



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

Zakari¹, H., Nimzing², L., Agabi¹, Y. A., Amagam³, P. and Dashen,¹ M. M.

¹Department of Microbiology, Faculty of Natural Sciences, University of Jos, Nigeria

²Department of Medical Microbiology, Faculty of Medical Sciences, University of Jos, Nigeria.

³Department 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. Aseptically, 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 IgG antibody was employed. The analysis was carried out as specified by the manufacturer.(Regany *et al.*, 1998)

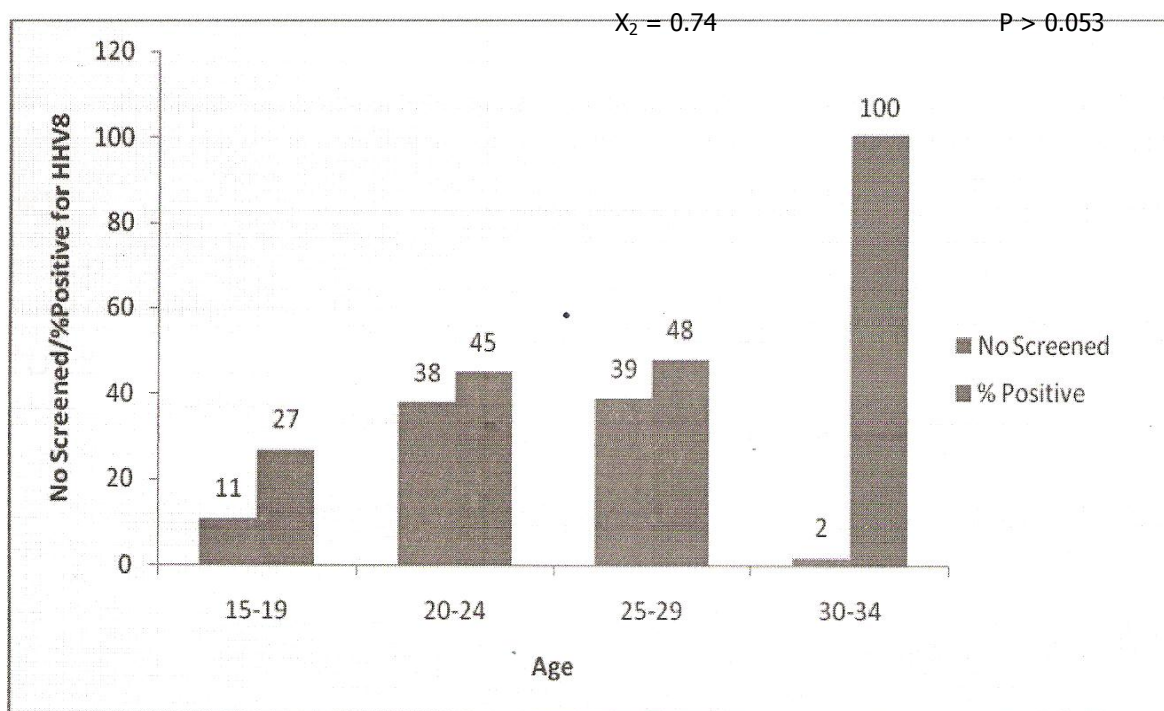


Figure 1: HHV8 Seroprevalence in relation to Ages among Commercial Sex workers in Jos

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

$X_2 = 4.51$

$P > 0.05$

Table 5: Seroprevalence of HHV8 Infection in Relation to the Use of Condom

Use of condom	No screened	No positive	(%) Positive for HHV8
Yes	78	31	41
No	14	10	71
Total	90	41	46

$X_2 = 1.47$

$P > 0.05$

Table 6: Sereoprevalence of HHV8 in relation to educational 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 were each associated with HHV8 seropositivity 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, R.J., 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 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* 7: 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.

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 connote 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.