

Publication

Anterior and posterior pituitary function testing with simultaneous insulin tolerance test and a novel copeptin assay

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CONTEXT: Posterior pituitary function in patients with suspected diabetes insipidus is usually assessed by a water deprivation test. Alternatively, a nonosmotic stimulus such as hypoglycemia may be used to stimulate vasopressin [arginine vasopressin (AVP)] secretion. Plasma AVP measurement may aid in the diagnosis and, especially, differential diagnosis of diabetes insipidus and polydipsia. However, AVP measurement is cumbersome. Copeptin, the stable C-terminal glycopeptide of the AVP prohormone, is stoichiometrically secreted from the posterior pituitary. **OBJECTIVE:** The aim was to study the value of copeptin levels in the diagnosis of diabetes insipidus during insulin-induced hypoglycemia. **PATIENTS AND METHODS:** A total of 38 patients were studied during insulin-induced hypoglycemia as part of a combined pituitary function test for possible anterior pituitary disease. There were 29 patients who had normal posterior pituitary function, and nine had central diabetes insipidus. Blood sampling was done before and 30, 45, and 90 min after iv insulin injection. Copeptin was measured with a new sandwich immunoassay. **RESULTS:** Patients with intact posterior pituitary function had basal copeptin levels of 3.7 +/- 1.5 pm, with a maximal increase to 11.1 +/- 4.6 pm 45 min after insulin injection. Copeptin levels in patients with diabetes insipidus were 2.4 +/- 0.5 pm before insulin injection, with a maximum increase to 3.7 +/- 0.7 pm. Both basal and stimulated copeptin levels were lower in patients with diabetes insipidus as compared with patients with intact posterior pituitary function. A stimulated copeptin level 45 min after insulin injection of less than 4.75 pm had an optimal diagnostic accuracy to detect diabetes insipidus. **CONCLUSION:** Copeptin measurement may be used to assess posterior together with anterior pituitary function during insulin-induced hypoglycemia.

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