733

Change in Fat / Lean Mass in HIV-positive and -negative Subjects; Data from HIV UPBEAT

(Understanding the Pathology of Bone Disease in HIV-infected Subjects)

Cotter AG,[1,2] Macken A,[1] Tinago W,[1] Kavanagh E,[2] McCarthy G,[2] Compston J,[3] Sabin CA,[4] Mallon PWG[1,2]

1) HIV Molecular Research Group, School of Medicine, University College Dublin
2) Mater Misericordiae University Hospital, Eccles St., Dublin
3) Department of Medicine, Cambridge Biomedical Campus, Cambridge
4) Global Health, UCL, London

Corresponding Author: Aoife Cotter
Email: aoife.cotter@ucd.ie

Introduction

Changes in body composition with antiretroviral therapy (ART) initiation have been relatively well defined but long-term body composition changes in people living with HIV on stable ART compared to people without HIV remain unclear. With concerns regarding adiposity and sarcopenia in older PLWH, we aimed to compare changes in fat and lean mass in a large prospective cohort of PLWH and HIV-negative individuals.

Methods

- HIV UPBEAT (*Understanding the Pathology of Bone Disease in HIV-infected Subjects*) is a prospective cohort study enrolling HIV-positive and -negative subjects from similar demographic backgrounds.[1,2]
- Demographic, clinical, medication and laboratory data were collected. Dual Xray Absorptiometry was performed on a Lunar Prodigy Scanner (GE Medical Systems, Madison, Wisconsin, USA); total and regional (arms, legs and trunk) fat and lean mass was measured.
- We determined the absolute change in log-transformed body composition variables with longitudinal mixed effects models. Time-updated variables were included in models and removed if no difference in slope was determined.
- Descriptive data are presented as median (interquartile range) or % change (95% confidence interval (C.I.)) unless otherwise stated.

Results

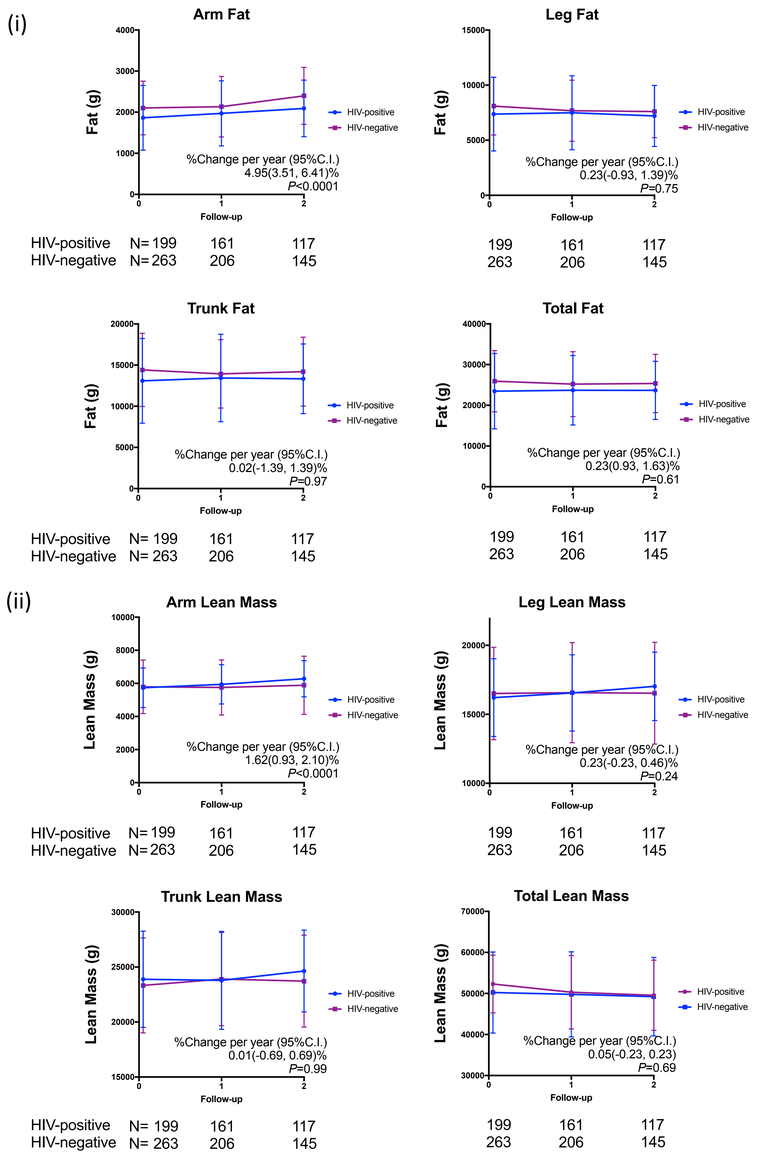
- From February 2011 to June 2014, 462, 367 and 262 subjects provided body composition data at 3 annual visits.
- Baseline characteristics (n=462) are provided in table 1. HIV-positive subjects were more likely to be younger, male and of African ethnicity than HIV-negative subjects.

Table 1. Baseline characteristics of the cohort

	HIV+ (n=199)	HIV- (n=263)	*P*
Age (years)	38.6 [33.6, 46.3]	41.7 [33.8, 48.4]	0.06
Male n (%)	118 (59.3)	114 (13.4)	0.001
African Ethnicity n (%)	78 (39.2)	65 (24.7)	0.001
BMI (kg/m^2)	26 [23, 30]	27 [24, 30]	0.05
Arm fat mass (kg)	1797 [1112, 2680]	2039 [1484, 2786]	0.01
Leg fat mass (kg)	7289 [4070, 10760]	8072 [5485, 10728]	0.03
Trunk fat mass (g)	12819 [8082, 18370]	14033 [10171, 19038]	0.08
Total fat mass (g)	22971 [14444, 32960]	25030 [18900, 33860]	0.06
Arm lean mass (g)	5672 [4575, 6967]	5605 [4273, 7492]	0.97
Leg lean mass (g)	16181 [13409, 19047]	15888 [13513, 20131]	0.71
Trunk lean mass (g)	24631 [19193, 27844]	22879 [19255, 27855]	0.76
Total lean mass (g)	50325 [40646, 57686]	47454 [40637, 59538]	0.95

Results

Figure 1. Change in (i) Fat and (ii) Lean Mass over time in HIV-positive and -negative subjects



Results

Fat mass

- Overall, while arm fat increased by +4.95 (+3.51, +6.41)% per year (*P*<0.0001), there were no significant changes in leg, trunk or total fat (fig. 1).
- There were no significant between-group differences in annual % change (95% confidence interval) in:
  - Arm Fat (+0.92 (-1.86, +3.75)%)
  - Leg Fat (-0.46 (-2.57, +1.86)%)
  - Trunk Fat (-0.69 (-3.75, +2.09)%)
  - Total Fat (-0.09(-0.03, +2.33)%)

Lean mass

- Arm lean mass increased by +1.62 (+0.93, +2.10)% per year (*P* <0.0001) but there were no significant changes in leg, trunk or total lean mass (figure 1).
- There were no significant between-group differences in annual % change (95% confidence interval) in:
  - Arm lean mass (+0.23 (-0.93, +1.39)%)
  - Leg lean mass (+0.46 (-0.23, +0.93)%)
  - Trunk lean mass (-0.69 (-2.09, +0.93)%)
  - Total lean mass (+0.23 (-0.23, +0.69)%)

Findings were unchanged after adjustment for age, gender or ethnicity.

Conclusions

- While increases in arm fat and lean mass were observed, there was no differences between PLWH and HIV-negative subjects.
- We did not observe significant change in any parameter of fat and lean mass either in the overall cohort or between groups.
- Limitations include:
  - Possible selection bias due to subject attrition
  - Absence of relevant outcome measures eg. frailty assessment
  - Limited power to detect smaller changes in body composition
- Overall, these data are reassuring; alterations in body composition in these PLWH reflect those observed in a relevant HIV-negative population.
- Future analyses will focus on changes in body composition and outcomes including falls and measures of frailty.

References

1. Cotter AG, Sabin CA, Simelane S, Macken A, Kavanagh E, Brady JJ, McCarthy G, Compston J, Mallon PWG; HIV UPBEAT Study Group. AIDS. 2014, vol 28(14): 2051-60.
2. Tinago W, Cotter AG, Sabin CA, Macken A, Kavanagh E, Brady J, McCarthy, Compston J, Mallon PWG; HIV UPBEAT Study Group. AIDS 2017; ,Mar 2013 31(5):643-652.

Acknowledgements

This work was supported by the Irish Health Research Board who funded A.G.C. (award HRA_POR/2010/66) and an unrestricted grant awarded to P.W.G.M by GlaxoSmithKline Ltd. We would like to thank the patients of the Infectious Diseases Clinic at the Mater Misericordiae University Hospital, Dublin, Ireland, and the healthy volunteers who contributed to the study.