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### PLASMA ADIPONECTIN AND IL-6 PREDICT INSULIN SENSITIVITY IN PATIENTS WITH HIV INFECTION INDEPENDENTLY OF BODY FAT DISTRIBUTION

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**BACKGROUND:** Metabolic abnormalities occur in 40% of patients who receive highly active antiretroviral therapy (HAART). It is unknown whether adipokines are related to metabolic abnormalities in these patients.

**OBJECTIVE:** To examine the relationships between plasma IL-6 and adiponectin concentration, and insulin sensitivity in HIV+ patients with (HIV-LD) or without (HIV-NC) lipodystrophy (Carr et al., [Lancet. 2003 Mar 1;361\(9359\):726-35](#)).

**METHODS:** We studied 24 men matched for age, BMI and body composition: 12 with HIV-LD receiving HAART (six receiving protease inhibitors) and 12 with HIV-NC (six receiving HAART, six naïve to antiretroviral therapy). Intravenous infusions of 6,6-<sup>2</sup>H<sub>2</sub> glucose and 2,2-<sup>2</sup>H<sub>2</sub> palmitate were used to measure plasma glucose and palmitate rates of appearance (Ra) and glucose disposal rate (Rd), during euglycaemia and graded insulin infusions [20 mU·m<sup>-2</sup>·min<sup>-1</sup> (stage 1) and 50 mU·m<sup>-2</sup>·min<sup>-1</sup> (stage 2)]. Fat-free mass (FFM) was assessed by dual energy X-ray absorptiometry.

**RESULTS:** Fasting HOMA was greater in HIV-LD than HIVNC (3.0 ±0.4 vs 1.3 ±2.1, *P*<0.001). Glucose Ra (4.7 ±0.9 μmol·kgFFM<sup>-1</sup>·min<sup>-1</sup> vs 2.6 ±0.4 μmol·kgFFM<sup>-1</sup>·min<sup>-1</sup>, *P*=0.008) and palmitate Ra (0.54 ±0.06 μmol·kgFFM<sup>-1</sup>·min<sup>-1</sup> vs 0.27 ±0.02 μmol·kgFFM<sup>-1</sup>·min<sup>-1</sup>, *P*<0.001) were greater, and glucose Rd (39 ±3 μmol·kgFFM<sup>-1</sup>·min<sup>-1</sup> vs 58 ±4 μmol·kgFFM<sup>-1</sup>·min<sup>-1</sup>, *P*=0.001) was lower in HIV-LD than HIV-NC, during stage 1 and stage 2, respectively. Basal plasma adiponectin concentration was ~40% lower in patients with HIV-LD than HIV-NC (4.2 ±0.6 pg/ml vs 7.4 ±1 pg/ml, *P*=0.02), and was ~40% lower in HIV-NC patients receiving HAART than those naïve to therapy

( $5.4 \pm 1.1$  mg/dl vs  $9.4 \pm 1.6$  pg/ml,  $P=0.07$ ). Adiponectin concentration correlated with serum HDL ( $r=0.47$ ,  $P=0.03$ ) and triglyceride ( $r= -0.45$ ,  $P=0.02$ ) concentrations, stage 1 glucose Ra ( $r= -0.40$ ,  $P=0.05$ ) and stage 2 glucose Rd ( $r=0.52$ ,  $P=0.008$ ). Plasma IL-6 concentration was not different between groups with HIV infection. Plasma IL-6 concentration correlated with glucose Rd ( $r= -0.51$ ,  $P=0.01$ ) during stage 2 and palmitate Ra ( $r=0.37$ ,  $P=0.08$ ) during stage 1. These correlations persisted after correction for age, limb fat mass and duration of HAART, HIV infection and PI exposure.

**CONCLUSION:** Plasma adiponectin and IL-6 concentrations independently predict the sensitivity of stimulation of glucose disposal and suppression of lipolysis by insulin in patients with HIV infection. Use of HAART is associated with a reduction in plasma adiponectin concentration.

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4

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