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INSULIN RESISTANCE IS INDEPENDENTLY ASSOCIATED WITH VAT AND UPPER TRUNK SAT IN CONTROLS AND HIV INFECTION

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BACKGROUND: Insulin resistance is associated with visceral obesity, but the association with other regional adipose depots is not understood. The presence of a buffalo hump has been associated with insulin resistance in patients with HIV, but whether upper trunk fat is associated with insulin resistance in the non-HIV setting is unknown.

METHODS: 258 Control and 931 HIV-infected subjects (HIV+) from the Study of Fat Redistribution and Metabolic Change in HIV Infection (FRAM) who had both insulin measurements in a central laboratory and MRI performed were analysed. Participants with diabetes or recent infections were excluded. HOMA (homeostasis model of assessment, an index of insulin resistance) was calculated. Visceral (VAT) and subcutaneous (SAT) adipose tissue volume in the legs, arms, lower trunk (back and abdomen) and upper trunk (back and chest) were measured by MRI. Stepwise, multivariate, logistic regression estimated the independent association of regional adipose tissue volumes with HOMA >4.

RESULTS: Among controls, those in the highest tertile of upper trunk SAT had an odds ratio (OR) of 9.0 (CI 2.4, 34; $P=0.001$) of having HOMA >4 compared to the lowest tertile, whereas HIV+ in the highest tertile of upper trunk SAT of controls had an OR of 2.1 (CI 1.4, 3.2 $P=0.001$) for HOMA >4. Among controls, the highest tertile of VAT had an odds ratio of 12.1 (CI 3.2, 46; $P=0.0002$) of having HOMA >4 compared to the lowest tertile, whereas in HIV+ in that tertile, the OR was 3.2 (CI 2.1, 4.9; $P<0.0001$). After

VAT and upper trunk SAT and VAT were added in stepwise regression models, the association of other SAT depots with HOMA >4 was weaker. After adjusting for adipose tissue depots and demographic factors, HIV infection was independently associated with having HOMA >4 (OR 1.62; CI 1.1, 2.4; $P=0.015$ versus control).

CONCLUSIONS: When multiple adipose tissue depots are analysed, VAT and upper trunk SAT were independently associated with insulin resistance in controls even more so than in HIV+. These data suggest an expanded physiognomy associated with insulin resistance.

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