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Prevalence and Risk Factors of HIV, Hepatitis B Virus and Hepatitis C Virus Infections in Drug Addicts among Gorgan Prisoners

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The objective of the present study is to determine the prevalence of HIV, HBV and HCV in the addict prisoners in Gorgan city. In this cross-sectional study conducted between 2002-2003, a randomized sampling was done on 121 drug addict prisoners. A blood sample was taken from each case and serologic tests for HBV, HCV and HIV were done, then complementary tests for HIV (ELISA and Western-blot) were done. Physical examinations and face-to-face interviews were done. Chi-square and Exact-Fisher test were used for data analysis and relationships between factors. The prevalence of HIV, HCV and HBV were 5.8, 23.1 and 4.1%, respectively. Injection was the most common route of drug use. Marital status was significantly related to HIV and HCV infection. Tattooing and shared syringe use were significantly related to all these infections. Because of the high prevalence of HIV, HCV and HBV in the studied cases and tending to the high risk behaviors among the prisoners, it seems that more educational and preventive programs are needed to control the spread of these infections in the population.

Key words: HCV, HBV, HIV, prisoners, drug addict

INTRODUCTION

Acquired immunodeficiency syndrome (AIDS), is an immense health problem all over the world. It is reported that in Iran, 58.2% of HIV cases are IV drug abusers. It seems that the most cases are singles (CDC Ministry of Health, Iran 2001). HCV prevalence in IV drug abusers tends to be even higher than HIV (Field *et al.*, 2001). Wide spread of addiction in our country, especially in young adults, is an alarm sign for the health care workers and the health system. Prisons are the most important origins for infections like HIV, HBV and HCV, they are not apart from the community and routes like shared syringe use, have important role in transmission of these infections (Sufian, 2000).

Prisoners are at the risk of infection and are sources for the beginning and spread of HIV in the community. In Iran more than one third of the prisoners are drug addicts (Zali *et al.*, 2001). Drug addiction plus risky behaviors could produce a suitable bed for promoting and spreading poor-prognosis infections.

In this cross-sectional study, we aimed to detect the prevalence and some risk factors of HIV, HCV and HBV infections in a high risk group, drug addict prisoners in Gorgan city (Northeast of Iran).

MATERIALS AND METHODS

This cross-sectional study was conducted in December 2002 up to November 2003. A randomized sampling was done on 121 drug addict prisoners in the central prison of Gorgan. Peripheral blood samples were taken and serologic tests for HBV, HCV and HIV were done in prison. Then complementary tests for HIV (ELISA and Western-blot) were done in Gorgan Blood Transfusion Organization's laboratory to confirm the positive results. Physical examinations and face-to-face interviews were done by a general practitioner. The questionnaire included personal data, the kind and route of addiction, some high risk behaviors such as: tattooing, shared syringe use and past history of surgery, signs and symptoms like weight loss, chronic diarrhea, fever and lymphadenopathy. Chi-square and Exact-Fisher test were used to analyze the relationships.

RESULTS

The prevalence of HIV, HCV and HBV were 5.8, 23.1 and 4.1%, respectively. Male to female ratio was 9 (109/12). No significant relationship was seen between gender and the risk of infection with HIV, HBV and HCV (Table 1).

Table 1: Prevalence of human immuno-deficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV) in the population studied

Infection	Number	(%)
HIV	0	0.00
HBV	5	4.10
HCV	28	23.10
HIV, HBV	1	0.80
HIV, HCV	3	2.47
HBV, HCV	0	0.00
HIV, HBV, HCV	3	2.47

Table 2: Distribution of the common routes of the drug use in the population studied

Route of drug use	Number	(%)
Injection	22	18.2
Inhalation	59	48.8
Edible	40	33.0
Total	121	100.0

Table 3: Distribution of educational status in the population studied

Educational status	Number	(%)
Illiterate	56	46.2
Lower than diploma	59	48.8
Diploma and more	6	5.0
Total	121	100.0

All HIV cases were males and in 25-30 years-old age group. 93 cases (76.9%) were married and others were single. There was a significant relationship between being single and HIV and being married and HCV ($p < 0.05$).

As shown in Table 2, the most common route of drug use was inhalation, but in the infected group, injection was the most common route. Of the 22 cases who have been injected the drug, 21 cases (95.4%) were infected with HCV, 4 cases (18.2%) with HIV and 3 cases (13.6%) with HBV.

Educational status is shown in Table 3. There was no significant association between educational status and HIV, HBV and HCV infections.

There was no significant association between these infections and occupational status (Table 4).

56.2% of the cases lived in urban areas and 43.8% in rural areas. There was a significant association between residence in urban areas and HIV infection ($p < 0.001$), but not with other infections (HBV and HCV).

Tattooing and shared syringe use were significantly related to HIV, HCV and HBV infections ($p < 0.001$). Past history of undergoing a surgical procedure and shared razor use had significant relationships with hepatitis C virus infection ($p < 0.001$) but not with HIV and HBV.

Fisher exact test showed a meaningful relationship between promiscuous heterosexuality and HCV and HIV ($p < 0.05$). Furthermore, HBV infection and HIV were significantly related to promiscuous homosexuality ($p < 0.05$).

Table 4: Distribution of the population studied based on occupational status

Occupational status	Number	(%)
Jobless	5	4.1
Householder	7	5.8
Military forces	2	1.7
Worker (laborer)	53	43.8
Farmer	27	22.3
Self employed	27	22.3
Total	121	100.0

DISCUSSION

HIV, HBV and HCV infections are among the most important health problems around the world. Because of their similarity in transmission routes, researchers often detect them contemporary, especially in high risk groups like prisoners.

Findings of the present study showed the high prevalence of these infections among the prisoners in Gorgan (HIV = 5.8%, HBV = 4.1%, HCV = 23.1). Zali *et al.* (2001) reported a prevalence of 45% for HCV in addict prisoners of Ghasr prisons in Tehran.

Based on a study conducted in 754 intravenous drug abusers in Italy, the prevalence of HIV, HBV and HCV were 2.5, 61.4 and 63.9%, respectively (Santolamazza *et al.*, 2001).

In the study done by Christensen *et al.* (2000) the rate of infection with HIV was zero in Danish prisoners. Shirin *et al.* (2000) showed that in narcotic drug abusers in Bangladesh, none of the people studied were infected with HIV, but the seroprevalence of HBV and HCV in intravenous drug users were 11.6 and 28.8%, respectively and in no intravenous drug-users were 6.6 and 5.8%, respectively.

Khani and Vakili (2003) reported the prevalence of HIV infection was 1.2%, HBV infection 3.8% and HCV infection 47.4% among Zanjan prisoners.

Taking into account the similarities in routes of transmission of these viruses it can be predicted that there is a high probability of an increase in the incidence of HCV, HBV infection and particularly HIV in the near future. Therefore, the threat to the health in our society is serious.

All efforts should be directed to achieve the preventive aims. Educational programs are the most economical and effective way of preventing such infections. Distributing the charge free syringes, safe

tattooing, facilities for marriage, family supports and more educations about the route of infection are among the preventing programs which should be considered. Such programs should be carried out constantly for all social classes because no races, border, sex or age limits can prevent these diseases.

Since drug addiction is one of the likeliest ways to expose the person to these infections, more preventive and controlling programs in the prisons are needed. Periodic screening programs should be done in the prisons and treating strategy should begin as soon as possible.

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