatitis C virus on the profiles of patients with chronic hepatitis B virus infection. J Gastroenterol Hepatol 2001;16:636-40.