Am J Obstet Gynecol. 1990 Nov;163(5 Pt 1):1474-9.

The relationship between plasma estradiol and the increase in bone density in postmenopausal women after treatment with subcutaneous hormone implants.

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Abstract

Twenty-three postmenopausal women with a median of 2 years past menopause (range, 1 to 12 years) and a median age of 52 years (range, 39 to 62 years) were recruited to participate in a longitudinal study designed to investigate the factors that influence the increase in bone density with subcutaneous estradiol and testosterone implants. All women received 75 mg of estradiol with 100 mg testosterone subcutaneously. Bone density was measured at the spine and hip by dual-photon absorptiometry before therapy and after 1 year of subcutaneous hormonal therapy. The mean pretreatment bone density at the lumber vertebrae and neck of the femur was 0.84 grams of hydroxyapatite per square centimeter (SD, 0.11) and 0.73 grams of hydroxyapatite per square centimeter (SD, 0.10), respectively. The bone density at both sites increased with values of 0.91 grams of hydroxyapatite per square centimeter (SD, 0.11) and 0.75 grams of hydroxyapatite per square centimeter (SD, 0.11), respectively. These values represent an increase of 8.3% (p less than 0.0001) at the spine and 2.8% (p less than 0.01) at the neck of the femur. The plasma estradiol level increased from a median of 80.5 pmol/L to 453 pmol/L (p less than 0.001). The percentage increase of vertebral bone density was not related to age, number of years past the menopause, pretreatment bone density, or serum testosterone levels, but a significant correlation was found between the percentage increase in bone density at the spine and the serum estradiol level (p less than 0.02, r = 0.45).

PMID: 2240090

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