Tobacco Smoking Not Independently Associated with Immune and Virologic Response Among Individuals of the Canadian HIV Observational Cohort (CANOC)

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Background

• In general, combined antiretroviral therapy (cART) reduces viral load (VL) and increases CD4 cell counts (CD4).
• Response to cART can be categorized as complete (CD4+/VL-), incomplete (CD4-/VL-), or discordant (CD4+/VL- or CD4-/VL+).
• There is a higher prevalence of tobacco smoking among people living with HIV (PLWH) compared to the general population.
• Some studies have found that smoking tobacco is associated with worse CD4 and VL while others have found no such association.

Hypothesis: individuals who smoke tobacco will be more likely to achieve incomplete and/or discordant immune/virologic response.

Methods

• The Canadian HIV Observational Cohort (CANOC) includes individuals initiating cART-naïve between Jan 1, 2000 and Dec 31, 2016.
• Any study participants with (1) known sex at birth, (2) follow-up ≥ 6 months, (3) VL and CD4 data to determine response, (4) tobacco smoking status within 12 months of cART initiation.
• Study participants were categorized (CD4+/VL+, CD4-/VL+, CD4+/VL-, or CD4-/VL-) based on a 6 month time window after cART initiation where
  - CD4+ corresponds to an increase in 50 cells/mm³
  - VL+ corresponds to achieving viral suppression <50 copies/mL
• Univariable and multivariable multinomial regression was used to model the relationship between tobacco smoking status and immune and virologic response category.
• Pre-specified confounders: sex at birth, baseline age, province, era of entry into cohort, neighborhood level material deprivation, and history of injection drug use (IDU)

Results

• From 10 972 CANOC participants, 4267 individuals were included in the study (Table 1).
• After adjustment, participants who smoked tobacco were not more likely to achieve incomplete and/or discordant response (Table 2).

Table 1. Baseline characteristics (n=4267).

Table 2. Univariable and multivariable multinomial regression modelling immune response using complete response (CD4+ VL-) as reference category (n=4267).

Discussion

• There was an association between tobacco smoking status and immune and virologic response category in the unadjusted model (p-value <.0001).
• After adjustment, no statistically significant independent association was detected (p-value .23).
• More granular data regarding tobacco smoking history (e.g. duration, pack years) may yield different results.

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