Cancer Incidence and Risk Factors Among People with HIV in REPRIEVE

620

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BACKGROUND

Cancer is a leading cause of morbidity and mortality among people with HIV (PWH).

- With the advent of highly effective antiretroviral therapy (ART), the distribution of cancer types among PWH has shifted from acquired immune deficiency syndrome (AIDS)-defining cancers (ADCs) towards non-AIDS-defining cancers (NADCs).
- Cancer incidence vary across geographic regions and are significantly affected by population characteristics.
- Enhanced understanding of cancer incidence and contributing risk factors is needed, particularly among those well -treated on ART.

METHODS

Population: REPRIEVE participants without a history of cancer at study entry.

Cancer classification: ADCs, Infection-related NADCs, Non-infection-related NADCs

Risk factors:

- Traditional: age, sex, Global Burden of Disease (GBD) region, body mass index (BMI), smoking
- HIV-related: CD4 count, CD4/CD8 ratio

Analysis: Incidence rates per 1,000 person-years and Cause-specific Cox regression for risk factors

Table 1. Participant Demographics

Demographics	N=7,507
Age (years), median (Q1, Q3)	50 (45, 55)
Female sex (%)	2,362 (31%)
Low or Mid Income GBD region, %	3,607 (48%)
Current or former smoking, %	3,685 (49%)
HIV-1 viremia suppressed, %	88%
CD4 count (cells/mm^3), median (Q1, Q3)	622 (449, 828)
Years since HIV diagnosis, median (Q1, Q3)	12 (7, 19)
CD4:CD8 ratio, median (Q1, Q3)	1 (1, 1)
BMI obese, %	1,713 (23%)

Table 1: Duration of HIV is defined as years since first positive HIV test. HIV-1 RNA was captured if available through standard of care. The assays used for testing varied, including assays with lower limits of quantitation (LLQ) between 20 and 400 copies/mL
Abbreviations: GBD, Global Burden of Disease; Q1, 1st quartile; Q3, 3rd quartile

In a global cohort of PWH on effective ART, cancer remains an important comorbidity. Prevention strategies, including smoking cessation and age- and region- specific cancer screening approaches are critical to reduce the cancer burden in this population.

RESULTS

- Analyses included 7,507 participants with 39,011.8 person-years (PY) of follow-up, and their demographics are shown in **Table 1**.
- Overall cancer incidence is shown in **Figure 1**. Among those with cancer, 160 were male (incidence 6.1 per 1,000 PY) and 59 were female (4.5 per 1,000 PY).
- The most common cancer among female was breast cancer (n=17 [28.8%] cases), and the most common cancer among male was prostate cancer (n=36 [22.5%] cases).
- High income GBD region had the higher cancer incidence (n=152, 7.6 per 1,000 PY), compared to Low or Mid Income GBD region (n=67, 3.5 per 1,000 PY).
- Cancer risk were higher for older individuals (50-59 vs 40-49, HR 1.6, 95% CI 1.2-2.1; ≥60 vs 40-49, HR 3.2, 95% CI 2.1-4.8), current smoking (HR 1.6, 95% CI 1.1-2.2). GBD regions of Latin America and Caribbean (HR 0.6, 95% CI 0.4-0.8), South Asia (HR 0.5, 95% CI 0.2-1.0), and Sub-Saharan Africa (HR 0.5, 95% CI 0.3-0.8) were associated with lower risk of cancer (**Figure 2**).

Figure 1. Incidence Rates of All Cancers and Cancer Types

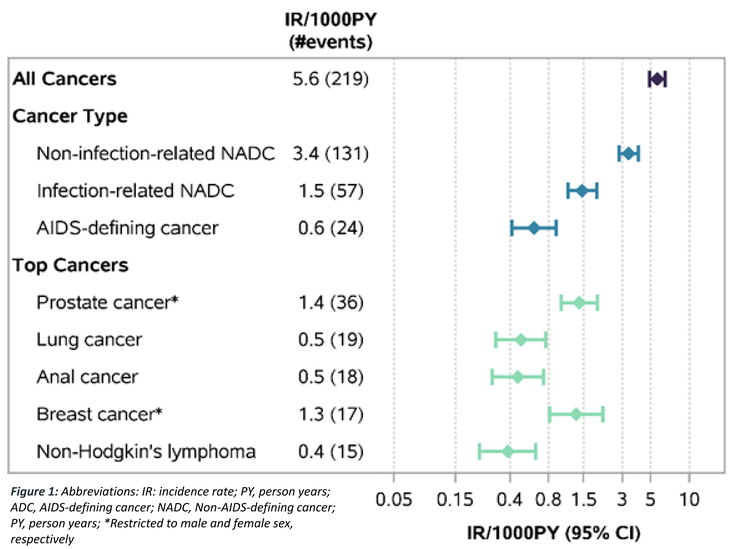


*Figure 1: Abbreviations: IR: incidence rate; PY, person years; ADC, AIDS-defining cancer; NADC, Non-AIDS-defining cancer; PY, person years; *Restricted to male and female sex, respectively*

CONCLUSIONS

- Cancer remains a major comorbidity in a global cohort of PWH with effective ART treatment,
- Non-infection-related NADCs are the most common cancer type in the whole population and across sex and GBD regions.
- Risk are highest among those with older age, current smoking, and high income GBD region residence.
- Prevention strategies, including smoking cessation and age- and region- specific cancer screening approaches are critical to reduce the cancer burden in this population.

Figure 2. Effects of Risk Factors on Cancer

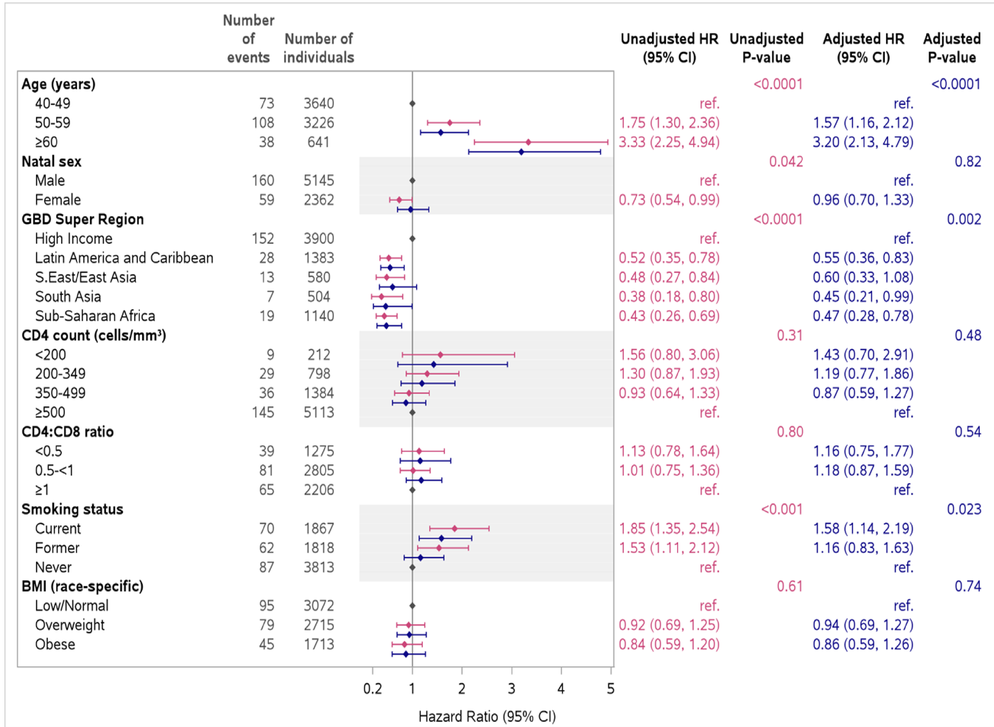


Figure 2: Unadjusted Model; Adjusted Model
Abbreviations: BMI, body mass index; GBD, Global Burden of Disease; HR, hazard ratio; ref, reference

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