Original Article

Seroprevalence of HCV, HBV and HIV in the Male Prisoners at Central Jail, Karachi

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ABSTRACT

Objective: This study was aimed to determine the prevalence of HCV, HBV and HIV in male prisoners at central jail, Karachi.

Study Design: Descriptive / cross sectional study

Place and Duration of Study: This study was conducted at Clinical Laboratory of Lyari General Hospital and Dow University of Health Sciences laboratory from October 2014 to Feb 2015.

Materials and Methods: A selected team of doctors and para medical staff collected the blood samples from the prisoners of jail. Lab tests was performed for anti HCV and HBsAg and HIV antibodies. By rapid testing immunochromatographic (ICT) devices were used for screening. Reactive samples were retested and final diagnosis of seropositvity for HCV and HBV was made using ELISA system (enzyme linked immunosorbent assay) whereas HIV positive serum was rechecked with chromatoghraphic immunoassay. The repeated and confirmed positive sera for HCV, HIV and HBV were included in the analysis. Statistical analysis was performed using SPSS (IBM SPSS Statistics 20.0).

Results: A total of 323 male prisoners were evaluated 226(69.96%) of prisoners were between 20-30 years, majority fell in age range of 31-40 years. 45(13.9%) among 323 male prisoners were found to be HEP C positive, 4(1.2%) was HEP B positive and 9(2.78%) were HIV positive. Male prisoners were highest among 20-30 years all 3 infections were more in the same age range. Overall seroprevalence of HCV coinfection with HIV or HBV or both was 6/323 (1.85%). Among total HCV positive prisoner's evidence of co infection HCV-HIV co infection prevalence rate was (6/45) 13.3%.

Conclusion: Prevalence of HCV was 14%, HBV was 1.2% and HIV was 2.78% in male prisoners of central jail.

Key Words: Hepatitis C, Hepatitis B, HIV, jail, Prevalence

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INTRODUCTION

Human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV) are three important prevalent infections all over the world[1]. People in correctional facilities like jail have high risk behaviors. They often have history of intravenous drug use, needle sharing and high risk sexual behavior[2,3]. The reason of this risky behavior is usually confinement in the prisoner leading[2,4] to high transmission of blood born viruses like hepatitis C, hepatitis B and HIV[2,5].

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Other highly prevalent identifiable risk factors in prisoners include previous imprisonment, tattooing and inconsistency of health services[2,6]. As these facilities serve as a reservoir of these blood born infections, the prisoner once released can become source of infection, for the community. A better knowledge of prevalence rates of these infections in these kinds of facilities could help in disease prevention and management.

Hepatitis C virus is a life threatening disease globally because of its high prevalence and potentially serious complications of persistent HCV infection and its co-infection with HIV or HBV associating it with an accelerated course of disease resulting in rapid progression[7]. The purpose of this study was to observe the prevalence of HCV, HBV and HIV infection in the prisoner of central jail in Karachi and to identify the risk factors.

MATERIALS AND METHODS

This descriptive cross sectional study conducted from October 2014 to February 2015. A favorable ethical opinion was obtained from the institutional ethical review committee. After taking informed consent,

participant blood sample was collected using aseptic technique by an expert phlebotomist. Sera was separated and analyzed on the same date. Screening for Hepatitis B virus surface antigen (HBsAg), anti HCV and HIV antibodies was performed in the clinical laboratory of Lyari General Hospital and Dow University of Health Sciences laboratory. Rapid testing immunochromatographic (ICT) devices were used for screening. Reactive samples were retested and final diagnosis of seropositvity for HCV and HBV was made using ELISA system (enzyme linked immunosorbent assay) whereas HIV positive serum was rechecked with chromatoghraphic immunoassay. The repeated and confirmed positive sera for HCV, HIV and HBV were included in the analysis.

Statistical Analysis: Statistical analysis was performed using SPSS (IBM SPSS Statistics 20.0). Descriptive statistics were used and frequencies and percentages were calculated.

RESULTS

A total of 323 male prisoners were evaluated 226(69.96%)of prisoners were between 20-30 years, 65(20.1%) fall in age range of 31-40 years and 32(9.9%) prisoners were between 41-50 years (Table-1). 45(13.9%)among 323 male prisoners were found to be Hep C positive, 4(1.2%)was HEP B positive and 9(2.78%)were HIV positive (table-2).Male prisoners were highest among 20-30 years all 3 infections were more in the same age range. Overall seroprevalence of HCV co-infection with HIV or HBV or both was 6/323 (1.85%). Among total HCV positive prisoner's evidence of co infection HCV-HIV co infection prevalence rate was (6/45)13.3%. No prisoner had co infection of HCV-HBV –HIV i.e. triple co infection among the 6 HCV-HIV co infection prisoners. Four were in the age range between 20-30 years and two patients were in between 31-40 years.

Table No.1: Age Distribution

Age Range (Years)	Total number (n = 323) (%)
20 – 30	226 (69.96)
31 – 40	65 (20.1)
41 – 50	32 (9.9)

Table No.2: Prevalence of Infectious Diseases (HCV/HBV/HIV)

Infections	Yes (%)	No (%)
HCV	45 (13.9)	278 (86)
HBV	04 (1.2)	319 (98.7)
HIV	09 (2.7)	314 (97.2)

DISCUSSION

The results of this study concluded that majority prisoners were between the age range of 20-30 years. The overall prevalence of hepatitis C was approximately 14%, hepatitis B was 1.2% and HIV was approximately 3%. This is comparable with overall prevalence reported in Lahore central jail, of HCV-15.3%, HBV-3.4% and HIV- 1.79%.[8]

The prevalence have seen to be high is developed and developing countries. In United States of America (USA), 1.8-6.6% for HIV, 20.2%-25.2% for HBV and 23.9-29.7% for HCV.[9,10] In Canada the overall prevalence of HIV was 2.3% and 8.8% among male and female and HCV was 16.6% and 29.2% respectively.[11] In Italy, HIV-7.5%, HCV- 38%, anti-HBc-52.7% and HBsAg-6.7%.[12]In Africa the reported prevalence of HIV – 19.2% HBsAg- 17.4% and HCV-19.2%.[5]In Ireland, HCV-37%, anti HBc-9% and HIV-2%.[13] The highest prevalence rate of HCV was reported in USA, Canada and Italy.[5,10,12] The highest prevalence rate of HBV was reported in USA and Italy.[10,12] HIV prevalence was highest in USA and Africa.[9,12] The reported prevalence of HCV in Lebanon was 3.4%, HBV-2.4% and HIV-0.17% which is consistent with our findings.

There are some limitations of our study. This study has been conducted in one prison so the results cannot be generalized to the entire jail population, especially to prisoners with shorter sentences. It is difficult to estimate the rates of drug abuse and sex. Security issues and religious beliefs are barriers for prisoner to respond accurately to the questions of drug abuse and sex behavior. Due to financial constraints we did not confirm the blood samples with western blot and PCR.

We reported a high prevalence of HCV in jail, which is a major health concern. Health care facilities should be enhanced by including screening programs in jail.

CONCLUSION

Prevalence of HCV was 14%, HBV was 1.2% and HIV was 2.78% in male prisoners of central jail.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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