

Low-level Viremia Increases the Risk of Diabetes Mellitus Among People with HIV in China: A 7-Year Retrospective Longitudinal Cohort Study

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Background:

It is unclear whether low-level viremia (LV) during antiretroviral therapy (ART), increases the incidence of diabetes mellitus (DM). This study aims to assess the association between HIV viremia exposure and DM using retrospective cohort data.

Methods:

People with HIV (PWH) who started ART in 2003 or later and had ≥ 6 months of treatment without DM at enrolment were included. Based on two consecutive viral load measurements, participants were categorized into three groups: viral suppression (VS), transient episode low-level viremia (Blips), and persistent low-level viremia (LLV). Blips and LLV were collectively classified as LV group. The incidence of DM was analyzed using Cox proportional hazard models adjusted for age, sex, baseline viral load, CD4 count, ART initiation regimen, ART initiation period, and WHO HIV stage. Fasting blood glucose (FBG) trajectories during follow-up were identified using heterogeneous linear mixed models.

Results:

During 26,097 person-years of follow-up, we observed 1,297 cases of DM in 8,731 participants. Two distinct FBG trajectories were identified: "Stable" and "Rapid increase". The LLV group had a significantly higher proportion of participants in "Rapid increase" trajectory (OR: 2.53, $p < 0.001$). Both the Blips (cHR: 1.40, $p < 0.001$) and LLV (cHR: 1.74, $p < 0.001$) groups were associated with higher incidence of DM compared to the VS group. After propensity score matching, the LV group showed a higher DM risk (aHR: 1.27, $p = 0.012$). Among participants age 35-49, the risk of DM was even higher in both the LLV (aHR: 2.03, $p = 0.017$) and Blips (aHR: 1.36, $p = 0.027$) groups compared to the VS group.

Conclusion:

Low-level viremia substantially increased the risk of diabetes mellitus among PWH, particularly in middle-aged individuals. Monitoring viral load and FBG is crucial to prevent the development of DM and to improve life expectancy among ART patients.

Disclosure of Interest Statement:

The authors report no conflicts of interests.