Controlled Attenuation Parameter is a Visceral Adiposity Marker in HIV-related NAFLD

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BACKGROUND

→Fat alterations are frequent in people with HIV (PWH) and predict worse cardiometabolic outcomes

→Visceral adipose tissue (VAT) is a hormonally active tissue critically contributing to obesity-related disorders and associated with ectopic fat accumulation in the liver

→We aimed to investigate HIV-associated nonalcoholic fatty liver disease (NAFLD) diagnosed by controlled attenuation parameter (CAP) as a marker of visceral adiposity.

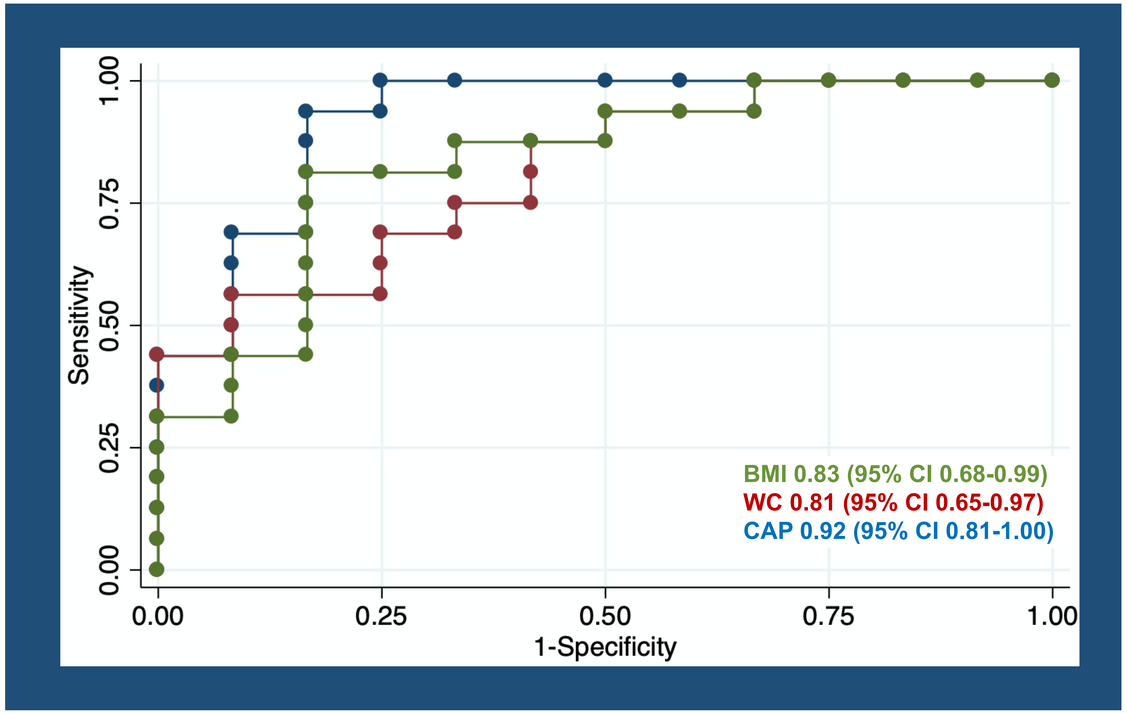
METHODS

→Prospective pilot study (ClinicalTrials.gov 2021-6656) of PWH undergoing metabolic characterization and paired CAP by transient elastography with dual-energy X-ray absorptiometry (DEXA) scan

→NAFLD defined as CAP ≥285 dB/m, in absence of alcohol abuse; Excess visceral adiposity defined as VAT>1.32 Kg.

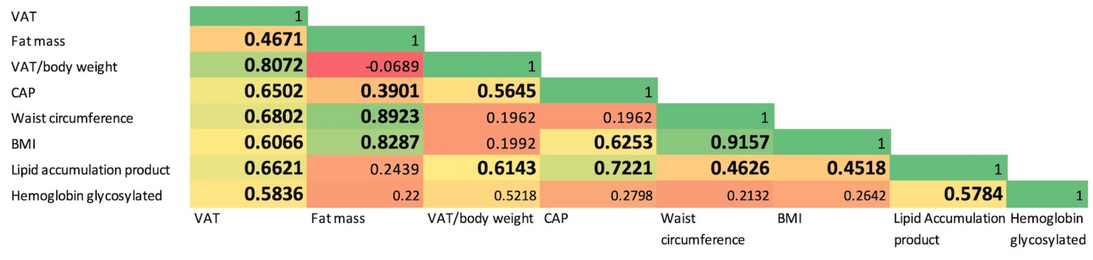
Table 1. Characteristics of the study population by excess VAT status (n=30).

	Excess VAT (n=17)	No excess VAT (n=13)	P-value
Age (years)	52.9 (12.4)	42.8 (12.5)	0.035
Male sex (%)	16 (94.2)	11 (84.6)	0.390
Ethnicity (%)			
White	7 (41.2)	3 (23.1)	
Black	3 (16.7)	4 (30.8)	0.503
Hispanic	4 (23.6)	3 (23.1)	
Hypertension (%)	7 (41.2)	4 (30.8)	0.558
Diabetes (%)	6 (35.3)	2 (15.4)	0.222
Waist circumference (cm)	106.6 (10.8)	93.3 (11.8)	0.004
BMI (Kg/m²)	32.1 (4.3)	26.9 (3.8)	0.002
Time since HIV diagnosis (years)	20.0 (13.4)	9.4 (9.0)	0.021
Nadir CD4 cell count (cells/μL)	254.2 (151.9)	214.6 (206.4)	0.684
ALT (IU/L)	51.9 (43.9)	26.2 (21.4)	0.118
Platelets (10⁹/L)	242.4 (178.4)	195.5 (46.9)	0.366
Triglycerides (mmol/L)	2.92 (2.04)	1.04 (0.56)	0.047
Total cholesterol (mmol/L)	4.51 (1.12)	4.14 (0.95)	0.490
HDL cholesterol (mmol/L)	1.03 (0.26)	1.37 (0.28)	0.025
Lipid accumulation product	111.5 (53.3)	38.1 (36.8)	<0.001
Fasting glucose (mmol/L)	6.14 (1.75)	5.33 (1.24)	0.253



RESULTS

- 30 consecutive HIV mono-infected patients were included
- CAP positively correlated with all visceral fat measurements by DEXA, including VAT (r=0.650, p<0.001), VAT/body weight ratio (r=0.565, p=0.001) and fat mass (r=0.390, p=0.033).
- Both BMI and waist circumference (WC) showed correlation with VAT and fat mass, but not with VAT/body weight ratio.
- After adjusting for duration of HIV infection (aOR 1.01 per year, 95% CI 0.91-1.12), BMI (aOR 1.77, 95% CI 0.74-4.23) and waist circumference (aOR 0.91 per cm, 95% 0.68-1.21), CAP remained the only independent predictor of excess VAT (aOR 1.05 per dB/m, 95% CI 1.01-1.10; p=0.036).
- The optimized CAP cut-off to diagnose excess VAT by AUC was 266 dB/m, with a sensitivity of 88.3% and a specificity of 84.6%



CONCLUSIONS

→NAFLD diagnosed by CAP is associated with VAT in PWH independently of anthropometric measures of obesity. CAP could be used as a potential marker of visceral adiposity in the practice of HIV medicine.

→Given that guidelines recommend case-finding for NAFLD-related liver fibrosis in PWH via non-invasive tools like transient elastography, CAP may provide synchronous information on the metabolic health status, visceral fat and cardiovascular risk.

→Larger studies with a HIV-uninfected control group, longitudinal design and long follow-up data are needed.

ADDITIONAL KEY INFORMATION

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