

# Abstract

Many studies have shown steroid hormone changes in adrenal incidentalomas with subclinical hypercortisolism and various forms of Cushing's syndrome. The aim of our work was to measure, using novel steroid GC-MS/MS measurement procedure, complex picture of many steroids in these patients. With the knowledge of these changes we could better explain causal pathophysiologic changes.

In the study on patients with adrenal incidentalomas we described complex steroid changes in patients with subclinical hypercortisolism. Previous studies showed decrease of DHEAS in subclinical hypercortisolism. We confirmed this finding and described a decrease in other androgens and their metabolites. We also evaluated their sensitivity and specificity when compared to routinely used parameters for diagnosis of subclinical hypercortisolism. Furthermore, we looked at the alterations in all measured steroids and their changes in the 1 mg dexamethasone suppression test.

In another study, we analyzed steroid changes in various forms of Cushing's syndrome. We confirmed the decrease of adrenal androgens in the ACTH independent forms and mild increase in the ACTH dependent forms. We also described elevations of mineralocorticoid precursors in central and ectopic forms of ACTH secretion. In the distinction of ectopic and central form of CS we describe novel steroid changes that could possibly help, if confirmed by other works, in the differential diagnosis.

The second part of my work was focused on evaluating the utility of early postoperative basal cortisol levels in patients undergoing pituitary surgery to predict the central hypocortisolism. From earlier studies there were data suggesting the usefulness of morning basal cortisol levels postoperatively in patients with either sufficiently high cortisol levels or very low cortisol levels. Our data confirm these studies. In patients with postoperative cortisol levels  $<100$  nmol/l there is a high probability of permanent hypocortisolism, but occasionally improvement can occur. On the other hand, basal cortisol levels  $>500$  nmol/l are very safe for discontinuation of the postoperative glucocorticoid substitution therapy. In patients with cortisol levels 100 – 500 nmol/l postoperative glucocorticoid replacement is necessary until the final stimulation tests. These data confirm findings from other endocrine centers on our Czech cohort.

**Keywords:** adrenal incidentaloma, Cushing's syndrome, subclinical hypercortisolism, hypocortisolism, stimulation test