Cardiovascular risk factors in antiretroviral therapy-treated patients living with HIV and obesity: A systematic review and meta-analysis of prognostic factors

Snehlalha A. Mfusi1, Sherika Hanley1, Zekhethelo A. Mkhwanazi2, Tawanda M. Nyambuya1,1, Bongani B. Nimkule1

1School of Laboratory Medicine and Medical Sciences (SLMMS), College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa. 2 Umlazi Clinical Research Unit, Centre for the AIDS Programme of Research of South Africa.

Introduction

- Antiretroviral therapy (ART) has significantly reduced the mortality rates in people living with HIV (PLWH).
- However, there is a gradual increase in the prevalence of metabolic and cardiovascular disease (CVD) in the ageing population of PLWH on ART.
- Despite the well-described link between obesity and incidence of CVD, prognostic factors associated with poor cardiovascular-related outcomes in ART-treated PLWH remain controversial.
- The prognostic value of traditional CVD-risk scores remains unclear in PLWH on ART.

Objectives

- To synthesize and assess the predictive value of traditional and novel prognostic factors in ART-treated PLWH and obesity.
- To review and provide a synthesis of prognostic factors of metabolic complications in people living with HIV (PLWH) and obesity on antiretroviral therapy (ART).
- To assess the modulatory effect of ART and obesity on traditional cardiovascular risk factors.

Methods

Eligibility criteria

- ART-naïve adults (18 years and older) living with HIV and obesity
- Two studies were scored as good (25-28 points) while seven were scored as fair (21-24 points) and the other five were scored as poor (15-20 points)

Search strategy: Obesity, cardiovascular disease, antiretroviral therapy and prognosis

Databases search

We retrieved a total of 51 citations, and after full-text screening, only 14 studies met the inclusion criteria.

Risk of bias and quality assessment

- Certainty of evidence in the included studies was assessed using the Quality in Prognostic Studies (QUIPS) tool based on six domains (GRADE) approach
- The overall quality of evidence was evaluated using the Grading of Recommendation Assessment Development and Evaluation (GRADE) approach

Results

- The pooled estimates showed that sex (OR: 1.61 [95%CI: 0.66, 2.57], p=0.001), body mass index (OR: 1.34 [95%CI: 0.47, 2.20], p=0.001), CD4 counts (OR: 1.61 [95%CI: 0.90, 1.42], p=0.031) and IL-6 levels (OR: 2.57 [95%CI: 2.05, 3.10], p=0.020) were associated with increased CVD-risk in PLWH. Notably, only CD4 T cell counts, and IL-6 levels were confirmed prognostic factors.

Conclusion

In this systematic review and meta-analysis, we identified and confirmed nadir CD4 counts between 100-199 cells/mm³, and IL-6 levels prior to initiation of ART as prognostic factors strongly associated with cardiometabolic risk in PLWH and obesity.

References