Drug abuse and HIV risk- An autopsy based study

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Abstract
Substance abuse is a major public health problem all over world and showing rising trends in current scenario. Drug abusers are more prone to viral infections like HIV, Hepatitis B, Hepatitis C due to sharing of common needles. Therefore present study aim is to find out the prevalence of HIV among dead bodies (Claimed and unclaimed both) having documented history of drug abuse brought for autopsy.
Out of 200 cases, 100 cases had known identities and 100 had unknown identities. 177 cases (88.5%) were males and 23(11.5%) were females. Out of 200 cases, 86 cases (43%) had positive history of drug abuse. History of drug abuse was present in 79% of unclaimed cases as compared to 7% in claimed cases. HIV was four times more prevalent among unknown cases compared to known cases. HIV positive cases were found only in male individuals (5.64 %). Majority of cases (79.06%, 68 out of 86 cases) having history of drug abuse was found in age group of 21-50 years. Maximum prevalence of drug abuser with positive HIV infection was found in age group of 31-40 years (44.4%, 4 out of 9 cases). 1(14.28%) case was found ELISA positive among 7 known individuals with history of drug abuse, and 8(10.12%) cases were among 79 unknown individuals with history of drug abuse.
Results of this study help in highlighting the fact that HIV infection is more common among intravenous drug users (IDUs). Substance abuse causes overburdening of state and national health schemes. Therefore mental health literacy can be a part of de-addiction programs.

Keywords: HIV, Claimed cases, Unclaimed cases, Intravenous drug user (IDU).

Introduction
Substance abuse is a major public health problem in both developed & developing countries and showing rising trends all over world including India. World Health Organization (WHO) defined substance abuse as persistent or sporadic drug use inconsistent with acceptable medical practices[1]. According to drug abuse monitoring system in India, major substances of abuse in inpatient treatment centers were alcohol (43.9%), opioids (26%) and cannabis (11.6%).[2] In a systematic web based review by Murthy et al.[3] reported substance abuse pattern in India as tobacco (57%) followed by alcohol (21.6–33.3%), cannabis (3%) and opioids (0.7%).

According to NACO annual report 2016-17, HIV prevalence among adult (15-49 yrs) in India is 0.26% whereas in Delhi it's in the range of 0.21% to 0.25%. HIV prevalence among intravenous drug abusers in India is 9.9%.[4] The percentage of HIV infection is more among high risk population than normal population. HIV Prevalence in female sex workers is 5.1%, in injecting drug user is 7.2%, and in homo sexual men is 7.4%.[5]

Substance dependents are known to be more prone to viral infections like HIV, Hepatitis B and Hepatitis C due to use of shared needles. Injecting drug use (IDU) is common among substance abusers. Most of the unclaimed bodies in our study are either beggar or destitute commonly involved in different kinds of drug abuses and sexual activities.[6] Post-mortem examinations over such dead bodies in the past have revealed tuberculosis (which is commonly associated with HIV infection) as a predominant cause of deaths. Therefore this study aims to find out the prevalence of HIV among dead bodies (Claimed and unclaimed both) having documented history of drug abuse brought for autopsy.

Materials and Methods
The present study was a cross-sectional study, conducted in the Department of Forensic Medicine & Toxicology and Department of Microbiology, Lady Hardinge Medical College, New Delhi, from November 2011 to March 2013. Two hundred dead bodies (100 claimed and 100 unclaimed dead bodies) brought for medicolegal autopsy, were included in this study. Cases where time of death were not known and decomposed bodies were excluded from study. Standard autopsy procedure was followed in all cases. Depending upon the availability of blood, 5 ml of blood sample was collected from either femoral vein or cardiac chambers in plastic test tubes. All samples were centrifuged at room temperature at 4000 rotation per minute (rpm) for 10 minutes and serums were extracted. Haemolysed samples were diluted with 1:2 or 1:4 phosphate buffer salines, again centrifuged for 10 minutes and the supernatants were extracted. Samples were screened for HIV antibodies by ELISA kit, Microlisa-HIV kit.

Information regarding case details like age, sex, risk factors like drug abuse, time since death etc. was collected from inquest papers and by interviewing investigating officer and/ or relatives of the deceased. A Performa was filled for above mentioned parameters.

Results and Discussion
Blood borne infections are known to spread commonly through use of sharp needles especially in cases of drug abusers. Viral infections like HIV, HBV and HCV are most transferrable via needle stick injury. Drug abusers are more prone to getting infected with blood borne infections due to sharing of common needles and practice of unsafe sex

methods.[7] The risk of acquiring HIV transmission by percutaneous route is 0.3%.[8] Injuries with hollow bore needle carries a higher risk than the solid needles.[8] Moreover, the risk of transmission increases if the skin is visibly compromised, e.g. punctured etc.[8]

Out of 200 cases, 100 cases had known identities and 100 cases had unknown identities. Out of 200 cases, 177 (88.5%) were male and 23 (11.5%) were female (Figure 1). Out of 200 cases, 86 cases (43%) had positive history of drug abuse. 47.45% males (84 out of 177 cases) and 8.69% females (2 out of 23 cases) showed positive drug abuse history (Figure 2). A study done by Kumar V et al.[9] also showed male dominance in drug abuse cases. This may be due to higher number of males included in present study compared to females. Other reasons could be unemployment, job related problems and family problems among males.

Table 1 show that history of drug abuse was present in 79% of unclaimed cases as compared to 7% in claimed cases. HIV was detected positive on ELISA test in 8% (8 out of 100 cases) in unclaimed population as compared to 2% (2 out of 100 cases) in claimed population. Reason for this could be higher involvement of unknown persons in drug abuse practices. ELISA was found positive for HIV infection in 10.12% (8 out of 79 cases) among drug abusers with unknown identity while 14.28% (1 out of 7 cases) among drug abuser with known identity.

Study conducted by Christensen PB et al.[10] showed HIV positivity in 4% cases in drug related deaths. Zhang et al.[11] found that intravenous drug users showed significant increased prevalence of HIV-1. Data taken from a 2008 report of NACO (National AIDS Control Organization) shows, in India HIV prevalence in injecting drug user is 7.2%. Increased prevalence of HIV infection among drug abusers in India compared to the studies by Christensen PB et al[10] and Zhang et al[11] is due to more number of drug abuser are either destitute or vagabond who have least knowledge and information about transmission of HIV. Besides, they are crippled with poverty, chronic malnutrition, and chronic infection in the absence of proper medical attention etc.

Out of 177 male cases, 10 (5.64%) cases were found ELISA positive for HIV whereas out of 23 female cases, no case was found ELISA positive for HIV (Figure 3). A study done by Nongkhamuad C et al.[12] also observed similar results. The high prevalence of HIV infection in males was due to more number of males included in the study than females. Male population also has higher exposure to drug abuse compared to females in countries like India. As HIV infection is more common in homosexual population and unsafe sex practices, males are more exposed to infection.

Majority of cases (79.06%, 68 out of 86 cases) having history of drug abuse was found in age group of 21-50 years (Table 2). Maximum prevalence of drug abuser with positive HIV infection was found in age group of 31-40 years (4 out of 9 cases, 44.4%) followed by 21-30 years & 41-50 years (2 out of 9 cases, 22.2%). This could be because HIV positive cases were mostly among unknown individuals who indulged in drug abuse and different kind of sexual activities after puberty as only sources of entertainment and died early because of chronic malnutrition and diseases.

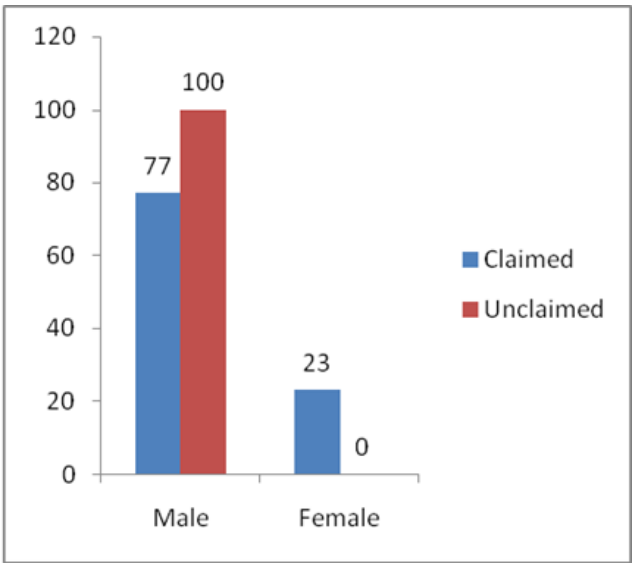

Fig. 1: Sex- wise distribution of Cases

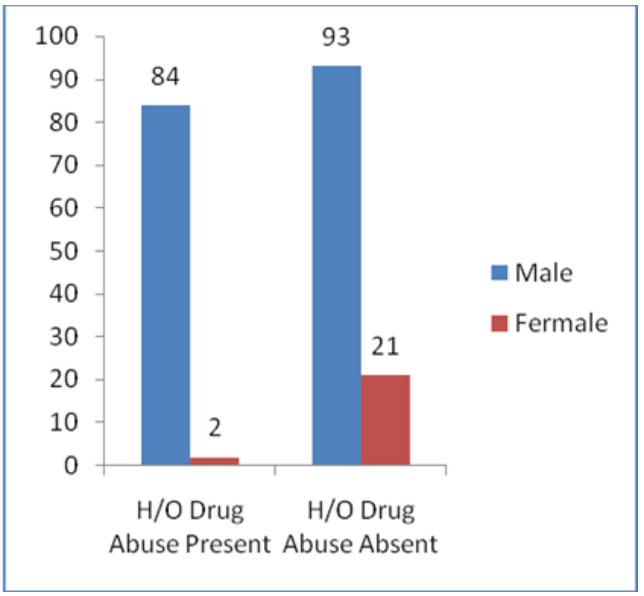

Fig. 2: Sex and History of drug abuse

Table 1: Identity wise distribution of HIV Positive Cases as per history of drug abuse

H/o Drug Abuse	Claimed Cases		Total	Unclaimed cases		Total
	HIV + ve	HIV - ve		HIV + ve	HIV -ve	
Present	1	6	7	8	71	79
Absent	1	92	93	0	21	21
Total	2	98	100	8	92	100

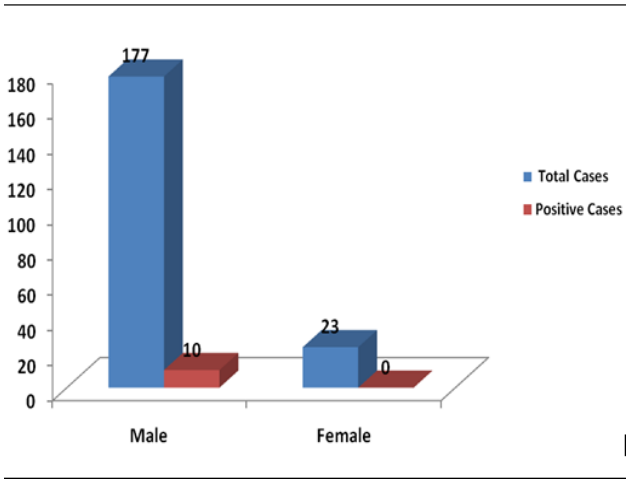

Fig. 3: Gender wise distribution of HIV Positive cases

Table 2: Age-wise distribution of HIV Positive Cases as per History of Drug Abuse

Age group (Years)	History of drug abuse				Total
	Present		Absent		
	HIV +ve	HIV - ve	HIV +ve	HIV - ve	HIV +ve
1-10	0	0	0	2	0
11-20	0	0	0	7	0
21-30	2	17	1	29	3
31-40	4	19	0	21	4
41-50	2	24	0	24	2
51-60	1	13	0	14	1
61-70	0	4	0	14	0
71-80	0	0	0	2	0

Conclusions

The present study revealed that

1. Out of 200 cases, 100 cases had known identities and 100 cases had unknown identities. 177 cases (88.5%) were males and 23 (11.5%) were females.
2. Out of 200 cases, 86 cases (43%) had positive history of drug abuse. 47.45% males (84 out of 177 cases) and 8.69% females (2 out of 23 cases) showed positive drug abuse history.
3. History of drug abuse was present in 79% of unclaimed cases as compared to 7% in claimed cases.
4. Out of 200 cases, 10 (5.00%) cases were found ELISA Test positive for HIV infection.
5. Out of 100 known cases, 2 (2.00%) cases were HIV positive whereas out of the 100 unknown cases, 8 (8.00%) cases were HIV positive. Thus HIV is four times more prevalent among unknown cases brought for medico-legal autopsies.
6. HIV positive cases were found only in male individuals (5.64 %).
7. Majority of cases (79.06%, 68 out of 86 cases) having history of drug abuse was found in age group of 21-50 years. Maximum prevalence of drug abuser with positive HIV infection was found in age group of 31-40 years (4 out of 9 cases, 44.4%) followed by 21-30 years & 41-50 years (2 out of 9 cases, 22.2%).
8. 1 (14.28%) case was found ELISA positive among 7 known individuals with history of drug abuse, and 8 (10.12%) cases were found ELISA positive for HIV infection among 79 unknown individuals with history of drug abuse.

Recommendations

1. Post-mortem testing of HIV infection in medico legal autopsies can be useful in monitoring the surveillance of HIV-infection in the population. HIV testing in medico legal autopsies is a convenient and effective "back-up" for epidemiological studies and could be used instead of unlinked anonymous tests from hospital and other similar patient materials.
2. Screening of HIV infection prior to autopsy especially in high risk cases such as unclaimed bodies, drug abusers etc. can alarm to take utmost precautions while conducting autopsy in HIV positive cases, thus reducing the risk of contracting the disease to persons involved in autopsy works.

Limitations

Most of the drug abuser in the present study were unclaimed dead bodies which were either destitute or beggars. History regarding consumption of substance of abuse was given by police officer therefore exact substances used by them are not known.

Conflict of Interest: None.

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