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ARTIGO

Prevalence of HIV-1/2, HTLV-I/II, hepatitis B virus (HBV), hepatitis C virus (HCV), *Treponema pallidum* and *Trypanosoma cruzi* among prison inmates at Manhuaçu, Minas Gerais State, Brazil

Prevalência do HIV-1/2, do HTLV-I/II, do vírus da hepatite B (HBV) e C (HCV), do *Treponema pallidum* e do *Trypanosoma cruzi* entre presidiários em Manhuaçu, Minas Gerais, Brasil

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Abstract *The purpose of this study was to determine the seroprevalence of human immunodeficiency virus (HIV-1/2), human T-cell lymphotropic virus (HTLV-I/II), hepatitis B virus (HBV), hepatitis C virus (HCV),* Treponema pallidum *and* Trypanosoma cruzi *among 63 male prisoners in Manhuaçu, Minas Gerais, Brazil and to compare this with data from eligible blood donors. The positive results were as follows: 11/63 (17.5%) for HBV, 5/63 (7.4%) for syphilis, 4/63 (6.3%) for HCV, 3/63 (4.8%) for Chagas' disease, 2/63 (3.2%) for HIV-1/2 and 1/63 (1.6%) for HTLV-I/II. The seroprevalence in prisoners was higher than among blood donors, mainly for antibodies to HIV-1/2, HCV and HBV. This is probably due to low social economic level, illiteracy, higher proportion with a prior history of intravenous drug use and/or unsafe sexual behavior. Therefore, these prisoners constitute a high risk group and routine screening and counseling are recommended.*

Key-words: *AIDS. HIV-1/2. HTLV-I/II. HCV. HBV. Syphilis. Chagas' disease.*

Resumo *O objetivo deste estudo foi determinar a soroprevalência do vírus da imunodeficiência humana (HIV-1/2), do vírus linfotrópico humano (HTLV-I/II), da hepatite B (HBV), da hepatitis C (HCV), do* Treponema pallidum *e do* Trypanosoma cruzi *em 63 presidiários do sexo masculino em Manhuaçu, Minas Gerais, Brasil e comparar com resultados de doadores de sangue. Os resultados positivos foram: 11/63 (17,5%) para HBV, 5/63 (7,4%) para sífilis, 4/63 (6,3%) para HCV, 3/63 (4,8%) para doença de Chagas, 2/63 (3,2%) para HIV-1/2 e 1/63 (1,6%) para HTLV-I/II. A soroprevalência em prisioneiros foi mais alta que entre doadores de sangue, principalmente para anticorpos anti-HIV-1/2, HCV e HBV. Isso se deve provavelmente ao baixo nível socio-econômico e de escolaridade, proporção elevada de história pregressa de uso de drogas endovenosas e/ou comportamento sexual de risco. Concluímos que prisioneiros constituem um grupo de alto risco para essas doenças e testes de triagem e aconselhamento são recomendados como rotina no ambiente carcerário.*

Palavras-chaves: *AIDS. HIV-1/2. HTLV-I/II. HCV. HBV. Sífilis. Doença de Chagas.*

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Blood and sexually transmittable diseases are important public health problems in Brazilian prisons[8]. Most prisoners have high-risk behavior for these diseases. Besides drug use, unsafe sex and homosexuality[9], they frequently tattoo their skins in the prison environment, sharing needles and ink[1 2 9]. As a rule, there is inadequate medical staff and access to appropriate care is very difficult for the inmates.

Comparison of data from prisoners and those from eligible healthy donors living in the same geographic area is an important means to provide clues which may lead to action and changes in public health policy, education and clinical practice[4 5].

In this paper we present the results of a seroprevalence study conducted in a public prison, in which we carried out a brief medical examination and tested the sera of 63 male inmates for the presence of antibodies to human immunodeficiency virus (HIV-1/2), human T-cell lymphotropic virus (HTLV-I/II), hepatitis B virus (HBV), hepatitis C virus (HCV), *Treponema pallidum* and *Trypanosoma cruzi*.

MATERIAL AND METHODS

Study population. Subjects for this study were male inmates incarcerated in Manhuaçu, a city with 80,000 habitants, in Minas Gerais State, Brazil. After explanation of the purpose of the study all prisoners (n = 64) were invited to participate. They were informed that the study was confidential and that the information provided would not affect their incarceration status. Sixty-three individuals joined in the research. Written informed consent was obtained from each participant and information regarding the protocol and informed consent was presented at the appropriate literacy level. The study was conducted in a confidential manner and numbers were used to identify the participants.

Data collection procedures and serological tests. All 63 inmates answered a questionnaire which included demographic information and risk factors for STDs and blood borne diseases. Physical examination was performed to evaluate general health condition of each prisoner.

Serum was collected from each participant and tested at the Fundação Hemominas for antibodies to HBV (HBsAg, ELISA monoclonal, Abbot, USA), HCV (ELISA, Ortho, USA), *T. pallidum* (VDRL: Hoescht-Behring, Germany; FTA-Abs: Biolab, Brazil), *T cruzi* (Indirect Immunofluorescence: IF-K37-3, Biolab, Brazil), HIV-1/2 (ELISA: Abbott, USA; Western Blot: Cambridge Biotech, USA) and HTLV-I/II (ELISA: Ortho, USA; Western Blot: Cambridge Biotech, USA), according to the manufacturer's instructions. Repeatedly reactive specimens by ELISA were assayed by Western Blot.

Statistical analysis. The Fisher's test was used to check for a statistically significant association between the serological results (inmates compared with donors). To measure the strength of the associations OR was calculated and the 95% confidence interval (CI) tested to ascertain whether the results were statistically significant.

RESULTS

All 63 subjects were males, their mean age was 30.2 years and the majority was in the range of 21-40 (51/63). Of the inmates 75% were cigarettes smokers and alcohol consumption was reported by 71%. Marijuana use was reported by 33% (21/63), cocaine (inhaled and/or intravenous) by 12% (8/63) and multiple substances by 10% (6/63) of the inmates. Homosexuality was reported by 11% (7/63) of the subjects; two of these reported initiation of this behavior in prison environment. Fourteen (22%) inmates had their skins tattooed in prison, using shared needles and ink. Physical examination revealed only minor health problems, e.g., superficial fungal and bacterial infections, scabies and light arterial hypertension.

Positive results for HBV were obtained in 11/63 (17.46%), for syphilis in 5/63 (7.40%), for HCV in 4/63 (6.34%), for Chagas' disease in 3/63 (4.76%), for HIV-1/2 in 2/63 (13.17%) and for HTLV-I/II in one inmate (1.58%) (Table 1). All positive results were found in different individuals, except for one inmate, who was seropositive for HIV-1/2, HBV and HCV. These results were compared with data of eligible blood donors (n = 3,309) of the same geographic area and year. This control group had a comparable mean age and 80% were males. The seroprevalence for all infections was significantly higher in prisoners than among blood donors, except for HTLV-I/II, which, although higher in inmates, had p value above 0.05.

Table 1 - Prevalence and relation of positive serological results among inmates and eligible blood donors. Manhuaçu, Minas Gerais - 1994

	HIV-1/2		HTLV-I/II		HBV		HCV		Syphilis		Chagas	
	nr	%	nr	%	nr	%	nr	%	nr	%	nr	%
Inmates (n = 63)	2	3.17	1	1.58	11	17.46	4	6.34	5	7.40	3	4.76
Blood donors (n = 3309)	2	0.06	3	0.09	31	0.93	19	0.57	65	1.95	31	0.93
Odds ratio	54.21		17.77		22.37		11.74		4.30		5.29	
p (Fisher's)	0.002		0.073		0.000		0.001		0.009		0.025	

DISCUSSION

The present data show a significantly higher proportion of positive results in all tests among inmates than in blood donors, particularly for HIV-1/2, HBV and HCV. This agrees with results previously reported that prisoners and former prisoners represent a high risk group for blood borne diseases and STDs[3 5 7]. Their low socioeconomic status and education, the flexibility of their moral values associated with the absence of motivation to improve self-destructive behavior enhance the risk of transmission of these diseases[12]. An important number of inmates reported drug use, sometimes multiple substances. Manhuaçu is located at the junction of two important highways, connecting large cities such as Rio de Janeiro, Belo Horizonte, Salvador and Vitória. This special geographic localization may facilitate drug distribution. In this study, the inmates reported several sexual partners and relations with sexual workers without preservatives. Although almost all of them had heard about AIDS, they were not aware of STDs and their sexual behavior showed that they did not take the risk seriously. The blood donors used as a comparison group passed routine pre-donation screening designed to exclude those with risk factors for transfusion-transmitted infections; that is why the differences between the groups could be overestimated.

Although the inmates participating in this study cannot be considered representative of all prisons in Brazil, the results obtained have important implications for penal and public health administrators, indicating the importance of policies to prevent transmission of these infections during and following incarceration. These policies must include testing programs in prisons, which should be seen as an opportunity to improve the health outcome of those infected and prevent further transmission of infectious agents[4 6 10 11 13]. Assuring equitable access of inmates to medical assistance, including serological testing, is crucial, due to their inability to self-refer.

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