SEROEPIDEMIOLOGICAL STUDY ON SEXUALLY TRANSMITTED DISEASES AND HEPATITIS B IN AFRICAN PROMISCUOUS HETEROSEXUALS IN RELATION TO HTLV-III INFECTION


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A seroepidemiological study was performed on HTLV-III, T. pallidum, C. trachomatis and Hepatitis B virus (HBV), in Butare, Rwanda, among 33 female prostitutes, 25 male customers of prostitutes, and 60 male and female controls. As compared with female controls the prostitutes had a higher prevalence of antibodies to HTLV-III (29/33 versus 4/33, p<0.001), T. pallidum (TPHA: 27/33 versus 6/33, p<0.001; RPR: 19/33 versus 2/33, p<0.001; FTA-Abs: 27/33 versus 5/33, p<0.001) and C. trachomatis (IgG IF: 31/33 versus 13/33, p<0.001). HBV serological markers were more often detected in the prostitutes than in the female controls (31/33 versus 18/33, p<0.001) although HBs antigen carriage rate was similar in both groups. As compared with male controls, the male customers of prostitutes had more frequently detectable antibodies to HTLV-III (7/25 versus 2/27, p =0.05), and a positive RPR (10/25 versus 1/27, p<0.01). Among the 118 individuals studied, odds ratios and trend analysis disclosed a significant association between HTLV-III seropositivity and a positive TPHA, RPR, FTA-Abs, Chlamydia IgG IF test and serological markers to HBV. No association was found between HTLV-III seropositivity and HBs Ag carriage. This study suggests that HTLV-III has to be considered as an infectious agent transmitted among promiscuous Central African heterosexuals by sexual contact and/or parenteral contact with unsterile needles used for STD treatments.

INTRODUCTION

Acquired immunodeficiency syndrome (AIDS) is now wellknown to exist in Central Africa (11, 19). Although possible transmission through contaminated blood transfusion has been recently suggested in a young Rwandese patient (20), heterosexual transmission is thought to be the main mode of transmission of Human T cell Lymphotropic Virus type III (HTLV-III) — the aetiologial agent of AIDS (12) — in Central Africa (3). In order to confirm this hypothesis, a seroepidemiological study on HTLV-III, Treponema pallidum, Chlamydia trachomatis and Hepatitis B virus (HBV), has been performed in Butare, Rwanda, among promiscuous African heterosexuals of both sexes, 33 female prostitutes and 25 male customers of prostitutes, as well as among 60 non promiscuous African controls.

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SUBJECTS AND METHODS

Subjects: 118 individuals entered this study. 33 Rwandese prostitutes were selected from the medical records of the only sexually transmitted disease (STD) clinic of Butare, a city situated in the South of Rwanda, Central Africa. We defined as a prostitute, a woman having, at least once a week, a sexual intercourse with a man with an exchange of money. In addition, 25 male customers of prostitutes who were attending the STD clinic for present venereal disease, were also selected. We defined as customer of prostitute a man recognizing at least one sexual intercourse with a prostitute in the previous 3 months.

Clinical, immunological, sociological data and results of HTLV-III serology for both prostitutes and male customers have been published elsewhere (21).

The control group consisted of 33 women denying prostitution practice and 27 men denying sexual contact with prostitutes. They were selected as controls from the blood-donor population of the Rwandese Red Cross Unit. They were all matched for sex, age, ethnic and geographic origin and annual income.

In all 118 individuals, blood was taken for seroepidemiological analysis.

RESULTS

Prevalence of antibodies to T. pallidum, C. trachomatis, HBV and HTLV-III

Table 1 gives the antibody prevalence rate to HTLV-III, T. pallidum, C. trachomatis and HBV in 33 Rwandese prostitutes, 25 male prostitute customers and controls. As compared with female controls, the prostitutes had a higher prevalence of antibodies to HTLV-III (29/33 versus 4/33, p<0.001), T. pallidum (T. pallidum hemagglutination (TPHA): 27/33 versus 6/33, p<0.001; Rapid Plasma Reagin (RPR): 19/33 versus 2/33, p<0.001; Fluorescent treponemal antibodies (FTA-Abs): 27/33 versus 5/33, p<0.001), and C. trachomatis (IgG IF: 31/33 versus 13/33, p<0.001). HBV serological markers were more often detected in the prostitutes than in the female controls (31/33 versus 18/33, p<0.001) although HBs Antigen carriage rate was similar in both groups (1/33 versus 2/33, respectively).

In the male subjects, the only significant differences in antibody prevalence rate between customers of prostitutes and male controls were observed for HTLV-III (7/25 versus 2/27, p=0.05) and RPR (10/25 versus 1/27, p<0.01). In none of the sera tested, could IgM IF antibody to chlamydia be detected.

Association between antibody prevalence rate to three selected infectious agents and HTLV-III

Table 2 shows the associations between HTLV-III seropositivity and the presence or absence of antibodies to T. pallidum, C. trachomatis and HBV in 118 sera. Among the individuals studied, HTLV-III seropositivity was significantly associated with the presence of antibodies against T. pallidum (TPHA, p<0.001; FTA-Ab, p<0.001; RPR, p<0.01), C. trachomatis (IgG IF, p<0.01) and HBV (RIA Anti-HBs and/or Anti-HBc, p<0.01). However, no association was found between HTLV-III seropositivity and HBsAg carriage. As shown in table 3, when scored from 0 to 3, following the cumulative number of seropositive tests for 3 selected assays (TPHA, chlamydia IgG IF and RIA Anti-HBs and/or Anti-HBc), the subjects having 2 or more positive tests had a dramatically higher probability of having detectable antibodies to HTLV-III than those with lower score. The same relationships between seropositivity for HTLV-III antibodies and serological markers to the three selected infectious agents were found when considering the odds ratios for each population group or when considering separately the male and the female subjects.

SEROLOGICAL METHODS

HTLV-III antibodies were quantitated using an enzyme linked immunosorbent assay (ELISA) with disrupted HTLV-III as antigen (15) and further confirmed by a modification of the Western Blot Technique (15). Hepatitis B surface antigen (HBsAg) as well as antibodies to HBsAg (Anti-HBs) and to Hepatitis B core antigen (Anti-HBc) were measured by standard radioimmunoassays (RIA). The serological detection of IgG and IgM antibodies to a pool of the serotypes D to K of Chlamydia trachomatis was done by a microimmunofluorescence technique (IF) (22) (antigen was prepared by the Institute of Ophthalmology, Prof. J. Treharne, London, United Kingdom). Treponemal antibodies were also evaluated by means of well established techniques (4, 18).

STATISTICAL METHODS

Comparison of seropositivity in the selected groups were done by chi square test and Fisher exact test. Odds ratios and 95 per cent confidence intervals were calculated using the exact method of D.G. Thomas (16) and Trend analysis, following J.L. Fleiss (5).