Pattern of Sexually Transmitted Diseases Among HIV-1 Infected Commercial Sex Workers in Ibadan, Nigeria

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Summary

This study evaluated the association of HIV-1 infection with some other sexually transmitted diseases (STDs) among female commercial sex workers. Blood samples were collected from 250 female commercial sex workers in Ibadan Oyo State, Nigeria and tested for the presence of HIV antibodies using ELISA and Western blot. Endocervical and high vaginal swab samples were also collected for microscopy and culture. The prevalence of HIV-1 infection among CSWs in Ibadan, Nigeria was 25.6% with 2.8% having dual reactivity to HIV-1 and HIV-2. Bacterial vaginosis was the commonest STDs (32.8%) followed by herpes genitalis, vaginal candidiasis, gonorrhoea, trichomoniasis, chancroid, syphilis, tinea curiz, genital warts, lympholgranuloma venerum (LGV) and scabies. Recurrent vaginal discharge, genital ulcer diseases as well as non-genital ulcer diseases (tinea curiz and scabies) were associated with increased risk of HIV infections. Access to prevention and prompt management of these STDs will reduce the spread of HIV.

Introduction

Sexually transmitted diseases (STDs) constitute major health problem all over the world. The World Bank estimates STDs as the second most important cause of healthy life lost in women aged 15-44 years after maternal morbidity and mortality [1]. Failure to diagnose and treat the traditional STIs such as syphilis, Chlamydia and gonorrhea have

serious effects with social and economic consequences [2]. The risk of transmitting and acquiring HIV is increased three to five fold by the presence of both ulcerative and or non-ulcerative sexually transmitted infections [3,4]. Genital tract inflammation or ulceration has been clearly associated with an increased HIV-RNA in genital secretions, making identification and treatment of STDs in those with HIV infection a high public health priority. Studies in Uganda showed that early detection and treatment of STIs led to a reduction in the incidence of HIV infection in the community.

Since the beginning of the HIV/AIDS epidemics, the focus of prevention efforts has been on those at risk of infection. An alternative approach to prevention would focus on those already identified with HIV and concentrate efforts on prevention of transmission to others. The success of the latter approach hinges on improving identification of those infected with HIV. Presently, there is dearth of comprehensive data on the prevalence of STDs among HIV infected CSWs in Nigeria. This study therefore evaluated the association of STDs with HIV-1 infection among female CSWs in the country.

Materials and Methods

A total of 250 female CSWs from some brothels in Ibadan, South Western part of Nigeria were tested for presence of HIV antibodies and some other STIs. A structured questionnaire was administered to them to elicit information on their demographic data, reproductive health history, duration of sex work and willingness to use condom. A complete pelvic of examination was carried out on each subject for signs of infection such as vaginal discharge, endocervical discharge, genital ulcer diseases and genital masses.

Laboratory Procedure

Urethral, vaginal and endocervical swabs were collected for culture of some STIs with sterile cotton-tipped applicator. The high vaginal swabs were examined by the wet preparation for the presence of *Trichomonas vaginalis, Candida albicas* and clue cells. The urethral and endocervical swabs were cultured on chocholate agar, modified Thayer Martins agar, human blood bilayer tween agar and incubated at 37°C in 10% $C0_2$ extinction jar for 24-48hrs. About 5-10ml of venous blood was collected asceptically from each CSW into an EDTA specimen bottle and tested for antibodies to HIV-1/2 using the ELISA technique. The presence of HIV specific antibodies were confirmed by Western blot assay. The sera were also utilized for VDRL and immuno chromatographic rapid strip syphilis test. Data was analyzed using SPSS version 11.0 programme. The chi-square and student-t tests as well as the

analysis of variance were used to determine the level of significance and at P<0.05.

Results

The mean age of the HIV-1 infected CSWs was 25.88 yrs (15-55yrs) while that of seronegative subjects was 25.80yrs (15 58yrs). However, 62.8% were within the age of 20-29 years while 12.8% were less than 20 yrs of age and 24.4% over 30 yrs. Out of the CSWs 174(69.6%) were single while (12.0%) were either married or divorced (14.0%). Majority (98.4%) were Nigerians from different parts of the country while 1.6% were from neighbouring West African countries of Ghana, Togo and Cote D'ivoire.

Table 1 is a summary of the reproductive health history of the CSWs. 93.2% had their first sexual intercourse between ages of 11-20 yrs while 4(1.6%) were exposed when they were below the age of 11yrs. Majority (64.0%) attended to 1-5 sexual customers per day; 32.8% had 6-10 partners per day while 8(3.2%) had greater than 10 sexual partners per day. A total of 64 (25.6%) of the 250 CSWs were confirmed to have HIV-1 antibodies while 7 (2.8%) had dual HIV-1/2 infections. Bacterial vaginosis was the commonest STIs diagnosed in the CSWs as it occurred in 21(32.8%) of HIV-1 infected CSWs. Other STIs identified included Herpes genitalis (25%), vaginal candidiasis (23.4%), gonor-

TABLE 1: REPRODUCTIVE HEALTH HISTORY OF THE COMMERCIAL SEX WORKERS IN IBADAN, NIGERIA

	Frequency	Percentage %
(a) Age of First Sexual exposure Age (Yrs)		
<11	4	1.6
11-20	233	93.2
21-30	13	5.2
Total	250	100.0
(b)Duration of Work As CSWs Period (Yrs)		
<1	4	1.6
1-5	149	59.6
6-10	73	29.2
11-15	20	8.0
16-20	4	1.6
Total	250	100.0
C. Number of sexual partners per day		
No of sexual partners		
<5	160	64.0
6-10	82	32.8
>10	8	3.2
Total	250	100.0

TABLE 2: ASSOCIATION OF SEXUALLY TRANSMITTED DISEASES AND HIV INFECTIONS AMONG CSWs IN IBADAN, NIGERIA

	HIV NEGATIVE	HIV POSITIVE	X^2	P VALUE
Gonorrhea	32(69.4%)	14(30.6%)		0.406
Candidiasis	40(72.7%)	15(27.7%)	0.104	0.748
Trichomoniasis	29(76.3%)	9(23.7%)	0.086	0.769
B. Vaginosis	59(73.7%)	21(26.3%)	0.047	0.829
Herpes genitals	9(36.0%)	16(64.0%)	21.5	0.0001
Syphilis	1(10.0%)	9(90.0%)	22.6	0.0000
Genital warts	13(81.3%)	3(18.7%)	2.24	0.326
Chancroid	5(35.7%)	9(64.3%)	12.6	0.002
Scabies	-	1(100%)	0.916	0.000
Tinea curiz	4(44.4%)	5(55.5%)	0.719	0.30
LGV	9(90%)	1(10%)	0.572	0.51

rhoea (21.9%), syphilis (14.1%), chancroid (14.1%), trichomoniasis (14.1%), Tinea curiz (7.8%), genital warts, lymphogranuloma venerum and scabies (1.4%). There was no significant difference between HIV-1 infected CSWs with gonorrhoea, vaginal candidiasis, trichomoniasis, genital warts and those that are seronegative to HIV antibody (P>0.05).

Genital ulcer diseases (syphilis, chancroid and herpes genitals) were significantly associated with increased risk of HIV infection (P=0.000, 0.0001 and 0.002 respectively). Five (55.5%) of the 9 CSWs with tinea curiz were seropositive for HIV-1 (P=0.030). The only subject with scabies was HIV-1 positive (P<0.0001) (Table 2). Multivariate analysis using logistic regression of the risk factors to HIV showed that adjusted odd ratio of syphilis and chancroid was 19.0 (95%CI:1.0 – 23.1). However, recurrent vaginal discharge associated with bacterial vaginosis, gonorrhea, candidiasis and trichomoniasis was also found to be significantly associated with HIV-1 infection (RR=5.7; 95%CI: 22-14.9).

Conclusion

The prevalence of HIV-1 infection among CSWs in Ibadan, Nigeria was found to be 25.6%. The spectrum of STDs among the CSWs has widened since the previous studies in Nigeria by Osoba [5], Bello et al [6] and Odugbemi [7]. While gonorrhoea, syphilis and trichonomiasis were the only STDs diagnosed, a wider spectrum of STDs among the CSWs investigated was demonstrated. Bacterial vaginosis was the commonest STD diagnosed followed by herpes genitals, candidiasis, gonorrhoea, syphilis, chancroid, trichomoniasis, genital warts, Tinea curiz, LGV and scabies in order of frequency. The prevalence of STIs found in this study was low compared to studies by earlier investigators in Nigeria [8,9] who demonstrated a high incidence of STDs among CSWs. This was

partly due to the fact that majority of the CSWs were examined and investigated in their hotel rooms. Also surveillance data from the STD clinic generally show much higher STDs rates than in general population.

Herpes genitalis which could be recurrent was the commonest genital ulcer disease found in this study. Also, 64.0% of the CSWs with herpes had HIV-1 infection. Adjusted odd ratio was 3.7 (95%CI:10-13.7). HIV-1 risk was double in HSV type 2 seropositive individual. However, syphilis was significantly associated with increased risk of HIV infection. Reported cases of active syphilis range from 2.5% in Burkina Faso to 12.5% in Nigeria[10] and more recently, *Treponema pallidum* lipoproteins have been show to increase the number of cell receptive to HIV-1, and for the number of receptors experienced per cell.

Women who exchange sexual services for money can no longer be ignored in HIV control programs. The success of preventive approach hinges upon identification of those infected with HIV, effectively motivating them to adopt and maintain safer sex practices. Access to prevention and prompt management of these STDs will reduce the spread of HIV.

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