

HIV-1 Prevalence in Selected Tijuana Sub-populations

ABSTRACT

To assess the prevalence of HIV-1 (human immunodeficiency virus) infection among high-risk populations in Tijuana, Mexico, HIV-1 antibody status was determined and information on risk behavior was obtained from 1,069 individuals in three high-risk groups. The prevalence of HIV-1 among 415 prostitutes was 0.5 percent; 410 prisoners, 1.2 percent; 233 homosexual/bisexual men, 11.6 percent; and 106 intravenous drug abusers, 1.9 percent. The potential for spread of HIV-1 exists in Tijuana despite the current relatively low seroprevalence of HIV-1. (*Am J Public Health* 1991;81:623-625)

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Fernando Güereña-Burgueño, MD, Abram S. Benenson, MD, and Jaime Sepúlveda-Amor, MD

Introduction

By December 31, 1989, 3,512 AIDS (acquired immunodeficiency syndrome) cases have been reported to the Mexican Ministry of Health.¹ Projections made by the Mexican National Committee for AIDS Prevention (CONASIDA) suggest that the cumulative AIDS case total could exceed 75,000 by the end of 1991.² The majority of the 71 AIDS cases in the state of Baja California² have been reported by the city of Tijuana, geographically contiguous to San Diego, California. This border area is the busiest port of entry to the United States, with approximately 36 million legal entries of alien and US citizens, and more than 500,000 illegal aliens deported in 1987.

This study presents the results of a cross-sectional epidemiologic and serological survey designed to determine the prevalence of infection with the human immunodeficiency virus type 1 (HIV-1) among "high-risk" populations in Tijuana. The project was approved by the Committee on Protection of Human Subjects of the San Diego State University.

Methods

Sample sizes were selected to provide less than 3 percent margin of error ($\alpha = .05$ and $1 - \beta = .80$) (4). From 1,967 prisoners in the Tijuana State Penitentiary, 410 were recruited by selecting every fifth prisoner listed in the prison records. From 2,000 active prostitutes registered at the Municipal Medical Services Clinic, 415 were sequentially included in the study. A convenience sample of 233 homosexual/bisexual men was recruited in diverse homosexual gathering sites. From 1,000 intravenous drug abusers with files at the Juvenile-Integration Center detoxification clinic at Tijuana, a sample size of 341 was included in the study by selecting every third individual listed in the clinic records.

Participation was voluntary and anonymous. Each subject was individually counseled prior to testing. Sociodemographic and risk factor information was obtained and a blood sample was drawn.

Test results with post-test counseling were offered to the participants.

Antibodies against HIV-1 were determined with licensed enzyme-immunoassay (EIA) kits.⁵ Those repeatedly reactive were then confirmed by the indirect immunofluorescent antibody assay (IFA)^{6,7} or by the Western blot technique.⁸

Descriptive statistics and odds ratios were calculated and 95 percent confidence intervals estimated with Cornfield's method.⁹

Results

Questionnaires were completed and blood samples obtained from 1,069 individuals. The refusal rate was 2 percent in the prisoner and prostitute groups and 25 percent to 30 percent in the group of homosexual/bisexual men. Only 11 of the 341 drug abusers in the files of the detoxification clinic could be located. However, 95 individuals in the other three groups admitted intravenous drug abuse (IVDA).

A total of 34 individuals tested positive for HIV-1. The prevalence rates by study group, sex, and history of IVDA are shown in Table 1.

Seropositive homosexual/bisexual men exhibited high-risk behavior patterns (Table 2); a history of receptive anal sex showed the strongest relation to HIV-1 infection. For vaginal sex, 36 percent (139/383) of prostitutes reported using condoms "usually" or "always." Of female prostitutes and female prisoners participating in the study, 12.3 percent (46/383) and 5.9 percent (2/34), respectively, reported anal sex.

From the Graduate School of Public Health, San Diego State University California (Güereña-Burgueño and Benenson) and the General Directorate of Epidemiology, Ministry of Health, Mexico (Sepúlveda-Amor). Address reprint requests to Fernando Güereña-Burgueño, MD, Division of HIV/AIDS, Centers for Disease Control, 1600 Clifton Road, NE, Mailstop G-29, Atlanta, GA 30333. This paper, submitted to the *Journal* April 2, 1990, was revised and accepted for publication October 10, 1990.

TABLE 1—Prevalence of HIV-1 Antibody by Study Group, Tijuana HIV-1 Seroprevalence Study, June–October 1988

Study Group	Total		Intravenous Drug Abusers*		Non-intravenous Drug Abusers	
	No. Subjects	Prevalence (%)	No. Subjects	Prevalence (%)	No. Subjects	Prevalence (%)
Prostitutes						
Males	1/32	(3.1)	1/2	(50.0)	0/30	(0.0)
Females	1/383	(0.3)	0/3	(0.0)	1/380	(0.3)
Total	2/415	(0.5)	1/5	(20.0)	1/410	(0.2)
Prisoners						
Males	5/376	(1.3)	0/81	(0.0)	5/295	(1.7)
Females	0/84	(0.0)	0/4	(0.0)	0/30	(0.0)
Total	5/410	(1.2)	0/85	(0.0)	5/325	(1.5)
Homosexual/bisexual men	27/233	(11.6)	1/5	(20.0)	26/228	(11.4)
IVDA at the CIJ-clinic	0/11	(0.0)	0/11	(0.0)	0/0	(0.0)
Total	34/1069	(3.2)	2/106	(1.9)	32/963	(3.3)

*101 reported IV drug abuse since 1978

TABLE 2—Behavior Patterns among Homosexual/Bisexual Men by HIV-1 Antibody Status, Tijuana HIV-1 Seroprevalence Study, June–October 1988

Behavior	Seropositive		Seronegative		OR*	95% CI**
	N	(%)	N	(%)		
History of drug abuse	16/27	(59.3)	87/206	(42.3)	2.0	0.82, 4.9
History of sexually transmitted disease	15/27	(55.6)	83/206	(40.3)	1.9	0.77, 4.5
History of receptive anal sex	21/27	(77.8)	113/206	(54.9)	2.9	1.0, 8.4
History of prostitution	11/27	(40.7)	67/206	(32.5)	1.4	0.58, 3.5
History of sex in the US	12/27	(44.4)	60/206	(29.1)	2.0	0.80, 4.7
Usually or always using condoms	5/27	(18.5)	55/206	(26.7)	0.62	0.20, 1.9

*Odds ratio
**Cornfield's 95% confidence limits

Within the penitentiary, 30 percent (117/410) of the prisoners reported current use of illegal drugs, 47 percent of the current users reported using IV drugs. Regular use of condoms was reported by only 4.2 percent (17/403) of the sexually active prisoners.

Discussion

This study is the largest survey reported of HIV-1 seroprevalence among potential high-risk populations in Tijuana. Nevertheless, it was impossible to reach and make precise estimates of the number

and location of the homosexual/bisexual men; self-selection may have biased the seroprevalence estimated in this group. The main reason of failure to find the drug abusers selected from the clinic, was that most of them were residents of the neighboring state of California, who came to Tijuana for treatment. The almost complete lack of refusal among the prisoners and prostitutes groups actually eliminates concern of selection bias. However, bias could have been introduced when obtaining information by questionnaire regarding sensitive issues, such as sexual behavior and drug abuse.

Plausible hypotheses can be offered to explain the relatively low seroprevalence of HIV-1 infection found in this study. First, the number of partners claimed by the homosexual group is lower than that reported in high incidence places.¹⁰⁻¹² Second, the availability in pharmacies of sterile syringes without the requirement of a medical prescription may result in less sharing of used needles among drug abusers. However, the 1.9 percent prevalence of HIV-1 positivity in this group was similar to that estimated in various studies conducted in the Southern California area, ranging from 0 percent to 7 percent.¹³ Third, the low rate among prostitutes may be attributed to the increased health consciousness of this group with monthly medical contact. Fourth, the legal weekly permission for the prisoners to receive conjugal visits by spouses or prostitutes might have lessened the possibility of widespread unprotected homosexual activity among the prisoners; however, 5 percent (19/376) of the prisoners reported history of homosexual contact during the last year. The lower availability of sterile syringes in this site and the low use of condoms indicate a serious potential of spread of HIV-1 should the virus be brought into the prisoner group.

Experience has shown that reduction in HIV-1 transmission, as well as other sexually transmitted diseases, is possible when reduction of high-risk sexual practices is induced by means of preventive intervention.¹⁴⁻¹⁶ Logistic support in the implementation of preventive efforts needs to be permanently offered to non-governmental AIDS organizations by the health authorities and coordinated and complementary action by the two countries must follow. □

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énez, MD, Director of the Municipal Medical Services; Mr. Ernesto Moreno Montiel, Director of the Tijuana State Penitentiary; Remedios Lozada, MD, from the Sanitary Jurisdiction No. 2 SSA, and to all the volunteers for their cooperation. This study was supported by the State of California Department of Health and Human Services and the Graduate School of Public Health, San Diego State University.

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ABSTRACT

HIV-1 antibody was detected in 6.0 percent of prisoners in an Ethiopian prison. HIV-1 seropositivity was strongly associated with positive VDRL status (RR = 3.7) and recent admission to prison (RR = 3.5). Seropositive prisoners were more likely to have prostitute contacts. No correlation was found between seropositivity and number of sexual contacts, long-term sex partners, or dental extractions. HIV-1 infection in this area may be of recent origin and the high prevalence may reflect rates in the surrounding community. (*Am J Public Health* 1991;81:625-627)

HIV Infection in an Ethiopian Prison

Yohannes Kebede, MD, MPH, Joyce Pickering, MD, Jane C. McDonald, MD, Kay Wotton, MD, MPH, and Debrework Zewde, PhD

Introduction

Infection with human immunodeficiency virus (HIV-1) in Africa has increased rapidly. By 1988, 11,753 cases had been reported from 45 countries.^{1,2} In Ethiopia, 285 AIDS (acquired immunodeficiency syndrome) cases have been reported to the National AIDS Prevention and Control Unit, by January 1990,³ the majority (70.4 percent) from Addis Ababa.

This study was conducted in the major prison in Dire Dawa to assess the rate of HIV-1 seropositivity and associated factors. Dire Dawa is on the main communication and trade route linking Addis Ababa to the Red Sea ports of Assab and Djibouti. People in the area have high mobility and contact with neighboring regions and countries. Information obtained will lead to more relevant approaches to health prevention practices in prisons in Ethiopia and to increased awareness of the extent of HIV-1 infection in this region.

Methods

Four hundred fifty consenting prisoners from Dire Dawa District prison, pre-

sent in November 1988, were enrolled. An oral closed-ended questionnaire was pre-tested and then administered after standardized translation into Oromingna, Somali, and Amharic.

Characteristics including age, sex, education, marital status, and time in prison were determined. Aspects of sexual behavior were obtained during confidential interviews.

All participants had blood samples drawn for HIV-1 and VDRL status. HIV-1 testing was done in the National

Address reprint requests to Jane C. McDonald, MD, Division of Infectious Diseases, Montreal Children's Hospital, 2300 Tupper, Montreal, Quebec, H3H 1P3. Dr. Kebede is with the Department of Community Health, Addis Ababa University, Ethiopia; Drs. Pickering, McDonald, and Wotton are affiliated with the Department of Epidemiology and Biostatistics, McGill University, and with the Department of Community Medicine, Addis Ababa University; Dr. Zewde is with the AIDS Laboratory, National Research Institute of Health, Addis Ababa, Ethiopia. Drs. Pickering, McDonald, and Wotton are fellows of the Royal College of Physicians (Canada). This manuscript, received June 19, 1990, was revised and accepted for publication January 23, 1991.