Does frailty assessment, biomarkers of ageing and phenotypic age scores predict mortality in older people with HIV?

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Background: Effective antiretroviral therapy has increased survival for people with HIV, but not necessarily healthy ageing. Frailty significantly contributes to adverse outcomes of ageing, including poorer quality of life and mortality. This study aimed to assess associations of frailty and mortality with biomarkers of ageing and phenotypic age scores.

Methods: In 2015, 100 men with HIV, aged 50 years and over, underwent frailty assessments using the Frailty Index (FI) and Fried's Frailty Phenotype (FP). Clinical and HIV characteristics were followed to 2024. Nine biomarkers of ageing were measured on available stored plasma samples from 2013 and 2015. Phenotypic age (PA) and phenotypic age acceleration (PAA), markers of biological ageing, were calculated using a validated composite clinical biomarker algorithm.

Results:

There were 22% of men frail by FI and 11% by FP.

Higher levels of IL6, hs-CRP, HbA1c, insulin and NT-proBNP in 2015 were associated with frailty by both FP and the FI (all $p<0.05$).

Higher IL6, hs-CRP, and NT-proBNP in 2013 were associated with frailty by FP, but only higher NT-proBNP was associated with frailty by FI.

Higher absolute or percentage change in insulin and HbA1c from 2013-2015 were predictive of frailty by FP but only absolute change in insulin for frailty by FI ($p<0.05$).

Greater PA and PAA were associated with frailty by both FI or FP ($p<0.001$).

Of the 100 men assessed in 2015, 26 had died by 2024. Mortality was associated with being frail by FP ($p=0.005$), PA ($p=0.004$) and PAA ($p=0.026$) in 2015, greater comorbidities ($p=0.023$), higher IL6 ($p<0.001$), HbA1c ($p=0.001$) and NT-proBNP ($p=0.015$). Mortality was not associated with any HIV demographic parameters.

Conclusion: Biomarkers of inflammation, glucose metabolism and cardiac dysfunction are associated with frailty and mortality. Both FI and FP were associated with higher PA and PAA ($p<0.001$), indicating increased biological aging.

Conflicts of interest

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Disclosure of interest: N/A