Breast Cancer Risk Among Women with HIV in North America (2000-2016)

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Introduction

- Breast cancer is poorly characterized in women with HIV
- Some studies suggesting reduced risk in women with versus without HIV compels assessing breast cancer in women with HIV
- We estimated breast cancer cumulative incidence and risk factors in the North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD)

Methods

Study population:
Women ≥25 years old, prescribed antiretroviral therapy (ART), under observation (1 Jan 2000-31 Dec 2016), no history of any cancer, ≥ 6 months of follow-up

Observation Time (time scale, age):
Study entry, latest of: 1 Jan 2000, age 25, ART initiation, study enrollment, cohort-specific cancer observation start

Study exit, earliest of: invasive breast cancer diagnosis, death, loss to follow-up, 31 Dec 2016, cohort-specific cancer observation close

Analysis

- **Breast cancer cumulative incidence** calculated using non-parametric estimators accounting for competing risk of death
- **Quantified breast cancer risk** by time-varying HIV viral load, obesity (body mass index ≥30 kg/m^2) at analysis entry, race, smoking, and history of AIDS prior to ART (CD4 count <200 or AIDS-defining illness) using subdistribution hazard ratios to account for competing risk of death

Results

- 60 cases of breast cancer identified among 10,197 women contributing 81,639 person-years
  - Median follow-up: 7.4 years (IQR: 3.5 to 12.5)
  - Median age at study entry: 40.5 (IQR: 33.9 to 47.7)
- Breast cancer cumulative incidence was 3.1% from 2000-2016
  - Median age at diagnosis: 51.7 (IQR: 46.1 to 57.5)

Table 1. Association between clinical/demographic factors and breast cancer among women in the NA-ACCORD 2000-2016

Covariate	aHR	95% CI
Race		
White	REF	REF
Black	0.93	0.53, 1.65
Other	1.05	0.39, 2.82
Obesity	1.30	0.75, 2.26
Smoking Status		
Never	REF	REF
Ever	2.08	0.93, 4.67
History of AIDS prior to ART	1.02	0.59, 1.74
Per $\log_{10}$ viral load increase	1.02	0.99, 1.04

Abbreviations: adjusted subdistribution hazard ratio, aHR; confidence interval, CI.

- Large magnitude association between smoking and breast cancer (aHR=2.08) as well as obesity and breast cancer (aHR=1.30), though estimates were non-significant (p>0.05)
- Two percent increase in breast cancer risk per $\log_{10}$ increase in viral load, which was marginally non-significant
- No association between history of AIDS prior to ART or race and breast cancer risk

Conclusions

- **We observed lifetime breast cancer risk of 3.1% over 16 years (2000-2016) in women with HIV (median follow-up 7.4 years) and associations with smoking, obesity and time-varying viral load that merit further investigation**
- Findings should be interpreted cautiously given small case sample size and limited follow-up after age 65
- Additional exploration is needed as more follow-up is accrued and incorporating traditional/reproductive risk factors for breast cancer

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