Abstract

Am J Med. 1999 May;106(5):534-43.

Reduced hypothalamic-pituitary and sympathoadrenal responses to hypoglycemia in women with fibromyalgia syndrome.

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PURPOSE: To perform a detailed comparison of the hypothalamic-pituitary-adrenal axis and the sympathoadrenal system in women with and without fibromyalgia.

SUBJECTS AND METHODS: Fifteen premenopausal women who met the 1990 American College of Rheumatology criteria for the diagnosis of fibromyalgia and 13 healthy, premenopausal women were enrolled. We measured baseline 24-hour urinary free cortisol levels and evening and morning adrenocorticotropic hormone (ACTH) and cortisol levels, performed stepped hypoglycemic hyperinsulinemic clamp studies in which serum glucose levels were decreased from 5.0 to 2.2 mmol/L, and compared the effects of infusions of placebo and ACTH.

RESULTS: Women with fibromyalgia had normal 24-hour urinary free cortisol levels and normal diurnal patterns of ACTH and cortisol. There was a significant, approximately 30%, reduction in the ACTH and epinephrine responses to hypoglycemia in women with fibromyalgia compared with controls. Prolactin, norepinephrine, cortisol, and dehydroepiandrosterone responses to hypoglycemia were similar in the two study groups. In subjects with fibromyalgia, the epinephrine response to hypoglycemia correlated (P = 0.01) inversely with overall health status as measured by the fibromyalgia impact questionnaire. Graded ACTH infusion revealed similar increases in cortisol in women with fibromyalgia and healthy controls.

CONCLUSIONS: Patients with fibromyalgia have an impaired ability to activate the hypothalamic-pituitary portion of the hypothalamic-pituitary-adrenal axis as well as the sympathoadrenal system, leading to reduced ACTH and epinephrine responses to hypoglycemia.

PMID: 10335725