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## THE EFFECT OF RECOMBINANT HUMAN GROWTH HORMONE TREATMENT ON CIRCULATING LEPTIN AND ADIPONECTIN CONCENTRATIONS IN PATIENTS WITH HIV-ASSOCIATED FAT ACCUMULATION

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**BACKGROUND:** Adiponectin and leptin are proteins derived from adipose tissue. While leptin is related to overall fat mass and recent energy balance, circulating adiponectin levels are inversely correlated to visceral adipose tissue mass (VAT). Higher circulating adiponectin levels are associated with increased insulin sensitivity and HDL-C levels. We have previously reported that growth hormone (GH) treatment reduced fat mass and excess VAT in patients with HIV-associated fat accumulation. In the present study, the effects of GH treatment on adiponectin and leptin levels and the relationship to adiposity as well as lipids, resting energy expenditure (REE) and insulin sensitivity were assessed in these patients.

**METHODS:** Ten men with HIV-associated fat accumulation (buffalo hump and/or abdominal obesity) received GH for 6 months at 3 mg/day ( $n=5$ ) or 1 mg/day ( $n=5$ ). As previously reported, serum lipids, total fat mass (DEXA), VAT (CT), REE (indirect calorimetry) and insulin sensitivity (euglycaemic hyperinsulinaemic clamp) were measured at baseline and 6 months. In the current study, we report serum leptin and adiponectin levels measured by radioimmunoassay at baseline and month 6 of GH treatment and the relationship (Spearman correlation coefficient) between percent change in these adipocytokines with percent change in total fat, VAT, HDL-C, REE and insulin sensitivity.

**RESULTS:** Treatment with GH resulted in a significant increase in adiponectin ( $4.8 \pm 2.3$  to  $5.8 \pm 2.4$  mg/ml,  $P=0.02$ ) and decrease in leptin levels ( $5.2 \pm 2.6$  to  $3.8 \pm 2.2$  ng/ml,  $P<0.05$ ). Percent change in leptin ( $r=0.77$ ,  $P=0.01$ ) but not adiponectin ( $r=-0.09$ ,  $P=0.80$ ) correlated with percent change in total fat mass; neither was significantly correlated with change in VAT (leptin  $r=0.42$ ,  $P=0.23$ ; adiponectin  $r=0.35$ ,  $P=0.33$ ). Percent change in adiponectin was significantly correlated with change in HDL ( $r=0.65$ ,  $P=0.04$ ) and REE ( $r=0.65$ ,  $P=0.04$ ), but not with insulin sensitivity ( $r=0.07$ ,  $P=0.85$ ).

**CONCLUSION:** Treatment with GH is associated with an increase in adiponectin and a reduction in circulating leptin levels. The reduction in leptin is probably related to GH-induced reduction in total fat mass. The mechanism(s) underlying the increase in adiponectin and its relationship to increased HDL-C and REE are of potential clinical interest and warrant further investigation.

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