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Prevalence of Herpes Simplex Virus 1 and 2 in a Sexually Transmitted Disease Clinic in Miami

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ABSTRACT

The Prevalence of HSV-1 and HSV-2 among STD clinics in Miami is not known. The objective of this study was to evaluate infection rates of HSV 1 and 2, and to describe the socio-demographic characteristics, sexual orientation and co-infection with HIV and other STIs, in individuals attending a Sexually Transmitted Diseases (STD) clinic in Miami. A cross-sectional study of 663 patients tested for HSV type-specific serology or herpes culture during the year 2007 was performed. An overall infection rate of HSV-1 was 42.1% and 36.7% for HSV-2. Statistically higher infection rates for HSV-1 and 2 were seen among Hispanics (56.7%, 54.4%) compared to non-Hispanic black (36.80%, 41.70%) and non-Hispanic white patients (6.1%, 3.5%) respectively. Females showed higher HSV-2 infection rates over males, 41.6% vs. 58.4%; $p = 0.03$. HSV-1 and 2 infection rates were 60.2% and 57.6% among foreign-born individuals, in contrast to 39.8% and 42.4% found among persons born in the United States. Our data shows high infection rates for HSV-1 and 2 in this community, and especially among the Hispanic population. Efforts to decrease acquisition among the Hispanic population should be a focus of future STI prevention programs. Florida Public Health Review, 2011; 8, 10-14.

Background

Herpes Simplex Viruses (HSV), members of alpha-herpes viruses, are common human pathogens mainly causing oral mucocutaneous and genital ulcerative disease (Singh et al. 2005). Herpes simplex virus type 2 (HSV-2) is the main cause of genital herpes, although HSV-1 is an emerging cause both in developing and industrialized countries (Peña, Adelson, Mordechai, & Blaho, 2010; Samra, Scherf, & Dan, 2003).

Seroprevalence of HSV 1 and HSV 2 has particular public health importance mainly due to the synergistic relationship between HSV, STIs and the HIV epidemic. Most HSV-infected individuals are asymptomatic, are unaware of their infection and have sub-clinical disease. Transmission as a consequence of asymptomatic viral shedding contributes to the spread of disease. Episodic outbreaks of genital ulcers as well as asymptomatic shedding facilitate the acquisition and transmission of HIV and other STIs (Lingappa et al., 2009)

For the general U.S. population, an estimate of the prevalence of HSV 1 and HSV 2 can be obtained by the US National Health and Nutrition Examination Surveys (NHANES) database. According to the NHANES study, in 1999-2004, the overall age-adjusted HSV-2 seroprevalence was 17.0% (95% CI, 15.8%-18.3%) and the seroprevalence for HSV-1 was 57.7% (95% CI, 55.9%-59.5%) (Xu et al., 2006). However, the statistics found in the NHANES database are unlikely to be representative of the HSV

prevalence in ethnically diverse cities such as Miami and cannot be extrapolated to high risk groups.

Purpose

The objective of this study is to evaluate infection rates of HSV 1 and HSV 2, and to describe the socio-demographic characteristics, sexual orientation and co-infection with HIV and other STIs, in individuals attending a Sexually Transmitted Diseases (STD) clinic in Miami.

Methods

A retrospective chart review of patients tested for HSV type-specific serology or herpes culture during the year 2007 was performed. HSV IgG specific serology testing is available at the Miami Dade County STD clinic and is offered to individuals if clinically indicated or if specifically requested. For the purpose of this study we defined HSV infection by having either a positive IgG serology for HSV-1 and/or HSV-2, or a positive culture from a lesion consistent with genital herpes based on clinical finding.

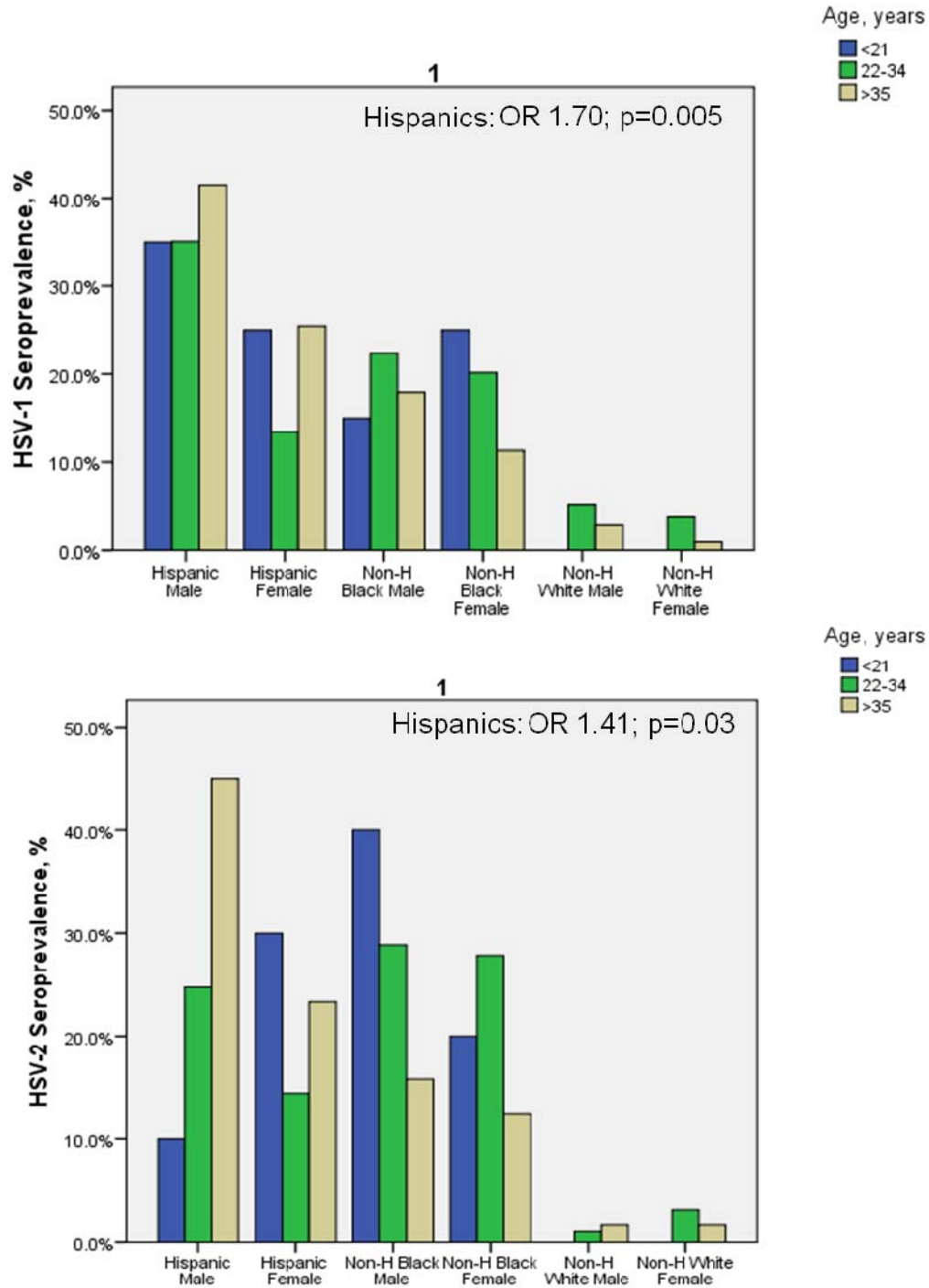
SPSS V.17 software was used to analyze the data. Univariate analyses were performed to examine the association between HSV-1 and HSV-2 prevalence rates and socio-demographic data, sexual preference, and other STIs by Pearson's χ^2 . A p -value less than 0.05 with a 95% confidence interval was considered to be significant.

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<http://health.usf.edu/publichealth/fphr/index.htm>

Table 1 Demographic and Epidemiological Characteristics of Individuals with HSV-1 and HSV-2 Infection

Total population tested for HSV-1 and HSV-2 = 663						
	HSV1+ (n=279, 42.1%)			HSV2+ (n=243, 36.7%)		
	N	Pct	Unadjusted OR (95% CI)	N	Pct	Unadjusted OR (95% CI)
Gender						
Male	174	62.4	0.9 (0.6, 1.3)	142	58.4	0.7 (0.5, 1.0)
Female	105	37.6	1.0 (0.7, 1.4)	101	41.6	1.3 (0.9, 1.9)
Age						
≤ 21	20	7.2	0.8 (0.4, 1.5)	10	4.1%	0.3 (0.1, 0.7)
22-34	146	52.3	0.8 (0.6, 1.2)	105	43.2%	0.5 (0.3, 0.6)
≥ 35	113	40.5	1.1 (0.8, 1.6)	128	52.7%	2.6 (1.9, 3.7)
Ethnicity						
Hispanic	148	56.7	1.7 (1.2, 2.3)*	124	54.4%	1.4 (1.0, 1.9)*
Non-H black	96	36.8	0.5 (0.4, 0.8)	95	41.7%	0.8 (0.6, 1.1)
Non-H white	16	6.1	0.8 (0.4, 1.5)	8	3.5%	0.4 (0.1, 0.8)
Birthplace						
U.S.	111	39.8	0.4 (0.3, 0.6)	103	42.4%	0.5 (0.4, 0.7)
Non-U.S.	106	60.2	2.2 (1.6, 3.0)*	140	57.6%	1.7 (1.2, 2.3)*
Income (\$)						
< 5000	129	52.4	0.7 (0.5, 1.0)	120	55.0%	0.9 (0.6, 1.2)
5000– 15000	59	24.0	1.0 (0.6, 1.5)	55	25.2%	1.1 (0.7, 1.6)
> 15000	58	23.6	1.5 (1.0, 2.2)	43	19.7%	1.1 (0.7, 1.7)
Sexual orientation						
Same	31	12.4	0.8 (0.5, 1.3)	29	13.1%	0.9 (0.5, 1.5)
Opposite	219	87.6	1.0 (0.6, 1.4)	193	86.9%	1.09 (0.7, 1.6)
HIV status						
Positive	5	2.0	1.2 (0.08, 0.5)	14	6.3%	1.1 (0.5, 2.2)
Negative	246	98.0	4.5 (1.7, 11.9)*	209	93.7%	0.8 (0.4, 1.7)
Prior HSV						
Yes	32	12.9	1.5 (0.9, 2.7)	37	16.7%	2.6 (1.5, 4.5)
No	217	87.1	0.6 (0.3, 1.1)	184	83.3%	0.3 (0.2, 0.6)*
Prior STIs						
Yes	84	33.5	0.618 (0.4, 0.9)	101	45.3%	1.3 (0.9, 1.9)
No	167	66.5	1.619 (1.2, 2.3)	122	54.7%	0.7 (0.5, 1.0)

Figure 1. HSV-1 and HSV-2 Seroprevalence among Hispanics in an STD Clinic in Miami



This study was approved by both, the University of Miami and the State of Florida Institutional Review Boards.

Results

The total population tested in the study period for HSV1 and 2 was 663, with 418 (63%) males and 245 (37%) females. Overall, the infection rate for HSV-1 was 42.1% and HSV-2 was 36.7%. Table 1 describes the rates of infection with HSV-1 and 2 respectively, by socio-demographics, sexual orientation, co-infection with HIV and history of other STIs.

Discussion

We found infection rates of HSV-1 to be 42.1%, and HSV-2 to be 36.7% in this study. When compared to the national statistics for the general population, the HSV-1 infection rate is similar, but the HSV-2 rate is markedly high. However, our rates may not be comparable due to the biased study population, with a larger percentage of high risk and foreign born persons, ethnical diversity, and lower socioeconomic status.

Statistically higher infection rates for HSV-1 and HSV-2 were seen among Hispanics and foreign-born individuals. Figure 1 demonstrates HSV-1 and 2 infection rates according to age, ethnicity and gender. All Hispanics in the over 35 year age group showed a trend with the highest rates of infection for HSV-1 and HSV-2. On the other hand, the NHANES database (1999-2004) reports low overall HSV-2 seroprevalence rates (10%) for Mexican-Americans (Xu et al., 2006). This figure contrasts with our findings for the Hispanic population in Miami, which may speak to the varied infection rates of herpes simplex among Latin-Americans of different origin (Da Rosa-Santos, Goncalves Da Silva, & Pereira, 1996; Soto et al., 2007).

There were significantly higher rates of HSV-2 infection among females and again a trend toward the eldest age group (>35 years), with rates as high as, 41.6% (OR 1.38, 95%CI 0.99-1.91) and 52.7% (OR 2.67, 95%CI 1.92-3.71) respectively. Higher HSV-2 rates among women have been previously described in the literature and may be as a result of more efficient transmission from male to female (Gottlieb et al., 2002; Singh et al., 2005).

There was no significant correlation observed for HSV-1 or 2 with income or sexual orientation. Among those seropositive for Herpes, the rate of HIV co-infection was unremarkable. This is in contrast to the high rates of co-infection found when looking at HIV positive groups (Celum et al., 2010).

An important limitation of our study was the individual patient's compliance to pay for HSV serological testing. Moreover, the retrospective design accounts only for what is recorded in the chart and some cultures may have been negative despite lesions due to HSV.

Screening for herpes is generally not recommended, however, the prevalence of HSV-1 and 2 among STD clinics in Miami was not known. 87.10% of patients infected with HSV-1 and 83.3% of those with HSV-2 had not known their serological status, nor were they ever given a clinical diagnosis of genital herpes. Screening high risk persons can provide a diagnosis for those infected and unaware of having herpes, and could potentially protect unexposed sexual partners. This knowledge and subsequent education of infected persons, along with, an opportunity to consider suppressive therapy may reduce transmission of herpes and possibly other STIs and HIV.

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