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Interaction between atrial natriuretic peptide (α-hANP) and hypothalamic-pituitary function in normal man


The relation between ANP and the anterior pituitary is poorly understood. We therefore studied 1. the influence of releasing hormone-induced pituitary stimulation on endogenous ANP secretion and 2. the effects of exogenous α-hANP-administration on releasing hormone-induced pituitary secretion.

10 healthy volunteers (5 female, 5 male) were studied twice by means of a combined pituitary function test (Combibiss® Bissendorf, FRG). After an overnight fast and bed rest, 200 µg TRH, 100 µg hCRF, 50 µg GRH and 100 µg GnRH were either injected at once (protocol 1) or after an α-hANP bolus of 100 µg followed by an infusion of 0.1 µg/kg/min over 30 min (protocol 2).

Hormone responses for ACTH, cortisol, GH, LH, FSH and prolactin did not differ for both protocols. α-hANP diminished the TRH-induced TSH-increase (maximum 6.4 ± 3.0 vs. 11.5 ± 5.4 µU/ml (± SD, p < 0.001). Serum levels for ANP and cGMP remained constant during protocol 1, whereas cGMP increased from 3.96 ± 1.34 to 44.53 ± 10.52 nmol/l in protocol 2.

Conclusions: 1. In normal man, stimulation of the anterior pituitary induced by releasing hormone administration does not influence endogenous ANP-secretion. 2. α-hANP, when given before releasing hormone injection, attenuates TRH-induced TSH secretion; all other pituitary hormone responses remain unaltered. 3. cGMP may serve as a marker for α-hANP-actions.