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TITLE

FURTHER EVIDENCE FOR A ROLE OF HUMAN GROWTH HORMONE (HGH) IN THE CONTROL OF PENILE ERECTION IN THE ADULT MALE

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ABSTRACT

Context: Examine the role of GH in the mechanism of penile erection.

Objectives: Human growth hormone (GH) has been suggested to be involved in sexual maturation and play a role in male reproductive function.

Methods: Effects of GH were investigated on electrically (EFS)-induced relaxation of isolated penile erectile tissue in the absence and in presence of ODQ (guanylyl cyclase inhibitor) and L-NOARG (nitric oxide synthase inhibitor, 10 μ M). Effects of GH on the production of cGMP in the absence and presence of ODQ and L-NOARG were also elucidated. Blood samples were drawn simultaneously from the corpus cavernosum and a cubital vein during the penile conditions flaccidity (Fl), tumescence (Tu), rigidity (Ri, healthy subjects only) and detumescence (Det) and serum levels of GH determined.

Patients: Thirty five (35) healthy males (mean age: 26 years) and 45 patients with erectile dysfunction (mean age: 52 years).

Intervention: Blood withdrawal from cubital vein and penis.

Main outcome measures: Tissue bath experiments using human erectile tissue, radioimmunometric measurement of GH.

Results: ODQ and L-NOARG abolished the relaxation of the tissue induced by EFS, whereas amplitudes were increased by GH (1 nM - 100 nM). The attenuation of EFS-induced amplitudes by L-NOARG but not ODQ was, in part, reversed by GH. cGMP production induced by 10 nM GH was abolished in the presence of ODQ. Combining GH (10 nM) + L-NOARG (10 μ M) maintained cGMP-production above baseline. In the healthy males, a marked increase in GH was registered during Tu (5.2 ± 8.2 to 9.5 ± 12.4). In the patients, GH levels were determined to be 7-fold lower than in the blood of the healthy males. Furthermore, the increase in systemic and cavernous GH levels from Fl to Tu was 5-fold weaker.

Conclusion: Our data provide evidence that GH is of importance in the maintenance of male erectile function.

INSTITUTE

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