

Bayero Journal of Pure and Applied Sciences, 5(1): 159 – 162 Received: January 2012

Accepted: June 2012 ISSN 2006 - 6996

### SEROPREVALENCE OF HUMAN HERPES VIRUS 8 (HHV8) INFECTION AMONG COMMERCIAL SEX WORKERS IN JOS

Zakari<sup>1</sup>, H., Nimzing<sup>2</sup>, L., Agabi<sup>1</sup>, Y. A., Amagam<sup>3</sup>, P. and Dashen,<sup>1</sup> M. M.

<sup>1</sup>Department of Microbiology, Faculty of Natural Sciences, University of Jos, Nigeria <sup>2</sup>Department of Medical Microbiology, Faculty of Medical Sciences, University of Jos, Nigeria. <sup>3</sup>Department of Pathology, Plateau State Specialist Hospital Jos, Nigeria. \*Correspondence author: hashyz1000@yahoo.com

#### ABSTRACT

A study of HHV8 seropositivity was conducted among commercial sex workers in Jos aimed at determining the prevalence in relation to history of STD, duration of prostitution, age and number of sexual partners per day. Antibodies to HHV8 were detected by enzyme linked - immunosorbent assay (ELISA) (Advanced biotechnologies Inc USA) in serum samples of 90 commercial sex workers, 41 (45%) of cases were positive for HHV8, 15 (17%) of the women were HIV Seropositive. Furthermore eight (8) among the HHV8 seropositive women were HIV seropositive given a co-infection rate of 20%. Of the risk factors evaluated, HIV seropositivity and history of sexually transmitted diseases were found to be significantly associated with HHV8 infection using chi's square. (P < 0.05). However lack of condom use, number of sex partners and duration of prostitution were found not to be significantly associated with HHV8 infection using chi's square. (P > 0.05.) we expect that this important seroepidemiologic baseline data will become a powerful tool for evaluating interventions and control measures. Keywords: HHV8, HIV, Commercial Sex Workers (CSW).

#### INTRODUCTION

Human Herpes virus-8 (HHV8) was identified in 1994, and appears to be the primary aetiologic agent of Kaposi-sarcoma, primary effusion lymphoma and multicentric castlenman's disease (Anna *et al.*, 2000).

Kaposi sarcoma is the most common neoplasm affecting patients with Acquired immunodeficiency syndrome (AIDS) who manifest Kaposi sarcoma at a rate 106,000 times greater than in the general population (Biggar et al 1996). The epidemiology of Kaposi sarcoma had suggested that it may be caused by a sexually transmitted infections agent (Peterman *et al.*, 1993).

In western countries (non-endemic countries) such as USA, Europe and Asia, the prevalence of HHV8 is high in homosexual men (20 - 30%) and transmission in this group is thought to occur via saliva or sexual exposures. In non homosexual men and women, prevalence is low (2-5%) (Viera et al., 1997) in those population groups the main identified risk factors are HIV seropositivity, increased number of sexual partners and history of sexually transmitted diseases, suggesting HHV8 contamination during sex (Dukers *et al.*, 2001).

While in Endemic countries of Africa and South American the prevalence of HHV8 is high and transmission is common even in children and by age 3-4 years old, 55% of Tanzanian children were already HHV8 seropositive (Anna *et al.*, 2000).

Among Adults in Lagos Nigeria lower prevalence was reported (22% of men and 14% of women). However female commercial sex workers had 31% prevalence rate (Eltom *et al.*,2002).

The study was aimed at determining the seroprevalence of HHV8 in commercial sex workers in Jos and to evaluating risk factors associated with the disease.

#### MATERIALS AND METHODS Study Area

The study area is Jos, the capital city of Plateau State, Nigeria. The area is located at an attitude of 1,200 metres and the temperature is mild all year round.

#### **Collection of Samples**

A total of ninety(90) blood samples were collected from commercial sex worker operating at different locations within Jos and its environs using randomised sampling and structurally designed questionnaire. A septically, 5ml of blood was drawn using syringe and needle into a sterile container containing EDTA and labeled appropriately before the plasma was separated within 2-4 hours of collection The blood samples were centrifuged at 1500rpm for 5minutes. Using a micropipette, each serum sample was transferred into a clean blood tube and storage was done at 20°C until ready for use(Dukers *et al*.,2001).

#### **HHV8 Detection**

A commercially available HHV8 high antibody ELISA Cat No. 15501-000 (Advanced Biotechnologies Inc Maryland USA) Enzyme Linked Immunosorbent Assay for the detection of HHV8 lgG antibody was employed. The analysis was carried out as specified by the manufacturer.(Regany *et al.*, 1998)

#### Bajopas Volume 5 Number 1 June, 201

#### **Evaluation of Risk Factors For HHV8**

A commercially available Abbott, Determine<sup>R</sup> HIV 1 and 2 an invitro visually read qualitative immunoassay for the detection of antibodies to HIV 1 and HIV 2 in human serum, plasma or whole blood was used. The analysis was carried out based on manufacturers instruction. (Bernard, 2000)

#### Confirmation Test For HIV1 & HIV2

Confirmation was based on the serial algorithm recommended by FMOH and WHO.The chembio HIV1 and HIV 2 STAT.PAK Assay (Chembiodiagnostic sys inc) is a single-use immuno chromatographic test kit for the detection of antibodies to HIV 1 and 2 in serum and plasma. This test was used for validation of rapid HIV test results and the sensitivity was found to be substantially equivalent to EIA and western blot tests when tested on selected performance panels. The analysis was carried out as specified by the manufacturer.(Bernard, 2000)

#### **Other Risk Factors**

Data on other risk factors such as number of sexual partners, use of contraceptives, history of sexually transmitted diseases and duration of prostitution were evaluated using structurally designed questionnaire(.Anna, et al., 2000)

#### **Data Analysis**

Data were entered into computer and analyzed using SPSS version 13.0. Statistical significance was accepted at P < 0.05 using Chi square.

#### RESULTS

Serum Samples from 90 commercial sex workers were analyzed for anti bodies directed against HHV8

antigen, 41 (46%) were seropositive for HHV8. In addition, 15 (17%) were HIV seropositive. 8 (20%) of the HHV8 seropositive women were HIV positive (Table 1).

HIV seropositive was found to be significantly associated with HHV8 infection using Chi's square (P < 0.05). Age group (30-34) of years show high prevalence for HHV8 (100%), while age group( 15-19)of years was the least prevalent 27% (Figure 1).

Table 2 shows the seroprevalence of HHV8 in relation to history of sexually transmitted disease (STDS). The women who showed history of STDS significantly had higher prevalence (64%) than those who did not (7.0%) by Chi's square( P < 0.05)

Seroprevalance of HHV8 in relation to number of sexual partners per day is depicted in table 3. Higher prevalence of 66.7 % was observed in women who accepted having 7-9 sexual partners per day. However, this was not statistically significant using Chi's square (P > 0.05).

Table 4 shows the seroprevalence of HHV8 in relation to duration of prostitution which seems not to have any influence on HHV8 seropositive . The result of HHV8 seroprevalence in relation to the used of condom is represented in table 5. There was no significant difference using Chi's square between women who used condoms and those who did not.

Table 6 is the result of HHV8 seroprevalence in relation to educational level of the commercial sex workers. Level of education had no statistical significant association with HHV8 seropositive using Chi's square (P > 0.05).

				sex	screed	positive	
<b>1 HHV8 Seroprevalence in Relation to HIV</b> s Among Commercial Sex Workers in Jos				71	30	42.3	
polis		4-6	16	9	56.3		
				7-9	3	2	66.7
Reactio	HHV8	HIV	HHV8/HI	Total	90	41	46.0
n status			V	X <sub>2</sub> = 0.55		P > 0.05	
Reactive	41(46% )	15(17% )	8(8.8%)	_			
Non- reactive	, 49(54% )	, 75(83% )	33(36.6%)				
Total	90	90	41				
X <sub>2</sub> = 20.44		P < 0.	05	_			

Table 2: Seroprevalance of HHV8 In Relation to History of Sexually Transmitted Disease (STD)

History of STD	No screened	No positive	(%)positive
YES	61	39	64
No	29	2	7
Total	90	41	46
$X_2 = 11.66$	i	P < 0.05	

Table 3: Seroprevalence of HHV8 in Relation toNumber of Sexual Partners Per DayNumber ofNoNo(%)positive

Bajopas Volume 5 Number 1 June, 201

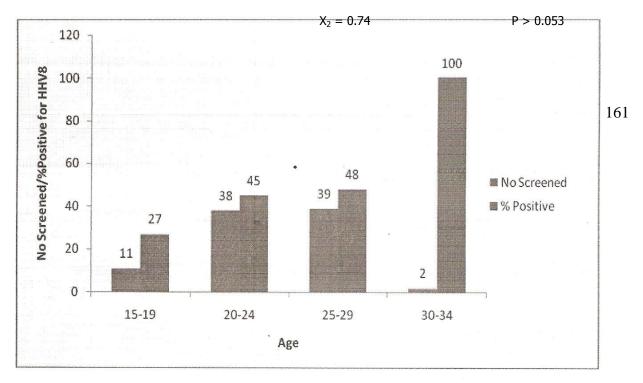


Figure 1: HHV8 Seroprevalence in relation to Ages among Commercial Sex workers in Jos

Table 4: Sereoprevalence of HHV8 in Relation to
the Duration of Prostitution

Duration of Prostitution (Yrs)	No screened	No positive	(%) Positive for HHV8
1	3	00	00
2	19	5	26
3	27	11	41
4	13	6	46
>5	28	19	68
Total	90	41	46
X <sub>2</sub> = 4.51	F	° > 0.05	

## Table 5: Seroprevalence of HHV8 Infection inRelation to the Use of Condom

Use of	No	No	(%)Positive
condom	screened	positive	forHHV8
Yes	78	31	41
No	14	10	71
Total	90	41	46
$X_2 = 1.47$		P > 0.05	

# Table 6: Sereprevalence of HHV8 in relation toeducational level

Educational level	No screened	No positive	(%) Positive for HHV8
Non formal	25	13	52
Primary	23	10	43
Secondary	39	16	48
Tertiary	3	2	67
Total	90	41	46

#### DISCUSSION

The results of this study suggest that infection of HHV8 is prevalent (46.0%) among commercial sex workers in Jos. The result is high compared to the 31% prevalence rate reported in Lagos, Nigeria by Eltom et al, (2002). However the result agrees with 42.0% prevalence rate among commercial sex workers in western Sicily which is also regarded as an endemic area for HHV8 infection as reported by Anna et al (2000). Factors that could contribute to these high rates are HIV seropositivity and history of sexually transmitted diseases. HHV8 seroprevalence was found to be significantly associated with HIV seropositivity with con-infection rate of 20%. This further confirms the implication of HIV as one of the identifiable risk factors of HHV8 infection. The prevalence of HHV8 was found not to be significantly associated with Age. However, high among women of 33 years and above this report did not correlate with the report of Etom et al. (2002) which states that increasing age and STD where each associated with HHV8 seropositvity in men and women. HHV8 seroprevalence was much higher in women with self reported history of sexually transmitted diseases. This finding can be regarded as marker of sexual promiscuity which also suggest the sexual spread of HHV8 and the possibility that sexual transmitted diseases act by increasing the likelihood of HHV8 infection.

#### REFERENCES

- Anna, M.P., Filippa, B., Francesco, V., Enza, V., Maria, R.V. (2000).Antibodies to human herpes virus-8 (HHV8) in general population and in individuals at risk for sexually transmitted disease in western Sicily. *International Journal of Epidemiology* 29 (1): 75-179.
- Bernard, M. B (2000) Rapid tests for HIV antibody. *AIDS reviews* 2: 76-83.
- Biggar, RJ., Rosenberg, P.S. and Cote, T. (1996).Aids/Cancer match study group. Kaposi Sarcoma and Non-Hodkins Lymphoma filling the diagnosis of AIDS. *International Journal of Cancer*, 68:754-758.
- Chang. Y., Cesarman, E. and Pressin, M.S. (2002). Identification of Herpes virus-Like DNA sequence in Kaposi Sarcoma. *Science* 266:1865-1869.
- Dukers, N.K., Renwick, N. and Frins, M. (2001). Risk factors for human herpes virus 8 seropositivity and seroconversion in a cohort of homosexual men. *American Journal of Epidemiol* 151:213-224.
- Eltom, M.A., Mbulaiteye, S.M., Dada, A.Y., Whitby, D and Biggar, R.J. (2002). Transmission of Human Herpes virus 8 by sexual activity

In this study it was observed that there was a high prevalence rate of 66.7% among women with 7 to 9 number of sex partners compared to 42.3% among those with 1-3 sex partners. This could be related to the fact that women with high number of sex partners will connotes different sex acts that could increase the risk of exposure to HHV8 infection. Furthermore this research found out that women who do not use condom have the highest prevalence 71.0% compared to those who use condom. This could be due to unprotected sex and condoms acts as a barrier or a preventive measure against HHV8 infection. However in the course of the research, it was found out that, some of the women who often use condoms were found to be HHV8 seropositive, which indicates that non-sexual routes of spread are common. Perhaps occurring via saliva or kissing as suggested by Viera et al (1997). This was further supported by Chang et al. (1996) which reported that, the pattern of seroprevalence of HHV8 did not quite resemble that of Herpes complex type 2, in which sexual contact appears to be a major mechanism for its transmission.

As a result of the above, true HHV8 seroprevalence will depend on intensive study of well characterized population that identify risk behaviours that predispose to HHV8 acquisition so as to formulate recommendations on the prevention of HHV8 infection and there is an urgent need for health education for the women and the general population on the various mode of transmission of this disease.

among adults in Lagos, Nigeria. *AIDS* 16 (8) 2473 - 2478.

- Peterman, T.A., Jaffe, M.W.B and Beval, V. (1993). Epidemiologic clues to the etiology of Kaposi Sarcoma *AIDS* I: 605 -611.
- Regany, N., Cathomas, G and Schwager, M. (1998) High HHV8 seroprevalence in homosexual population in Switzerland. *Journal of Clinical Microbiology* 36:1784-1786.
- Viera, J. Huang, M. L and Koelle, C. L. (1997) Transmissible Kaposi sarcoma associated herpes virus in saliva of patient with a history of Kaposi sarcoma. *Journal of virology* 71: 7083-7087.