Continuous positive airway pressure therapy decreases evening cortisol concentrations in patients with severe obstructive sleep apnea

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Patients with obstructive sleep apnea syndrome (OSAS) show recurrent episodes of nightly hypoxic stress. The purpose of this study is the detection of alterations of the hypothalamic-pituitary-adrenal stress axis in OSAS patients before and after continuous positive airway pressure (CPAP) therapy. An activation of the hypothalamic-pituitary-adrenal axis was proposed because of the nightly hypoxic stress in these patients, but previous studies were not conclusive. Here we hypothesize that CPAP therapy decreases salivary cortisol concentrations in patients with severe OSAS. We performed a clinical within-subject study including 50 patients with newly diagnosed OSAS and an apnea-hypopnea index greater than or equal to 40 h(-1). Diurnal profiles of salivary cortisol concentrations were compiled before and after 3 months of treatment with CPAP. Therefore, 6 cortisol samples were collected: before and after lunch, in the evening, the next morning after awakening, and before and after breakfast. Thirty-eight patients returned after 3 months of CPAP therapy for follow-up. According to the reference range for healthy subjects, cortisol values were not pathologically increased. Analysis of variance revealed a significant effect of CPAP therapy on diurnal cortisol profiles (P = .048). Subjects with severe OSAS showed a decrease (3.04 +/- 0.55 nmol L(-1) pre-CPAP vs 2.48 +/- 0.78 nmol L(-1) post-CPAP, P = .038) of evening cortisol levels after CPAP treatment, whereas prelunch levels were increased after CPAP therapy (7.18 +/- 0.83 nmol L(-1) pre-CPAP vs 10.22 +/- 1.10 nmol L(-1) post-CPAP, P = .044). Our results show that CPAP therapy decreases evening cortisol concentrations in patients with severe OSAS. These data suggest that OSAS may increase the cortisol nadir that is reversed after CPAP therapy.

type: journal paper/review (English)
date of publishing: 6-2009
journal title: Metabolism: clinical and experimental (58/6)
ISSN electronic: 1532-8600
pages: 848-53