ORIGINAL ARTICLE

Seroprevalence of Syphilis in Injecting Drug Users

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ABSTRACT

Study Design: It is a comparative and cross sectional study.
Setting: Study was carried in Department of Microbiology, Shaikh Zayed Hospital Lahore.
Subjects and Methods: A total of 197 Injecting drug users, age 15- 50 years were selected. Presence of syphilis was detected by rapid plasma reagin (RPR) and enzyme immunoassay syphilis.
Results: Injecting drug users showed syphilis positive by enzyme immunoassay were 51 (25.9%) and by rapid plasma reagin 81(41.1%). Number of cases missed by rapid plasma reagin was 17(33.3%).
Conclusion: Enzyme immunoassay syphilis was more accurate for syphilis diagnosis than rapid plasma reagin.
Key words: Enzyme immunoassay syphilis, Injecting drug users

INTRODUCTION

Syphilis is a complex, important, sexually transmitted, multiple system disease of human apart from acquired immunodeficiency syndrome (AIDS). Infection is acquired by sexual contact with infected person (rarely by blood from person having spirochetemia) and congenitally by trans-placental infection from infected mother to fetus.[1] Sexually transmitted infections (STIs) are some of the most common causes of illness worldwide. Sexually transmitted infections accounted for 87% of all cases, reported among the top 10 most frequently reported diseases in 1995. Sexually transmitted infections are far most common in developing countries than industrial countries. In many developing countries STIs ranks among the top five diseases[2].

Incidence of STIs, one of the most common communicable diseases in the world, is rising despite improved methods of diagnosis and treatment[3]. World over, excluding human immunodeficiency virus (HIV) and AIDS, there are 333 million new cases of STIs per year. In 1995 in south East Asia alone an estimated 150 million new cases occurred.[4] Currently there is no STIs reporting system in Pakistan and therefore information about STIs prevalence is limited[5]. Gonorrhoea and syphilis are commonly sees STIs in Pakistan[6]. Evidence that sexually transmitted infections may facilitate HIV infection has focused attention to the situation[7].

Pakistan is facing a growing problem of drug abuse for the last few decades posing significant social and health risks. In a health survey on drug abuse in 1993, there were three million drug users in the country, with an estimated growth rate of 6.4% per year[8]. In 2004 nearly five million IDUs were there in Pakistan[9]. According to the recent studies there is an increasing shift from oral route and inhalation to inject able drugs use among addicts, which is quite alarming.[10] Studies in countries like, Russia, Ukraine and India have shown that the increasing scales of injectable drug use puts a large group of individuals at risk of blood born infections through high risk behaviors such sharing of syringes, shooting drugs in groups, low use of condoms and indulging in commercial sex[11].

In Pakistan injecting method was introduced especially after Afghan war. Proportion of, injecting drug users, rose from 1.8% in 1993 to 25% in 1995[12]. In Asian countries prevalence of syphilis is variable but high in different population groups as well. A cross-sectional study among 161 registered injecting drug users in Karachi was conducted between October to November 2003, showed HIV 0.6% and syphilis positivity was 13.1%[13]. Another study was conducted in China on 333 IDUs for seroprevalence of HIV and syphilis, seroprevalence of HIV was 2.53% and syphilis was 4.71%[14]. A similar study was conducted in St. Petersburg, Russia showed seroprevalence of syphilis as 12%[15]. A study conducted on IDUs for HIV, hepatitis B, hepatitis C and syphilis in New Delhi India, Seroprevalence of HIV, 40.1%, Hepatitis B 30.4%, Hepatitis C 44.2% and syphilis was 6.7%.[16] A very high seroprevalence of syphilis 43% was reported among male transvestites from Jakarta, Indonesia.[17] Population of drug abusers have been associated with epidemics of STIs specially HIV. Sexually transmitted infections were associated with use of contaminated equipments for injecting drugs and unsafe sex. There is a body of evidence supporting the close association between drug use and STIs[8,19]. Few studies on STIs and especially on syphilis have been conducted in Pakistan. Therefore, the data regarding STI is lacking. A large national survey conducted for

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National AIDS Control Program (NACP) by Family Health Institute in 2005. According to this study, seroprevalence of syphilis in Karachi was found to be 18.2% in IDUs and in Lahore the figures was 3.9% in IDUs[20].

MATERIALS AND METHODS

It was a comparative and cross-sectional study. This study was carried out in the Department of Microbiology, Shaikh Zayed Hospital Lahore, which is a tertiary care university teaching hospital. Present study comprised 197 samples from IDUs, irrespective of age, sex and duration of their profession. Narcotic addicts on intravenous injectable injecting drug users men, who have injected drugs at least once in the past six months.

RESULT

Seroprevelance survey of syphilis was carried out on samples collected and sera were stored in 2001, from injecting drug users, irrespective of their age, education and duration of their profession. Total IDUs (all males) were n-197 (33.66%), Age range was 15-50 years. Mean age (±SD) was 26.8±7.5 years. Maximum number of IDUs fell in 21-30 years of age, 94 (47.71%) and minimum number of IDUs was in 41-50 years 8 (4.06%) (Table1). Injecting drug users showing syphilis positive cases by EIA was 51 (25.9%) and RPR reactive cases were 81(41.1%). This difference in positivity of syphilis by EIA and RPR was statically significant [P<0.001] (Table2)

Table 1: Mean Age±SD in injecting drug users (n=197)

Age (years)	
10-20	51(25.89%)
21-30	94(47.71%)
31-40	44(22.33%)
41-50	8(4.06%)
Range (years)	10-50
Mean±SD (years)	26.8±7.57)

Table 2: Percentage of positivity in injecting drug users (IUDs) (n=197)

EIA positive		**RPR positive**	
n=	**%age**	**n=**	**%age**
51	25.9	81	41.1

P value: <0.001

Injecting drug users showing percentage of positive cases according to disease pattern was, true positive (EIA + RPR positive) 34 (17.25%), biological false positive(EIA -ve + RPR +ve) were 47(23.96%), latent cases(EIA +ve + RPR -ve) were 17(8.62%) and true negative (EIA -ve + RPR -ve) were 99 (50.25%) [Table 3). Maximum number of active syphilis disease cases were 13 (25.5%) in 10 –20 years of age. Minimum number of active syphilis disease cases were 10 (22.73%) in 31-40 years of age. No case of active syphilis disease was seen in 41-50 years of age (Table 4). Total cases showing positivity by EIA and missed (non reactive) by RPR were 17 (33.3%), P value <0 .001 (Table 5). Sensitivity, specificity, positive predictive value and negative predictive values are 67%, 68%, 42% and 85%respectively.

Table 3: Percentage of positivity in IDUS according to the disease pattern

EIA +ve + RPR +ve		**EIA +ve + RPR -ve**		**EIA -ve+ RPR +ve**		**EIA -ve + RPR -ve**	
No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
34	17.25	17	8.62	47	23.95	99	50.25

Table 4: Percentage of true positive/active disease in IDUS (n=197)

	No. of cases	**+ve by EIA + RPR**	**% positive**
10 – 20	51 (25.89%)	13	25.5%
21 – 30	94 (47.71%)	11	11.70%
31 – 40	44 (22.33%)	10	22.73%
41 –50	8 (4.06%)	-	-
51 – 60	-	-	-

Table 5: Percentage of missed (non-reactive) cases by RPR in IDUS

Groups	+vee EIA	+ve EIA + RPR	Missed by RPR	% missed cases
IDUs	51	34	17	33.3%

P value: <0.001

DISCUSSION

The epidemiology of sexually transmitted diseases has not been studied in normal representative surveys in Pakistan. However, the few studies that have been undertaken suggest that sexually transmitted infections are not uncommon[21]. In our study seroprevalence of syphilis in IDUs was 25.89% while in 2005 study, syphilis in IDUs was 3.9% in Lahore and18.2% in Karachi.[20] Most of the international studies on seroprevalence of syphilis ranges between 6-23%. Such as a cross sectional study by Altaf et al[22] in Karachi showed seroprevalence of HIV as 0 .6% and syphilis as 13 %. Another study conducted in three major cities of Russia by Rhodes et al showed seroprevalence of syphilis 8%, 20% and 6% while HIV was 14%, 3% and 9% respectively, in Moscow Volgograd and Barman.[23] Other studies of the world showed prevalence rate of syphilis in IDUs, e.g., in India (6.07%), Bangladesh (23%) and in Germany (3.3%)[24,25]. The possible explanation for the difference could be the difference in sub groups of population studies and the diagnostic test employed

in addition to the region, gender, ethnic and socio-economic factors.

By comparing international studies with our study on seroprevalence of syphilis in IDUs, our results are quite high (25.89%). When compared with the study results of 2005 in IDUS of Karachi (18.2%)[20], Our study results were close to that study. However a significant (P<0.05) decrease in syphilis was observed in Karachi. When the same study results (3.9%) in Lahore[20] syphilis in IDUs were compared with our study results (25.89%), a decrease in seroprevalence of syphilis was noted, which was highly significant (P<0.001).

CONCLUSION

Our study results of seroprevalence of syphilis when compared with other studies in the same region, suggested that syphilis prevalence has decreased in the recent years. Biological false reactions comprise a high proportion of all venereal disease research laboratories (VDRL) reactions. Therefore, the use of VDRL as a screening procedure is challenged. The reliability of an EIA methodology as a screening for active syphilis in IDUs has been established. Treatment and rehabilitation are specially recommended keeping syphilis in currently low level in our setup. Further studies on larger groups are needed to find out the actual status of syphilis in high -risk groups in Pakistan. In the future studies it would be useful to use EIA syphilis for screening purposes.

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