

ABSTRACT

Immunometabolism in Cardiovascular Disease and Diabetes Mellitus During Treated HIV Infection

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Cardiovascular disease (CVD) and diabetes mellitus (DM) have become prevalent co-morbidities for persons living with HIV (PLWH) in high income countries. Both diseases are associated with chronic inflammation and immune activation in treated PLWH, with monocytes and T cells suggested to be important contributors of inflammation. Elevated glucose metabolism in monocytes and T cells is linked to inflammatory functions, but the role of heightened glucose metabolism in immune cells in PLWH with CVD or DM is unknown. HIV+ participants from the Women's Interagency HIV Study (WIHS) cohort were selected by the presence of subclinical CVD or DM and matched to controls. HIV+ women with DM showed evidence of increased glucose metabolism in CD4+ T cells compared to HIV+ women without DM and HIV- women with DM. In HIV+ women with subclinical CVD there was evidence of increased glucose metabolism in intermediate monocytes compared to HIV+ women without subclinical CVD. These results suggest that immunometabolism in PLWH may be a contributing factor towards DM and CVD. Whether these results are also applicable in a low- and middle-income country (LMIC) setting is uncertain. Accordingly, the prevalence of CVD risk in HIV+ participants enrolled at the CHARES clinic of the UHWI in Jamaica was assessed by measuring HDL cholesterol concentration. Most participants had intermediate-high risk of CVD at enrolment and intermediate risk of CVD at 3-years post enrolment. HIV+ males were more likely to be classified as high risk and this was associated with high viral load and low CD4 count at 3-years post enrolment. In summary, immunometabolism was associated with CVD and DM in PLWH in a high income setting and the identification of CVD being prevalent in HIV+ Jamaicans warrants additional investigation to determine if immunometabolism is also relevant to CVD in a LMIC context.

Keywords: HIV, immunometabolism, cardiovascular disease, diabetes mellitus, monocytes, CD4+ T cells.