Study on the prevalence and incidence of dysplasia and HPV infection of the oropharyngeal, cervical and anal mucosa (oropharyngeal) of people with HIV

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Background: PLHIV under ART with undetectable viral load have persistent chronic inflammation. This inflammatory status favors the emergence of comorbid non-AIDS defining diseases, including non-AIDS neoplasms, and cardiovascular disease. The main objectives of this study of PLHIV participating in a program for the screening, diagnosis, treatment, and prophylaxis of anal and cervical dysplastic lesions were to determine the prevalence and incidence of HPV-related dysplasia and the clearance and acquisition rates of high-risk HPV (HR-HPV) in the oropharyngeal and anal mucosae of PLHIV, and in the genital mucosa of women living with HIV (WLWH), and to evaluate factors related to HR-HPV infection in OP mucosa at 12 months.

Results: 276 PLHIV were included (table 1 and 2). The HPV infection, other STIs and oropharyngeal dysplasia at baseline visit at table 3.
At 12 months, the incidence of OP mucosa dysplasia was zero, with HR-HPV clearance and acquisition rates of 5.5% and 4.4%, respectively. The incidence of anal HSIL was 1,811.6 cases x 100,000 people-year, with HR-HPV clearance and acquisition rates of 16.2% and 25.6%, respectively; 6.2% had concomitant infection in oropharyngeal and anal mucosa. The incidence of CIN2/CIN3 or cervical cancer was zero, while the incidence of CIN1 was 3,488.3 per 100,000 women/year, with HR-HPV clearance and acquisition rates of 11.3% and 7.5%, respectively; 1.8% had concomitant HPV infection in oropharyngeal and genital mucosa. Factors related to HR-HPV infection at 12 months of follow up in oropharyngeal mucosa undetectable viral load retained (HR=0.184; 95% CI, 0.035-0.959).

Table1. Epidemiological variables	N=276
Age, mean (years), (± SD)	45.3 (10.8)
Male	218 (79)
Spanish nationality, n (%)	243 (88)
Median NP12m (IQR)	1 (1 – 1)
Median NPT (IQR)	5 (3 – 13)
Years since first sexual relations (IQR)	29 (31 – 44.5)
Use of condoms for oral sex, n (%)	4 (1.5)
Use of condoms for vaginal sex, n (%)	96 (35.8)
Use of condoms for anal sex, n (%)	12 (37.5)
Retired	30 (10.9)
Illiterate	13 (4.7)
Primary	59 (21.4)
Secondary	80 (29)
University	124 (44.9)
Smoker, n (%)	100 (36.4)
Alcohol, n (%)	38 (13.8)
IDU, n (%)	2 (0.7)
Polypharmacy, n (%)	23 (8.3)
HPV vaccination, n (%)	93 (33.7)
Chronic HBV infection, n (%)	5 (1.8)
Active chronic HCV infection, n (%)	15 (5.4)
Syphilis at baseline, n (%)	9 (3.3)
Other STIs at baseline, n (%)	20 (7.2)
Condylomas at baseline, n (%)	8 (2.9)
History of genital condylomas, n (%)	82 (29.7)

Table 2. HIV related variables	N=276
HIV infection acquisition, n (%)	
MSM	276 (78.3)
Heterosexual	43 (15.6)
IDU	13 (4.7)
Other	4 (1.4)
Years HIV infection diagnosis (IQR)	23 (17 – 29)
AIDS (A3, B3, C), n (%)	67 (24.3)
CD4 at diagnosis, cells/uL, mean (± SD)	398.8 (278.4)
Cd4 nadir, cells/uL, mean (± SD)	335.5 (231.5)
CD8 at diagnosis, cells/uL, mean (± SD)	1023.8 (477.2)
VL at diagnosis, log_{10}, mean (± SD)	5.5 (6.1)
Current CD4, cells/uL, mean (± SD)	725.2 (300.2)
Current CD8, cells/uL, mean (± SD)	867.5 (417.1)
Current CD4/CD8, ratio, mean (± SD)	0.96(0.5)
Current VL, log_{10}, mean (± SD)	2.5 (3.7)
Current HIV-RNA VL undetectable n (%)	239 (85.2)
Naïve, n (%)	0 (0)
Years with ART, median (IQR)	20.2 (13.1 – 23.4)
ART lines, median (IQR)	5.5 (3 – 7)
Current ART, n (%)	276 (100)
Virological failure, n (%)	2 (0.7)

Table 3. HPV infection, other STIs, and oropharyngeal dysplasia at baseline	N= 276
HPV positive PCR in oropharyngeal region, n (%)	31 (11.2)
High-risk HPV, n (%)	22 (8)
Number of high-risk HPV genotypes, median (IQR)	0 (0 – 0)
Low-risk HPV, n (%)	14 (5.1)
Number of low-risk HPV genotypes, median (IQR)	0 (0 – 0)
Mixed HPV (high- and low-risk), n (%)	4 (1.4)
HPV 6, n (%)	3 (1.1)
HPV 11, n (%)	1 (0.4)
HPV 16, n (%)	6 (2.2)
HPV 18, n (%)	2 (0.7)
HPV 31, 32, 33, , 35, 42, 43, , 52, 53, 54 n (%)	1 (0.4)
HPV 44, n (%)	4 (1.4)
HPV 59, n (%)	3 (1.1)
HPV 39, 40, 56, 61, 66, 68, 69, 70, n (%)	2 (0.7)
HPV-related oropharyngeal dysplasia, n (%)	0 (0)
Positive PCR for other STIs, n (%)	15 (5.4)
- N. gonorrhoeae	13 (86.7)
- C. trachomatis	2 (13.3)

Conclusions: Among PLHIV, HSIL incidence and HR-HPV acquisition rate are higher in anal *versus* oropharyngeal and genital mucosae. Non-detectability protects against oropharyngeal HPV infection.