

THE EFFECT OF HIGH DOSE ORAL 17β ESTRADIOL ON BONE MINERALIZATION AND BODY COMPOSITION IN YOUNG WOMEN WITH TURNER SYNDROME - A 5 YEAR RANDOMIZED CONTROLLED CLINICAL TRIAL

Line Cleemann, MD, PhD¹, Kirsten Holm, MD, PhD¹, Hanne Kobbernagel², Bent Kristensen, MD², Sven Olaf Skouby, Professor, dr.med.sci³, Andreas Emil Kryger Jensen, M.Sc, PhD^{4,5}, Claus H. Gravholt, Professor, PhD, dr.med.sci^{6,7}

¹Department of Pediatrics, Nordsjællands Hospital, DK-3400 Hillerød; ²Department of Radiology, Nordsjællands Hospital, DK-3400 Hillerød;

³Department of Gynecology and Obstetrics, Herlev University Hospital, DK-2730 Herlev; ⁴Center of Research and Innovation, Nordsjællands Hospital, DK-3400 Hillerød; ⁵Department of Public Health, University of Copenhagen; ⁶Department of Endocrinology and Internal Medicine and the Medical Research Laboratories, Aarhus Sygehus NBG, Aarhus University Hospital, DK-8000 Aarhus C; ⁷Department of Molecular Medicine, Aarhus University Hospital, DK-8200 Aarhus N

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BACKGROUND

Reduced bone mineral density (BMD) is seen in Turner syndrome (TS) with an increased risk of fractures and osteoporosis. Body composition in TS is characterized by increased body fat (FM) and decreased lean body mass (LBM), even with a normal BMI. Estrogen replacement therapy for attaining and preserving normal bone mass is necessary in most TS girls. There is a potential role of age-specific estrogen doses, with lower doses used in the early puberty and higher doses at the end of adolescence. Estrogen also affects the accrual and preservation of lean body mass positively.

AIMS AND OBJECTIVES

To evaluate the effect of 2 different doses of oral 17β -estradiol in young women with TS on BMD, bone markers, hormones related to bone metabolism, and body composition.

METHODS

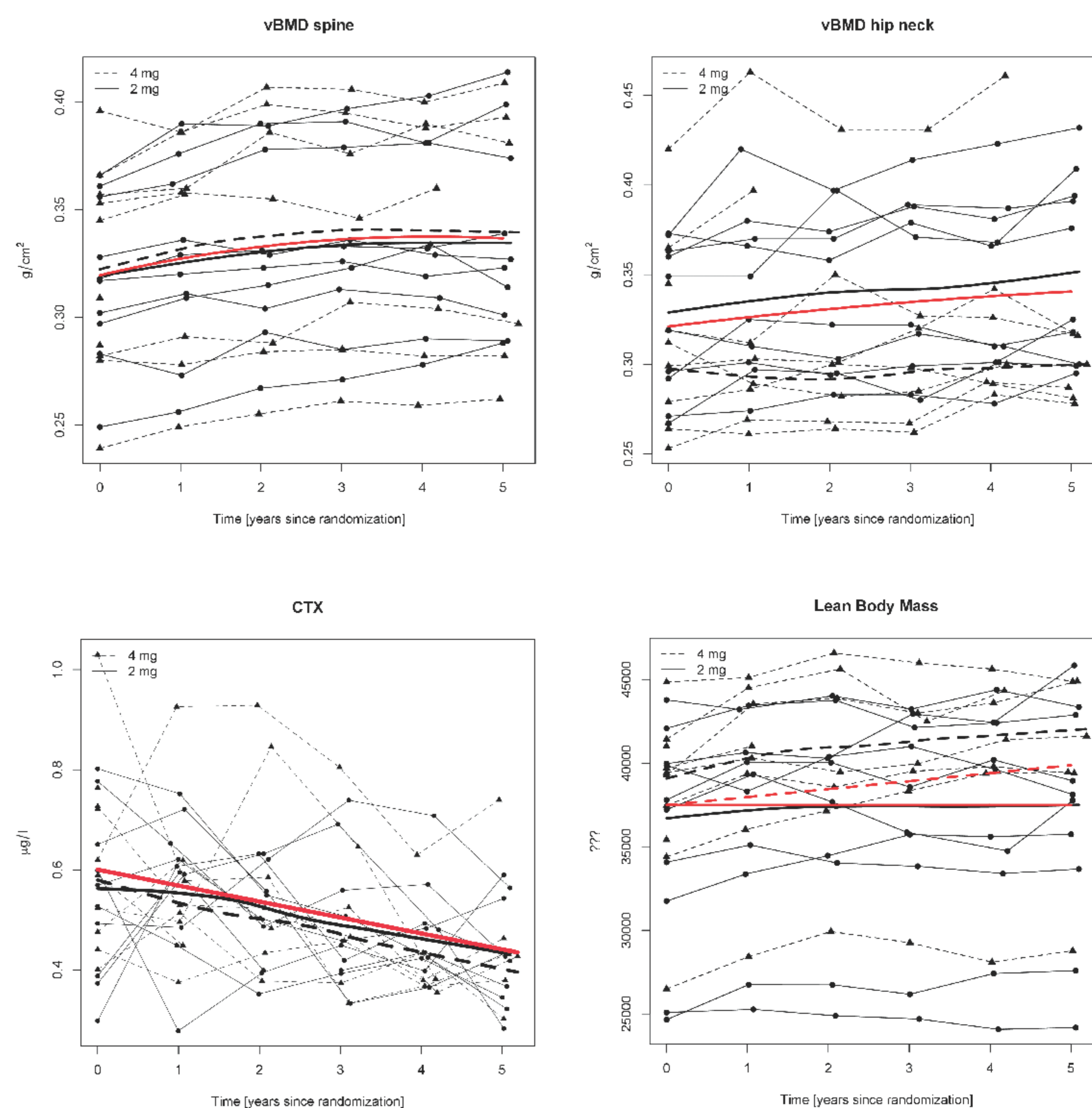
A double-blind 5 year randomized controlled clinical trial. The lower-dose (LD) group took 2 mg 17β -estradiol/day orally and placebo. The higher-dose (HD) group took 2+2 mg 17β -estradiol/day orally. 20 young TS women (19.2 ± 2.5 years, range 16.0-24.9) participated. DXA scan (BMD, FM, LBM), CTX, PINP, BSAP, PTH, IGF1, and IGFBP3 were performed yearly.

RESULTS

BMD increased over time with a tendency of attenuation towards the end of the study and bone markers decreased over time, both with no differences between the groups. IGF1 decreased in both groups. The rate of change of IGF1 was constantly lower in the HD group. LBM increased significantly in the HD group over time, whereas FM remained stable in both groups.

CONCLUSION

We show a distinct pattern of changes in BMD in TS over time with a steady increase in BMD in accordance with the findings in the general population of healthy young women. The higher estrogen dose did not affect BMD or bone markers. The positive effect on body composition may have long ranging health benefits in TS.



Volumetric BMD at the spine and the femoral neck of the hip, the CTX, and lean body mass in the HD group (▲) and the LD group (●)