Copeptin, a stable peptide derived from the vasopressin precursor, correlates with the individual stress level

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**BACKGROUND:** During stress, vasopressin is a potent synergistic factor of CRH as a hypothalamic stimulator of the HPA axis. The measurements of CRH and vasopressin levels are cumbersome because of their instability and short half-life. Copeptin is a more stable peptide stoichiometrically released from the same precursor molecule. The aim of our study was to compare copeptin and cortisol levels in different stress situations.

**METHODS:** Three groups of patients with increasing stress levels were investigated: a) healthy controls without apparent stress (n=20), b) hospitalized medical patients with moderate stress (n=25) and c) surgical patients 30 minutes after extubation, with maximal stress (n=29). In all patients we assessed cortisol and copeptin levels. Copeptin levels were measured with a new sandwich immunoassay. RESULTS: Cortisol levels in controls were (median, IQ range, 486 [397-588] nmol/L), not significantly different as compared to medical patients (438 [371-612] nmol/L, p=0.69). Cortisol levels in surgical patients after extubation were higher (744 [645-1062] nmol/L, p>0.01 vs controls and medical patients). Copeptin levels in controls were 4.3 [3.2-5.5] pmol/L, which was lower as compared to medical patients (17.5 [6.4-24.1], p<0.001) and surgical patients after extubation (67.5 [37.8-110.0] pmol/L, p=0.001). The correlation between copeptin levels and cortisol was r=0.46, p>0.001. CONCLUSION: Copeptin is a novel marker of the individual stress level. It more subtly mirrors moderate stress as compared to cortisol values.

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