Sex Hormone Suppression Boosts Effect of PTH in Men

NASHVILLE, TENN. — Suppression of androgens or estrogens increases bone turnover and bone loss in men, according to data presented at the annual meeting of the American Society for Bone and Mineral Research.

A total of 58 men, aged 20-45 years, were assigned to receive combinations of gonadotropin-releasing hormone (GnRH), an aromatase inhibitor, and hormone add-back therapy for 6 weeks, depending on their hormonal status, said Benjamin Z. Leder, M.D., of Massachusetts General Hospital in Boston.

Men in group 1 (16) received a GnRH analog, 3.6 mg goserelin acetate, given subcutaneously every 3 weeks, as well as an aromatase inhibitor, 5 mg anastrozole, given daily. Men in group 2 (12) also received the GnRH analog and aromatase inhibitor, but testosterone was replaced with a testosterone gel (AndroGel), at 5 g daily. Men in group 3 (14) received the GnRH analog and aromatase inhibitor, but estradiol was replaced with an estradiol cream applied twice weekly.

Men in group 4 (16) received the GnRH analog, aromatase inhibitor, testosterone gel, and estradiol patch. These men were sufficient in both testosterone and estradiol and served as a control group.

All the men underwent 18-hour infusions of parathyroid hormone (PTH) (1-34) at a dose of 0.35 U/kg per hour at baseline and at 6 weeks. Serum levels of the bone turnover markers cross-linked N-telopeptides (NTx) of type I collagen and osteocalcin were measured every 6 hours during the PTH infusions.

Restoration of bone by osteoclasts results in the production of NTx of type I collagen. NTx is specific to bone and is found in serum and urine as a stable end product of bone degradation.

Mean NTx levels measured prior to PTH infusion did not change between baseline and week 6 in the control group, but NTx levels increased by 24% in group 1, by 16% in group 2, and by 11% in group 3. Serum NTx levels increased during PTH infusion in all groups at all time points.

Serum osteocalcin levels decreased in all groups at all time points during PTH infusion. There were no significant differences between the two groups in terms of the variation of calcium content and the percentage of low-mineralized matrix.

Women with idiopathic osteoporosis appear to have a low mineralization in trabecular bone, which suggests that alterations in the mineralization processes could be responsible for bone fragility, said Glenn A. Ladinsky, M.D., of the University of Pennsylvania, Philadelphia.

In the control group, VBMs collected at the distal radius and the distal tibia showed conversion from trabecular plate to rod structure, indicating a reduction in bone strength during the 24-month study. Plate-like trabecular architecture was preserved in patients who received hormone therapy. There was a 3%-4% reduction in bone mineral density in the control group, as measured by DXA. No changes in BMD were noted in the therapy group.

Dr. Ladinsky is a part owner of MicroMRI Inc., which developed the MRI-based VBH technology. The study was funded in part by Novartis Inc.

Bone Mineralization Reduced in Women With Idiopathic Osteoporosis

A patient treatment group received hormone therapy (0.95 mg/day estradiol transdermal patch); a 27-patient control group did not. All women received supplemental calcium (1,500 mg/day), said Glenn A. Ladinsky, M.D., of the University of Pennsylvania, Philadelphia.

In the control group, VBMs collected at the distal radius and the distal tibia showed conversion from trabecular plate to rod structure, indicating a reduction in bone strength during the 24-month study. Plate-like trabecular architecture was preserved in patients who received hormone therapy. There was a 3%-4% reduction in bone mineral density in the control group, as measured by DXA. No changes in BMD were noted in the therapy group.

Dr. Ladinsky is a part owner of MicroMRI Inc., which developed the MRI-based VBH technology. The study was funded in part by Novartis Inc.