

Body composition in men with lipodystrophy enrolled in the Multicenter AIDS Cohort Study (MACS)

Adrian Dobs¹, Todd Brown¹, Majnu John¹, Frank Palella², Joan Chmiel², JLarry Kingsley³, M. Witt⁴

Johns Hopkins University, Baltimore, MD¹; Northwestern University, Chicago, IL², University of Pittsburgh, Pittsburgh, PA³; David Geffen School of Medicine at UCLA and Harbor-UCLA Medical Center, Los Angeles, CA⁴

Background:

Changes in fat redistribution are common among HIV-infected persons, and have been attributed to antiretroviral therapy. The relationship of observed lipodystrophy with measures of body composition has not been clearly defined.

Purpose:

- To document body composition of men with self-reported lipodystrophy (LD) compared to those without LD based on DEXA (fat, lean tissue, and bone density) and CT scans (viscera vs. peripheral fat).
- To understand the relationship between body composition and anthropomorphic

Methods

Study Population: The Multicenter AIDS Cohort Study is an ongoing cohort of men who have sex with men (MSM), both HIV-infected and HIV-seronegative, initially enrolled in 1984. We enrolled men from the Multicenter AIDS Cohort Study who were HIV-seropositive with self-reported lipodystrophy (HIV+ LD+), and compared them to two groups of controls: HIV-seropositive without any symptoms or metabolic abnormalities (HIV+LD-) and HIV- negative controls (HIV-LD-).

Outcome Measures:

- Body Mass Index (BMI)
- Waist Circumference
- Hip Circumference
- Thigh circumference
- DEXA scan
- CT scan

All measurements were taken by trained personnel using the NHANES protocol.

CT analyses were done by Steve Heymsfield, M.D.'s group at Columbia University, New York, NY

Statistical Analysis: Both controls were matched for age within +5 yrs. DEXA scans detected the quantity of fat, lean tissue, and bone density and CT scans to determine the viscera vs. peripheral distribution of body fat. We will test pairwise differences using t-tests and differences among all of the groups using ANOVA.

Analyses were adjusted for age, nadir CD4 cell count, and BMI (for circumference measurements).

Results:

Table 1 Baseline demographic characteristics of the cohort. Compared to the HIV-seronegative group, the HIV-infected groups were younger and had a lower BMI.

Characteristics Mean (S.E.)	HIV- (N = 32)	HIV+LD- (N = 23)	HIV+LD+ (N = 39)	p-value
Caucasian (%)	31 (97%)	18 (78%)	31 (79%)	0.0700
Years of Age	50.1 (1.2)	48.3 (1.4)	49.9 (1.1)	0.5705
Body Mass Index	28.9 (0.8)	26.9 (1.0)	23.6 (0.7)	< 0.0001
Nadir CD4 cell count (cells/mm3)	307.9 (48.1)	227.8 (25.9)		0.1525
CD4 cell count, (cells/mm3)	NA	604.3 (54.9)	565.4 (59.9)	0.6347
HIV RNA (copies/ml)	137.0 (40.0, 2369.5)	137.0 (40.0, 5703.0)		0.8911

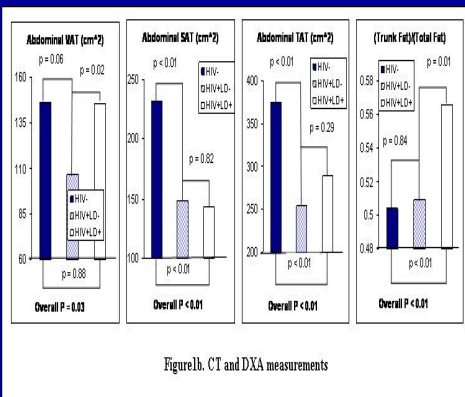
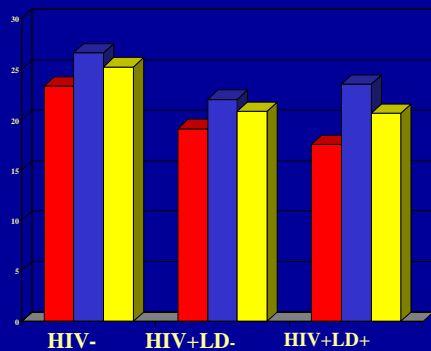


Figure 1b. CT and DEXA measurements

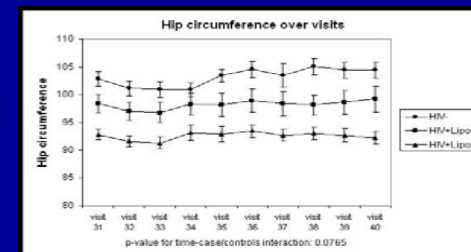
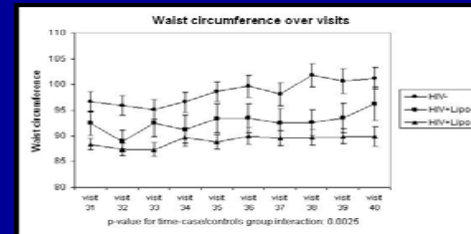
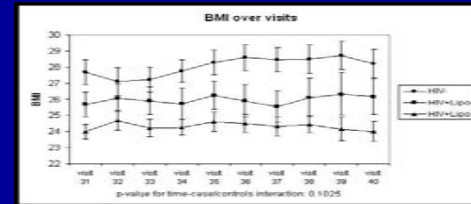


Figure 3 a), b), and c) (above): BMI, waist and hip circumferences in cases vs. controls over time. Waist and hip circumferences increased in control groups over time; no such change was observed in the cases ($p < 0.05$).

Figure 1 and 2 (left) Differences in Body Fat distribution in study groups by DEXA and CT scan.

Red - % extremity fat, $p = 0.012$
 Blue - % trunk fat, $p = 0.004$
 Yellow - Total % fat, $p < 0.001$

Summary

• HIV+ men had less subcutaneous fat compared to HIV-

• HIV+, lipodystrophy+ men have less %extremity fat, less total fat and subcutaneous fat, and increased visceral adipose tissue

• HIV+men have lower BMI and smaller waists compared to HIV- and this persists over time of observation.

Conclusions:

• Self-reported lipodystrophy was associated with consistent differences in body composition as measured by DEXA and CT of the abdomen.

• Compared to our two control groups, HIV+LD+ men had lower BMI, extremity fat, subcutaneous adipose tissue, and anthropomorphic circumferences, but increased visceral adiposity.

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