HIV Seroprevalence among Male IVDUs in Houston, Texas

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Abstract: HIV seroprevalence was 8.4 percent in a sample of 921 heterosexual male intravenous drug users in Houston, Texas who were not in drug treatment at the time of the study. Males who were Black, injected drugs daily, or had a history of syphilis had greater odds of being HIV positive than participants without those characteristics. (*Am J Public Health* 1990; 80:1507–1509.)

Introduction

The association between acquired immunodeficiency syndrome (AIDS) and intravenous drug use is well documented.[1] The primary means by which intravenous drug users (IVDUs) become infected with the human immunodeficiency virus (HIV), the cause of AIDS, are known.[2,3] However, the risk of an IVDU becoming infected with HIV is not uniform across racial/ethnic groups nor geographic locations.[4–6] As well, rates of HIV seroprevalence have been reported to vary among IVDUs due to the drug injected, frequency of injection, use of shooting galleries, injecting with strangers, the number of sexual partners, and a history of sexually transmitted diseases.[7–11]

The purpose of this study was to examine HIV seroprevalence rates among intravenous drug using males recruited from their natural environments in Houston, Texas. The majority of studies reporting HIV seroprevalence rates among IVDUs have been conducted in drug treatment, detoxification, or some other clinical setting.[2] Few studies have reported on the seroprevalence rates among intravenous drug injectors not in treatment.

Methodology

Subjects for this study were recruited from Houston's intravenous drug using population not in drug treatment. Participants were asked to respond to an interviewer administered survey covering demographic characteristic, drug use, and sexual behaviors. IV drug users were recruited from the city's three predominant racial/ethnic groups by trained, indigenous outreach workers. Three neighborhoods with known high incidences of intravenous drug use were targeted for outreach activities using targeted sampling.[12,13] Although targeted sampling is purposive, it is not random.

Study participants were required to be 18 years, have injected an illicit drug at least once during the six months prior to participation, and not have been in drug treatment for 30 days prior to participation. Outreach workers successfully recruited 1,279 men willing to be interviewed. Of that number, 81 percent agreed to have blood drawn for HIV testing. Only those respondents with complete surveys and HIV testing were considered for inclusion in the data set. Twenty-three participants were excluded because of sexual relationships with men during the previous six months. The resulting study sample of 921 males was 65 percent Black, 24 percent White, and 12 percent Hispanic (primarily Mexican American).

All variables used in the analysis, except HIV serostatus, are self-reported. A respondent's racial/ethnic classification was determined by his stated racial/ethnic identity. Drug use variables analyzed were frequency of injection, length of injected drug use, injection in a shooting gallery, sharing needles with a stranger, number of persons with whom needles were shared, and drug(s) injected. Frequency of injection was categorized as less than weekly, weekly, or daily depending on how often a respondent reported injecting during the six months prior to the interview. Drugs injected were categorized according to the reported drug(s) a respondent said he had injected during the six months before the interview. Respondents who said they injected more than one drug could either have injected the drugs alone or as mixtures.

Variables related to sexual behaviors which were examined were a self-reported history of syphilis, gonorrhea, herpes, and chlamydia. The number of sexual partners a respondent reported during the six months prior to participating in the study was examined.

HIV serostatus was determined by ELISA and Western Blot assays. Blood samples which were repeatedly positive on the ELISA test were screened using Western blot analysis. Samples were classified HIV positive if protein bands P24, P31, and EP41 or EP160 were present.

Univariate relationships were estimated using odds ratios and 95% confidence intervals. Significance was confirmed using Fisher's exact test (not shown).[14] To test the independence of significant univariate associations, a model of those relationships was analyzed using maximum likelihood method of logistic regression.[14,15] Coefficients are reported in independent odds ratios.

Results

HIV infection rates varied by race/ethnicity. As shown in Table 1, Black males had a seroprevalence rate of 10 percent. Seven percent of the White males were HIV positive. Black males were 2.80 times as likely to be HIV positive as Hispanic males.

Frequency of injection was found to be related to seropositivity. Less than weekly users had a 4 percent seropositive rate (Table 1). Eight percent of weekly users were HIV positive. Daily users had the highest number of positive test results, 11 percent. Associations between seroprevalence and self-reported history of syphilis, gonorrhea, herpes, and chlamydia were examined. Only a self-reported history of syphilis was significantly related to seroprevalence. Males who reported having had syphilis were 2.34 times as likely to be HIV positive as those who had not.

To test the independent association between race/ethnicity, frequency of injection, a past history of syphilis, and HIV seroprevalence logistic regression analysis was used. As shown in Table 2, these three variables are inde-

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TABLE 1—Seroprevalence Rates for Male IV Drug Users

	Percent Positive/n(%)*	Odds Ratio	95% Confidence Interval (lower/upper)
Race/Ethnicity			
Hispanic	4/107 (4)	—	—
White	14/214 (7)	1.80	.58, 5.62
Black	59/600 (10)	2.80	1.01, 7.90
Frequency of Injection			
<weekly	8/206 (4)	—	—
weekly	25/325 (8)	2.06	.91, 4.67
daily	44/390 (11)	3.15	1.45, 6.82
Length of Injected Drug Use			
0–2 years	2/63 (3)	—	—
3–8 years	26/269 (10)	3.26	.75, 14.13
≥9 years	49/540 (8)	2.77	.66, 11.66
Injection in a Shooting Gallery			
no	22/227 (9)	—	—
yes	55/672 (8)	.92	.55, 1.54
Sharing Needles With a Stranger			
no	16/251 (6)	—	—
yes	61/670 (9)	1.47	.83, 2.60
Number of Persons with Whom Needles Shared			
none	12/139 (9)	—	—
1–2	37/429 (9)	1.00	.51, 1.98
≥3	28/325 (8)	.91	.45, .80
Drug Injected			
heroin	1/32 (2)	—	—
cocaine and heroin	11/198 (6)	1.82	.23, 14.63
cocaine	44/476 (9)	3.16	.42, 23.69
cocaine and amphetamines	21/215 (10)	3.36	.44, 25.85
Syphilis			
no	61/759 (7)	—	—
yes	16/101 (16)	2.34	1.29, 4.24
Gonorrhea			
no	44/562 (8)	—	—
yes	33/359 (9)	1.19	.074, 1.91
Herpes			
no	76/907 (8)	—	—
yes	1/14 (7)	.84	.11, .652
Chlamydia			
no	76/836 (8)	—	—
yes	1/8 (11)	1.38	.17, 11.14
Number of Sexual Partners			
none	9/75 (12)	—	—
one	21/224 (9)	.76	.33, 1.74
2–3	16/220 (7)	.58	.24, 1.36
≥4	31/402 (8)	.61	.28, 1.35

*rounded to nearest whole percent

TABLE 2—Logistic Regression Model

Variables	Odds Ratio	95% Confidence Intervals
Black	1.39	1.05,1.84
Daily Injection	1.40	1.09,1.77
Syphilis	1.42	1.05,1.92

pendently associated with seropositivity. Each of the variables has approximately equal weight.

Discussion

The results of the analysis show that there is an association between race, frequency of injection, and a past history of syphilis. The relationship between frequency of injection and HIV infection did not vary by drug(s) injected. Heroin users injecting daily were just as likely to be HIV positive as cocaine users injecting daily. Although drug injected may have some pharmacological effect on the injecting behaviors of users, how often an IVDU is injecting, whatever the drug, would appear to be of greater importance. The association between a history of syphilis and HIV infection is far from clear. It would seem likely that the variable is indicative of risk of HIV infection due to behaviors associated with the condition.

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HIV Seroconversion in Two Homosexual Men after Receptive Oral Intercourse with Ejaculation: Implications for Counseling Concerning Safe Sexual Practices

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Abstract: Seroconversion for HIV antibody occurred in two homosexual men who reported no anal intercourse for ≥ 5 years and multiple episodes of receptive oral intercourse with ejaculation. Neither man reported intravenous drug use or receipt of blood products. The last antibody-negative specimen was also negative by the polymerase chain reaction and p24 antigen assays. All sexually active persons should be clearly counselled that receptive oral intercourse with ejaculation carries a potential risk of HIV transmission. (*Am J Public Health* 1991; 81:1509–1511.)

Introduction

Studies of homosexual and bisexual men have shown that anal intercourse, especially receptive anal intercourse with ejaculation, is the sexual practice associated with the greatest risk of human immunodeficiency virus (HIV) infection.[1–5] Although orogenital contact has not been statistically associated in these studies with HIV infection, many subjects engaged in multiple sexual practices, making a relatively lower risk more difficult to detect statistically.

Although transmission of HIV through receptive oral intercourse has been suggested in a few brief reports,[4,6,7] these reports have not provided extensive detail about the circumstances surrounding seroconversion. For this reason, there continues to be controversy about the safety of oral intercourse.

We report seroconversion for HIV antibody in two homosexual men who denied anal intercourse for ≥ 5 years and who engaged in multiple episodes of receptive oral intercourse with ejaculation.

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Methods

The San Francisco City Clinic Cohort consists of 6,705 homosexual and bisexual men originally recruited from 1978 through 1980 for studies of hepatitis B.[8,9] Men enrolled in our prospective studies were recruited from this original cohort and are evaluated with an annual interview, including a sexual history by a trained staff member which asks about their activities in the preceding four months and for the entire period since their last interview. Study participants also receive an examination and medical history by a physician unaware of the subject's antibody status. Sera were tested for HIV antibody with the ELISA (Organon Teknika, Research Triangle, NC) and confirmed by both the Western blot and immunofluorescence assay (IFA).[10] Testing for HIV-DNA by the polymerase chain reaction (PCR) was conducted on DNA extracted from peripheral blood mononuclear cells using two different *gag* primers.[11] Sera were also tested for p24 antigen (Coulter Immunology, Hialeah, FL).

Results

For both men who seroconverted, in the two years preceding seroconversion at least three specimens were negative by the ELISA assay; the last pre-seroconversion specimen was also negative by PCR and p24 antigen assays. The first post-seroconversion specimen was positive for HIV antibody by the ELISA, IFA and Western blot assays. Both men were also HIV-antibody positive on repeat testing of the first post-seroconversion specimen (including a second serum sample drawn at the same time), as well as on at least one follow-up specimen drawn between four and nine months later.

Both men reported no insertive or receptive anal intercourse for at least five years preceding the estimated date of seroconversion; this history was supported by three previous interviews. Both men also denied use of intravenous drugs,