LGBT Health
Volume 4, Number 1, 2017

DOI: 10.1089/lgbt.2016.0049

Anal Squamous Intraepithelial Lesions and HPV Among Young Black Men Who Have Sex with Men

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Abstract

Purpose: Limited data are available on anal squamous intraepithelial lesions (ASILs) and anal human papillomavirus (HPV) infection in young, Black populations. The purpose of this study was to examine the prevalence of and relationships between ASILs and high-risk HPV infection in a young (<30 years of age), predominantly Black, men who have sex with men (MSM) population.
Methods: Results of anal cytology and HPV DNA were gathered for 83 individuals.
Results: Forty-two percent of individuals (35) had atypical squamous cells of undetermined significance and 33% (27) had low-grade squamous intraepithelial lesion by cytology. Only 9% tested positive for both high-risk HPV subtypes 16 and 18.
Conclusion: Low rates of infection with both HPV types 16 and 18 may provide further evidence that we should continue to vaccinate young, Black MSM against HPV.

Keywords: cancer, epidemiology, health screening, HIV/AIDS, men who have sex with men (MSM), prevention

Introduction

Limited data are available that examine rates of anal squamous intraepithelial lesions (ASILs) and anal human papillomavirus (HPV) infection in young, Black, men who have sex with men (YBMSM). A recent systematic review exposed the lack of racial minority representation in the current literature, and emphasized the need for racial minority inclusion in future research focused on anal HPV, ASILs, and cancer.[1] The primary aim of this study is to examine the prevalence of ASILs and high-risk HPV infection in a young (<30 years of age), predominantly Black, MSM population.

Methods

A retrospective chart review was conducted on all patients screened using anal cytology at a federally qualified health center in Chicago, IL, between 2012 and 2016. This project was submitted for approval and deemed low risk by the Institutional Review Board (IRB) at the University of Chicago. Approval was granted by the IRB and participant consent was waived due to the nature of the study. All study data were deidentified before analysis.

Anal cytology results of 83 individuals <30 years of age were included in the study (Table 1). Other variables included in the analysis were high-risk HPV detection, HIV status, CD4 T cell count, and HIV viral load. Multinomial logistic regressions were used to estimate relative risk ratios (RRRs) and 95% confidence intervals (95% CI) of factors associated with the presence of normal cytology, atypical squamous cells of undetermined significance (ASCUS), and low-grade squamous intraepithelial lesion (LGSIL).

Results

Of the 83 individuals included in the analysis, the mean age was 24 (SD 3.0); 99% (82) were male and 1% (1) were trans women. Ninety-eight percent identified as Black and 2% identified as mixed race. Cytology results were present for all individuals; 25% (21) had negative cytology results, 42% (35) had ASCUS, 33% (27) had LGSIL by cytology, and there were no cases of high-grade squamous intraepithelial lesion (HGSIL) by cytology.

Eighty-eight percent (73) of the population was HIV positive. Of those who were HIV positive, 58% had a CD4 T cell count >500 cells/mm^3, 93% (68) had a CD4 T cell count >200 cells/mm^3, and 7% (5) had a CD4 T cell count ≤200

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Table 1. Characteristics of Patients with Anal Cytology ($N=83$)

Age, mean (SD)	23.8 (3.0)
Gender, *n* (%)	
Male	82 (99)
Trans women	1 (1)
Race, *n* (%)	
Black	81 (98)
Other/mixed	2 (2)
Cytology results, *n* (%)	
Negative	21 (25)
ASCUS	35 (42)
LGSIL	27 (33)
HR HPV any	60 (87)
HR HPV, *n* (%)	
HPV type 16 only	13 (24)
HPV type 18 only	6 (11)
HPV types 16 and 18	5 (9)
Neither	30 (56)
Rectal gonorrhea	16 (26)
Rectal chlamydia	16 (26)
HIV status, *n* (%)	
Positive	73 (88)
Negative	10 (12)
CD4 category,[a] *n* (%)	
>200 cells/mm^3	68 (93)
≤200 cells/mm^3	5 (7)
Undetectable viral load[a]	38 (52)

[a]Among HIV-positive patients.
ASCUS, atypical squamous cells of undetermined significance; HPV, human papillomavirus; HR, high risk; LGSIL, low-grade squamous intraepithelial lesion.

cells/mm^3. Of those who were HIV positive, 48% (35) had an HIV viral load ≥48, whereas the remaining 52% (38) were classified as undetectable, or <48 viral copies detected per milliliter of blood.

HPV status was recorded for 84% (71) of the study population. Of those with HPV results, 87% (60) had high-risk HPV. HPV typing for strains 16 and 18 was recorded for 65% (54). Of those with reported HPV typing, 9% had both HPV types 16 and 18, 24% had only HPV type 16, 11% had only HPV type 18, and 56% had neither HPV type 16 nor HPV type 18. Rectal gonorrhea and chlamydia screening took place in 72% (60) of patients. Of those, rectal gonorrhea was diagnosed in 26% (16) and rectal chlamydia was diagnosed in 26% (16).

A significant relationship was observed between detection of high-risk HPV and the finding of LGSIL by cytology $P=0.014$ (RRR 8.67, 95% CI 1.66–45.21). This relationship remained significant when controlling for age and HIV status $P=0.01$ (RRR 10.52, 95% CI 1.63–68.07). No relationships were observed between HIV status, CD4 T cell count, HIV viral load, rectal gonorrhea, rectal chlamydia, and anal cytology findings in this population.

Discussion

In this population, the largest percentage of subjects had ASCUS (42%), followed by those with LGSIL (33%), and those with negative results (25%). These findings approximate the prevalence of anal atypia observed in other populations.[2–6] We did not find any HGSIL by cytology in our population. However, anal cytology has been shown to have a much lower sensitivity for HGSIL (46%) than for LGSIL (77%) or ASCUS (87%) in an HIV-positive population.[7] It is possible that high-grade disease was present and went undetected due to the relatively low sensitivity of this screening tool. Some authors have reported higher percentages of HGSIL in their HIV-positive populations. However, these are often in older patients[5] with lower CD4 T cell nadirs.[8]

These results show rates of infection with high-risk HPV type 16 and type 18 that are similar to those observed in other young, HIV-positive populations.[9] This contradicts the lower rates of high-risk HPV infection observed in other Black populations when compared with White or Hispanic groups.[10] Our findings are further evidence that infection with both types of HPV most commonly implicated in anal cancer, types 16 and 18, is still fairly rare in this population.

In our population, a relationship was observed between high-risk HPV and LGSIL. This observation has also not been confirmed by other studies. In fact, other studies have linked low-risk HPV (types 6 and 11) with LGSIL, and high-risk HPV with HGSIL and cancers.[11] This work has predominantly been done with HPV infection of the cervix. Some studies have estimated progression rates of anal intraepithelial neoplasia (AIN) based on prevalence of anal cancer,[4] but further investigation is needed to look at the natural history of HPV in the anal canal.

Some studies have strongly associated progression from LGSIL to HGSIL with high-risk HPV infection (especially types 16 and 18).[3] This risk of progression has also been shown to increase with age.[3] It may be that in our young population, LGSIL is a surrogate marker for later development of HGSIL. The major limitations of this study include a small sample size, lack of data related to subject smoking history, and lack of histological confirmation of AIN.

Conclusion

These findings could have implications for the field of public health. Based on these findings, we are not aware of any evidence that race plays a role in rates of HPV infection. Low rates of infection with both HPV types 16 and 18 may also provide further evidence that we should continue to vaccinate YBMSM against HPV before and possibly throughout their third decade of life.

Acknowledgment

This work was supported, in part, by NIMH R01 MH100021.

Author Disclosure Statement

No competing financial interests exist.

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