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Growth Hormone Reduces Belly Fat and Improves Function in Postmenopausal Women

Yael Waknine

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June 10, 2005 (San Diego) — Twice-daily administration of high-dose recombinant human growth hormone–releasing hormone (GHRH) 1,44-amide stimulates growth hormone (GH) and insulin-like growth factor 1 (IGF-1) production, decreases abdominal visceral fat, and improves physical performance in postmenopausal women, according to the results of a prospective three-month pilot study presented here at ENDO 2005, the 87th Annual Meeting of the Endocrine Society.

"For every decade of life after the age of 20 years, there is about a 14% decline in spontaneous growth-hormone release, and many of the changes that occur as a result of normal healthy aging in adults resemble those of growth-hormone deficiency," Arthur L. Weltman, PhD, colead investigator, told Medscape.

Dr. Weltman is a professor with joint appointments in the departments of Human Services and Medicine at the University of Virginia in Charlottesville.

According to Dr. Weltman, these changes can include reductions in muscle mass, strength, and exercise capacity; increases in abdominal visceral fat; unfavorable lipid and lipoprotein levels; loss of bone mineral density; and increased risk of vascular disease.

Injections of GHRH can be used to stimulate the release of endogenous GH, and its administration in aging healthy adults may yield an amelioration of negative effects similar to that associated with GH-replacement therapy in deficient patients.

"In a previous study, we gave GHRH to older men, and the resulting increase in growth-hormone

levels reduced visceral fat and improved functional performance," said Dr. Weltman. "So we did a follow-up study to establish whether the same holds true in older women."

In the study, 10 postmenopausal women volunteers underwent a baseline evaluation then received twice-daily subcutaneous injections of 1 mg of GHRH for three months.

Results showed that GHRH therapy almost doubled mean overnight GH concentrations at one and three months (increase, $98\% \pm 14\%$; $P < .005$) and yielded a significant and sustained increase of IGF-1 concentrations from the second week to the end of the study ($71\% \pm 3.5\%$; $P < .005$), relative to baseline levels.

At three months, the women had achieved a 16% reduction in abdominal visceral-fat mass (95% confidence interval [CI], 2% - 28%; $P < .029$) and $14\% \pm 5\%$ increase in tritiated water space ($P < .025$).

Physical performance also was improved, as demonstrated by significant decreases in the time required to walk 30 m (14%; 95% CI, 9% - 19%; $P = .015$) and to climb two flights of stairs (9%; 95% CI, 4% - 13%; $P = .003$).

"GHRH therapy for three months stimulated GH and IGF-1 production, altered body composition, and improved physical function in these postmenopausal women," Dr. Weltman noted.

The twice-daily injections were associated with local skin reactions in 70% of the women, but Dr. Weltman noted that the incidence of injection-site reactions will be reduced greatly in future studies through use of biweekly GHRH formulations currently in development. No systemic adverse events were reported.

The study was limited by its small size and the potentially confounding influence of coadministered hormone replacement therapy (HRT). "There did not seem to be any difference in outcome measures between the four women who were taking HRT and the six who were not, but this was only a pilot study," Dr. Weltman noted.

"Our findings are part of an accumulating body of evidence that suggests that administration of growth hormone or GHRH tends to lower visceral fat and improve function, not only in growth hormone-deficient individuals, but also in normal healthy aging adults and even obese patients," Dr. Weltman concluded. "Studies on a much larger scale for a much longer period would need to be done to determine the clinical utility of using such therapy."

The investigators report no pertinent financial disclosures.

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Reviewed by Gary D. Vogin, MD

