Effects Of GH And/Or Sex Steroid Administration On Abdominal Subcutaneous And Visceral Fat In Healthy Aged Women And Men

ABSTRACT
Aging is associated with reduced GH, IGF-1, and sex steroid axis activity and with increased abdominal fat. We employed a randomized, double-masked, placebo-controlled, noncross-over design to study the effects of 6 months of administration of GH alone (20 microg/kg BW), sex hormone alone (hormone replacement therapy in women, testosterone enanthate in men), or GH + sex hormone on total abdominal area, abdominal sc fat, and visceral fat in 110 healthy women (n=46) and men (n=64), 65-88 year old (mean, 72 year). GH administration increased IGF-1 levels in women (P=0.05) and men (P=0.0001), with the increment in IGF-1 levels being higher in men (P=0.05). Sex steroid administration increased levels of estrogen and testosterone in women and men, respectively (P=0.05). In women, neither GH, hormone replacement therapy, nor GH + hormone replacement therapy altered total abdominal area, sc fat, or visceral fat significantly. In contrast, in men, administration of GH and GH + testosterone enanthate decreased total abdominal area by 3.9% and 3.8%, respectively, within group and vs. placebo (P=0.05). Within-group comparisons revealed that sc fat decreased by 10% (P=0.01) after GH, and by 14% (P=0.0005) after GH + testosterone enanthate. Compared with placebo, sc fat decreased by 14% (P=0.05) after GH, by 7% (P=0.05) after testosterone enanthate, and by 16% (P=0.0005) after GH + testosterone enanthate. Compared with placebo, visceral fat did not decrease significantly after administration of GH, testosterone enanthate, or GH + testosterone enanthate. These date suggest that in healthy older individuals, GH and/or sex hormone administration elicits a sexually dimorphic response on sc abdominal fat. The generally proportionate reductions we observed in sc and visceral fat, after 6 months of GH administration in healthy aged men, contrast with the disproportionate reductions of visceral fat reported after a similar period of GH treatment of nonelderly GH deficient men and women. Whether longer term administration of GH or testosterone enanthate, alone or in combination, will reduce abdominal fat distribution-related cardiovascular risk in healthy older men remains to be elucidated.

Journal of Clinical Endocrinology and Metabolism Article