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[PubMed Central](#) 1: [Clin Endocrinol \(Oxf\)](#). 2001 Jul;55(1):93-9.[Related Articles, Links](#)**Effects of 6 years of growth hormone (GH) treatment on bone mineral density in GH-deficient adults.**[Clanget C](#), [Seck T](#), [Hinke V](#), [Wuster C](#), [Ziegler R](#), [Pfeilschifter J](#).BG Kliniken Bergmannsheil, Department of Medicine, University of Bochum, Burkle-de-la-Camp-Platz 1, D-44789 Bochum, Germany. Christof.Clanget@ruhr-uni-bochum.de

OBJECTIVE: Adults with growth hormone (GH) deficiency are often osteopenic. Short-term GH replacement therapy has been shown to improve bone mineral density (BMD). However, whether the increases in BMD are progressive with time is still unclear. We therefore examined long-term changes in BMD with GH treatment in GH-deficient adults over a period of 6 years. **DESIGN:** Open prospective GH therapeutic study. **PATIENTS:** Twelve GH-deficient patients (four women, eight men) with a mean age of 42.5 years (range 24-61 years) at the beginning of GH replacement. Eleven patients suffered in addition from LH/FSH insufficiency, eight from TSH insufficiency and eight from ACTH insufficiency. Before the start of GH substitution, the insufficient anterior pituitary axes were fully substituted for an average of 9.8 years (range 2-22 years). Average daily GH dose was 2.4 IU (SD 0.86). **MEASUREMENTS:** BMD and bone area were measured at annual intervals at the lumbar spine and at the proximal femur using dual-X-ray absorptiometry. **RESULTS:** Under GH substitution, serum insulin-like growth factor I concentrations increased by 140 microg/l compared to pretherapeutic values ($P = 0.0003$). BMD at the lumbar spine increased by 0.16 g/cm² ($P = 0.0005$), corresponding to a mean increase of 15.9% or an increase of the BMD Z-score by 1.53 SD. Increases in BMD were independently observed from years 3 to 6 by a mean of 5.8% ($P = 0.0087$). This increase was paralleled by an increase in the area of the lumbar vertebrae. Bone area also increased at selected sites of the proximal femur, but there was no consistent increase in BMD at the proximal femur. **CONCLUSION:** GH therapy in GH-deficient adults is able to progressively increase BMD and bone area at the lumbar spine over a period of at least 6 years. However, our study has several limitations, making it necessary to confirm these findings in further long-term studies.

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