Probability of anal human papillomavirus infection following acute HIV acquisition in Thailand

1261

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INTRODUCTION

Anal cancer is largely contributed by anal high-risk human papillomavirus (HRHPV) infection, especially human papillomavirus (HPV) 16. This study described HPV progression among individuals with acute HIV acquisition.

METHODS

From May 2017 to June 2020, participants who initiated antiretroviral therapy during acute HIV acquisition (Fiebig stages 1–5) and consented to anal HPV genotyping and high-resolution anoscopy were enrolled at a sexual health clinic in Bangkok, Thailand. At the time of acute HIV diagnosis, demographic data, sexual history, and baseline laboratory tests were collected. Anal HPV genotyping tests were performed at baseline and every 6 months. Two-state continuous-time Markov models were created separately for HPV 16, HPV 18 and/or 45 (18/45), and any HRHPV combined. Probabilities with 95% confidence intervals (CIs) and duration of HPV infection were estimated using the best-fitted models.

RESULTS

The analyses included 87 cisgender men and 4 transgender women, median age 26 years. At baseline, anal HPV 16, HPV 18/45, and any HRHPV were found in 12 (13.2%), 13 (14.3%), and 59 (64.8%) participants, respectively. Two years after HIV acquisition, estimated prevalence rates were 18.4% (95% CI 13.4%–25.5%) for HPV 16, 12.1% (95% CI 8.1%–17.1%) for HPV 18/45, and 58.9% (53.1%–64.5%) for any HRHPV. The probabilities of acquiring HPV within two years of HIV acquisition were 40.3% (95% CI 28.7%–53.8%) for HPV 16, 34.6% (95% CI 22.9%–50.7%) for HPV 18/45, and 97.9% (95% CI 93.3%–99.6%) for any HRHPV. The probabilities of HPV clearance within two years of HIV acquisition were 94.3% (95% CI 49.6%–100.0%) for HPV 16, 97.4% (95% CI 90.9%–99.7%) for HPV 18/45, and 92.7% (95% CI 85.2%–97.2%) for any HRHPV. The estimated duration of one episode of infection was 0.70 (95% CI 0.17–2.85) years for HPV 16, 0.55 (95% CI 0.36–0.84) years for HPV 18/45, and 0.77 (95% CI 0.55–1.07) years for any HRHPV.

CONCLUSIONS

In a cohort with antiretroviral therapy initiation during acute HIV acquisition, the majority of type-specific anal HRHPV infections are likely to spontaneously resolve. However, the probability of acquiring HPV after two years is exceptionally high. This suggests ongoing exposures to HPV among this population. Sexual health consultation, HPV immunization, and anal cancer screening should continue to be recommended for people living with HIV, even years after early antiretroviral therapy initiation.

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The probability of acquiring high-risk HPV after two years is exceptionally high, highlighting the importance of ongoing sexual health consultations and HPV vaccination, even years after ART initiation.

FIGURE 1 Observed and expected prevalence of HPV 16, 18/45, and any HRHPV over time

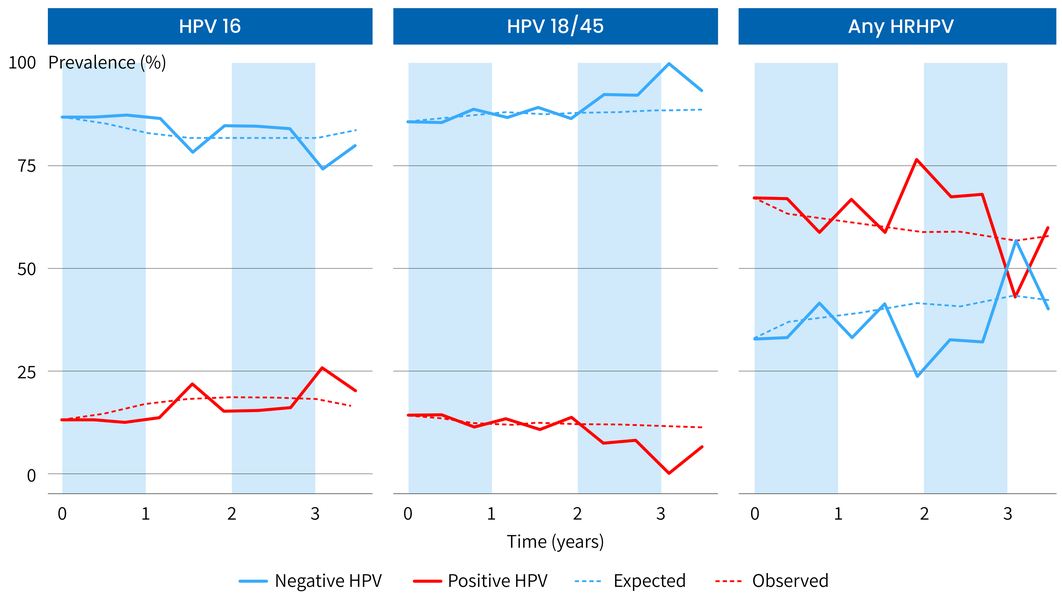


FIGURE 2 Probabilities of observing HPV incidence and clearance within different time points

