

Evaluation of Hypothalamic-Pituitary Function in a Combination of Tests with Four Hypothalamic Releasing Hormones and L-Dopa in Normal Subjects and in Patients with Hypothalamic and/or Pituitary Disorders

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Abstract

Hypothalamic-pituitary function was evaluated in a combination of tests with four hypothalamic releasing hormones (4RHs) and L-dopa in normal subjects and in patients with hypothalamic and/or pituitary disorders. Plasma concentrations of anterior pituitary hormones (GH, ACTH, TSH, PRL, LH and FSH) were measured before and after simultaneous iv administration of GHRH, CRH, TRH and LHRH. In addition, changes in the plasma levels of GHRH and GH were investigated before and after oral administration of L-dopa. Normal subjects showed appreciable responses to both tests. In five patients with hypothalamic disorders, the response of plasma anterior pituitary hormones varied, but plasma GHRH and GH did not respond to L-dopa. Patients with idiopathic and postpartum hypopituitarism showed low response to 4RHs or none at all, but L-dopa evoked a normal GHRH response in 2 of the 4 cases having no GH response. In the patients with hypopituitarism due to resection of a pituitary tumor, the response of anterior pituitary hormones to 4RHs was low, and L-dopa administration induced a normal GHRH and low GH response in 5 out of the 7 cases. After 4RHs administration, the patients with ACTH deficiency syndrome showed different patterns of impaired ACTH secretion, and isolated, combined or limited ACTH reserve. Seven patients with anorexia nervosa showed exaggerated GH, delayed TSH and FSH, low ACTH and LH, that is, normal PRL response to 4RHs, but no response of plasma GHRH or GH to L-dopa, suggesting the presence of hypothalamic dysfunction. These results indicate that the combination of the 4RHs test and L-dopa test is a simple and useful means for evaluating hypothalamic-pituitary function by measuring the response of plasma GHRH and six anterior pituitary hormones in the patients with endocrine disorders.

Following the discovery of TRH (1969), LHRH (1970) and CRH (1981), GHRH

was isolated in 1982 by Guillemin *et al.* and Rivier *et al.* Since then, there has been considerable advance in studies on the hypothalamic control of anterior pitui-