Hair cortisol concentration in preschoolers with attention-deficit/hyperactivity symptoms - Roles of gender and family adversity

Ursula Pauli-Pott, Susan Schloß, Isabelle Ruhl, Nadine Skoluda, Urs M. Nater, Katja Becker

Psychoneuroendocrinology, 2017
DOI: http://dx.doi.org/10.1016/j.psyneuen.2017.09.002

Abstract

Objective
Previous studies on the association between hypothalamic-pituitary-adrenal axis (HPAA) activity and ADHD yielded inconsistent findings, particularly in younger children. This might be due to the heterogeneity of the disorder, making moderator effects of variables probable, which circumscribe more homogenous subgroups. There have been indications of moderator effects on this association by gender of child and exposure to family adversity. Moreover, difficulties in capturing long-term basal HPAA activity in younger children might have contributed to the inconsistencies. We therefore analyzed moderator effects of gender and family adversity while using the hair cortisol concentration (HCC) to assess integrated long-term HPAA.

Methods
The community-based sample consisted of 122 4-5-year-old preschoolers (71 screened positive for elevated ADHD symptoms). ADHD symptoms were measured by a clinical parent interview and parent and teacher questionnaires. HCC in the most proximal 3-cm scalp hair segment was analyzed using luminescence immunoassay. An extended family adversity index was used.

Results
Hierarchical linear regression analyses yielded an interaction effect ($p < .05$) between ADHD symptom groups and gender on HCC, indicating a low HCC in boys with elevated ADHD symptoms. Further exploratory analyses revealed that this interaction effect was most pronounced under the condition of family adversity. The results held after controlling for oppositional, anxiety, and depressive symptoms.

Conclusion
Low HCC might indicate a specific pathogenic mechanism in boys with elevated ADHD symptoms. This mechanism might further involve an exposure to family adversity. However, the results need to be cross-validated before definitive conclusions can be drawn.