Anal HPV infections do not associate with rectal HIV-RNA shedding in HIV+ patients

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Background

- Rectal HIV-RNA shedding occurs in a not negligible proportion of HIV+ patients with undetectable plasma HIV-RNA.
- Inflammation induced by sexually-transmitted infections can increase mucosal HIV shedding.
- Since multiple HPV infections are often detected in anal swabs from HIV+ patients, a causal effect of HPV in triggering rectal HIV replication could be hypothesized.

Methods

- A cross-sectional, monocentric study was conducted, in which consecutively-enrolled, HIV+, virologically-suppressed patients undergoing routine anal pap and HPV-testing (DNA and E6/E7 mRNA) were also tested for rectal HIV-RNA.
- A backward stepwise multivariable logistic regression analysis was performed to verify the association of a higher number of anal HPV infections with the detection of rectal HIV-RNA by adjusting for potential confounders and other variables significantly related with the outcome at univariable regression (at a p-value <0.100).

HIV-positive patients with *multiple anal HPV infections did not seem to be at higher risk of rectal HIV-RNA shedding*. Conversely, residual plasma HIV-RNA was associated with an increased risk of detecting rectal HIV-RNA

Table 1. Characteristics of study population according to number of anal HPV infections (≤4 versus >4 infections).

Variables	Four or less HPV infections N= 62 (%)	More than four HPV infections N= 39 (%)	*p*-value
Age*	52 (44-57)	45 (38-54)	0.018
Caucasians ethnicity	56 (90.3)	33 (84.6)	0.388
Risk factor for HIV:			0.040
- Heterosexual	11 (17.7)	1 (2.6)	
- MSM	45 (72.6)	36 (92.3)	
- IDU	6 (9.7)	2 (5.1)	
CDC stage C	21 (33.9)	11 (28.2)	0.551
Nadir CD4 count (cells/µL)*	286 (136-460)	285 (127-466)	0.802
Time since HIV diagnosis (years)*	13 (7-21)	11 (4-24)	0.529
Residual plasma HIV-RNA (target detected<50 copies/mL)	13 (21.0)	13 (33.3)	0.166
Months since last HIV-RNA≥50 copies/mL	88 (30-137)	40 (7-136)	0.099
Detectable rectal HIV-RNA	5 (8.1)	6 (15.4)	0.250
Antiretroviral therapy:			0.268
- 2NRTIs plus anchor drug	40 (64.5)	31 (79.5)	
- Lamivudine plus dolutegravir or protease inhibitor	20 (32.3)	7 (17.9)	
- Other	2 (3.2)	1 (2.6)	
Number of high-risk HPV-DNA*	1 (1-2)	3 (3-4)	<0.001
HPV-mRNA (at least one)	21 (33.9)	30 (76.9)	<0.001
Other symptomatic STDs	0 (0)	0 (0)	na

Note: Values within brackets are expressed as percentages except for * continuous variable (interquartile range).

Results

Figure 1. Crude difference in the proportion of patients with detectable rectal HIV-RNA according to number of HPV infections

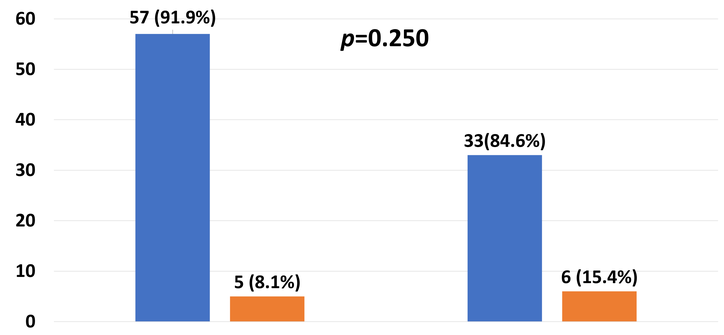

Table 2. Factors associated with the detection of rectal HIV-RNA

Variables	aOR (95% CI)	*p*
>4 anal HPV infections (versus ≤4)	2.79 (0.49-15.77)	0.247
Age (per 10 years more)	4.64 (1.12-19.24)	**0.034**
Caucasians ethnicity (versus other)	9.94 (0.89-110.71)	0.062
CDC stage C	4.79 (00.74-30.80)	0.099
Residual plasma HIV-RNA (target detected<50 copies/mL)	16.45 (2.43-111.40)	**0.004**
Months since last HIV-RNA≥50 copies/mL (per 1 month more)	0.99 (0.98-1.01)	0.218

Conclusions

- Rectal HIV shedding was independently associated with residual viremia and older age, but not to a higher number of anal HPV genotypes.
- Larger studies are needed to confirm these results.