INTRODUCTION

- There is preliminary evidence that adrenal steroids other than cortisol may be valuable biomarkers for major depressive disorder (MDD).
- However, so far, studies have been conducted in adults only, and conclusions are limited, mainly due to small sample sizes (1, 3).

AIM

Against this background, the present study was conducted to investigate whether selected adrenal steroids (progesterone, 17-hydroxypregosterone, 21-deoxycorticosterone, 11-deoxycorticisol, cortisol, cortisone, deoxycorticosterone, corticosterone) serve as biomarkers for adolescent MDD based on an adequately powered sample size.

METHODS

- In 261 depressed adolescents (N_{males}=170), treated at a single psychiatric hospital, serum adrenal steroids were determined by liquid chromatography-tandem mass spectrometry.
- Findings were compared to that of an age- and sex-matched reference cohort (N=255) by nonparametric analysis of variance.

RESULTS

Nonparametric ANOVA

- Compared to the reference cohort, levels of deoxycorticosterone and 21-deoxycortisol were decreased (P < 0.01; Figure 1).
- All other glucocorticoid- and mineralocorticoid-related steroids were increased (P < .001).

These findings were confirmed by sensitivity analyses considering important confounders of adrenal functioning (e.g., smoking and psychotropic medication).

- a subsample of patients with a confirmed MDD diagnosis.

ROC Analysis

- The corticosterone to deoxycorticosterone ratio evidenced excellent classification characteristics, especially in females (AUC: 0.957; sensitivity: 0.902; specificity: 0.891; Figure 1).
- This findings held up upon cross-validation.

CONCLUSIONS

The adrenal steroid metabolome qualifies as a bio-readout reflecting adolescent MDD by a distinct steroid pattern that indicates dysfunction of the hypothalamic-pituitary-adrenal axis.

Moreover, the corticosterone to deoxycorticosterone ratio may prospectively qualify to contribute to precision medicine in psychiatry by identifying those patients who might benefit from antiglucocorticoid treatment.

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REFERENCES


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