

Growth Hormone in Osteoporosis

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In 1972, Harris *et al.* (1) reported a marked increase of cortical bone formation and calcium accretion in adult dogs treated with high doses of growth hormone. Since in osteoporosis, bone formation is insufficient to compensate for the bone loss, human growth hormone (HGH) appears to be a promising substance for the treatment of this bone condition. Thus, a long-term treatment program in osteoporotics was started using a highly purified preparation of HGH*.

Nine post-menopausal women with overt osteoporosis were treated for up to one year with HGH, 16 I.U. i.m. every second day. The patients were studied before and at three months intervals after HGH. Investigations consisted of biochemical bone studies, e.g. determination of serum alkaline phosphatase (aPh) and urinary hydroxyproline (OHP), as well as of calcium (Ca) balance investigations combined with Ca kinetics, and of histomorphometry of paired iliac crest biopsies.

On HGH, a marked increase of hydroxyproline of + 150% and an also significant increase of the serum phosphorus was observed. In contrast to this, aPh showed only a slight and transitory increase. Both the Ca accretion V_{o+} and the Ca mobilization V_{o-} were increased significantly above the normal range, while the Ca balance remained unchanged. On treatment, the only statistically significant change found in the biopsies was an increase of osteoblasts after three months of treatment. However, osteoblasts remained within the normal range of this age group. The osteoid seams, osteoclasts and the volume density showed a slight increase during the first six months of treatment, the figures, however, were not statistically significant. Tetracycline labelling of the bones revealed a marked periosteocytic mineralization besides the extensive labelling of the

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