HPV CLEARANCE AFTER IMMUNIZATION: INVESTIGATING RISK FACTORS ASSOCIATED WITH CLEARANCE AT ANAL SITE

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Elena Bruzzesi[1], Federica Gandini[1], Riccardo Lolatto[2], Sara Diotallevi[2], Girolamo Piromalli[2], Caterina Candela[1], Angelo Roberto Raccagni[1], Flavia Passini[1], Silvia Aliverti[2], Paola Striglia[2], Massimo Cernuschi[2], Andrea Marco Tamburini[3], Roberto Burioni[1,4], Antonella Castagna[1,2], Silvia Nozza[1,2]

[1]Vita-Salute San Raffaele University, Milan, Italy [2]Infectious Diseases Unit, IRCCS San Raffaele Scientific Institute, Milan, Italy [3] Gastrointestinal Surgery Unit, San Raffaele Scientific Institute, Milan, Italy [4]Laboratory of Microbiology and Virology, IRCCS San Raffaele Scientific Institute, Milan, Italy

BACKGROUND

- Human papillomavirus (HPV) persistent infection induces almost all cervical cancers and it is related to about 90% of anal cancer.[1]
- Time to viral clearance varies with age, immune status, sexual behavior and baseline treatment, but it generally take within 6–12 months.[2]
- IANS and NIH guidelines suggest starting screening for anal cancer at 35 years in MSM with HIV (MwH).[3,4]
- Insights on viral clearance at anal site is still unknown, especially in the high-risk population of MwH.
- Aim of the study is to determine factors associated with the clearance of at least one genotype included in the 9-valent vaccine.

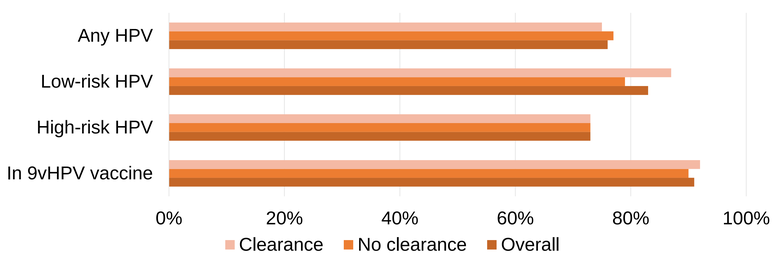
METHODS

- Retrospective cohort analysis in MwH in care for HIV at the Infectious Diseases Unit of San Raffaele Hospital, Milan, Italy, from 2014 and December 2023 (data lock).
- We included MwH with ≥2 HPV tests on anal swabs, collected 1 before and 1 after immunization with 9-valent HPV vaccine.
- Clearance was defined as type-specific HPV positivity followed by one or more HPV negative result.
- HPV genotypes are detected by multiplex real-time PCR (CFX96™, Seegene).
- Univariable and multivariable logistics regressions are used to estimate risk factors associated with clearance of ≥1 HPV genotype included in the 9-valent vaccine.

RESULTS

- Among 393 MwH with at least one HPV test pre-immunization, 96 (24.4%) have a subsequent one post-vaccine.

FIGURE 1.



- At last HPV test, 48 (50%) cleared at least one HPV genotype included in 9-valent vaccine.

TABLE 1.

Variable	Overall (n=96)	No clearance (n=48)	Clearance (n=48)	p. value
Age	39.4 (33.3-43.6)	39.9 (34.9-44.1)	35.1 (31.1-42.5)	0.095
Years since HIV diagnosis	8.6 (6.2-12.5)	9.1 (7-13.2)	7.9 (6.1-11.2)	0.170
Years on ART	7.6 (5.4-10.2)	8 (5.4-11.8)	6.6 (5.2-9)	0.111
Year HIV diagnosis	2013 (2009-2015)	2011 (2008-2014)	2013 (2011-2015)	0.117
Nadir CD4 count (cells/µL)	410 (285-558)	384.5 (283.8-561.2)	433 (294.5-552.5)	0.774
Nadir CD4 > 200 cells/µL	81 (84.4%)	41 (85.4%)	40 (83.3%)	0.000
No history of AIDS	92 (95.8%)	46 (95.8%)	46 (97.9%)	1.000
Subjects with undetectable viremia	94 (97.9%)	47 (97.9%)	48 (100%)	1.000
History of HCV	5 (5.2%)	1 (2-1%)	4 (8.3%)	0.346
HBsAg-positive	4 (4.2)	38 (79.2%)	42 (89.4%)	0.366
Smoking	51 (53.1%)	22 (45.8%)	29 (61.7%)	0.179
CD4 count (cells/µL)	787 (614-938.5)	793.5 (616.2-1021.8)	746 (607.5-899.5)	0.510
CD8 count (cells/µL)	809 (643.5-1000)	726 (610.8-1000)	838 (662-1000)	0.297
CD4/CD8 ratio	1 (0.8-1.2)	1 (0.8-1.3)	0.9 (0.7-1.1)	0.090
CD4 %	34.5 (28.5-39.8)	34.8 (30.8-40)	32.3 (28-39)	0.345
CD8 %	37.4 (30.1-40.2)	34.1 (28.5-38.6)	38 (32.9-41.8)	0.054
Year at immunization	2019 (2019-2020)	2019 (2019-2020)	2019 (2019-2019)	0.255
Year at first HPV test	2017 (2016-2019)	2018 (2016-2019)	2017 (2016-2018)	0.136
Days between HPV tests	1470 (1125-1736)	1322 (1001-1687)	1519 (1307.5-1890)	0.036
Number of HPV tests	2 (2-3)	2 (2-3)	2 (2-3)	0.697
History of STI^	52 (54.2%)	23 (47.9%)	29 (60.4%)	0.253
Concomitant STI^	19 (19.8%)	7 (14.6%)	12 (25.0%)	0.281

Demographic and immuno-virological characteristics within 180 days since last HPV test before vaccination. ^Sexually transmitted infections (STI), including syphilis, gonorrhea, mpox, chlamydia.

- 75% of those who did not cleared any genotype were older than 35, as opposed to 51.1% (p: 0.027).
- Among those with prior positive results, HPV-16 and -18 were cleared in 9/25 and 4/12 MwH. On the other hand, 11 and 6 MwH had a positivization for HPV-16 and -18.
- At multivariate regression, the odd of clearance ≥1 HPV genotype included in the 9-valent vaccine was associated with younger age.

TABLE 2.

Variable	Category	Adjusted Odds Ratio (95%CI)	P-Value
Age	**≥35 vs <35**	**0.34 (0.13, 0.81)**	**0.02**
Concomitant STI	Yes vs No	2.08 (0.71, 6.46)	0.19
Previous STI	Yes vs No	1.99 (0.83, 4.85)	0.12
CD4 nadir	Per 100 cells/µL higher	1.00 (0.99, 1.00)	0.62
CD4 count	Per 100 cells/µL higher	0.99 (0.97, 1.00)	0.35

CONCLUSIONS

Clearance of ≥1 HPV included in 9vHPV vaccine occurs in a considerable proportion of immunized MwH.
Viral clearance is less likely after 35 years of age in MwH.
Our data support recent guidelines, recommending starting anal cancer screening at 35 years in MwH.

REFERENCES

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CONTACT INFORMATION

bruzzesi.elena@hsr.it