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**Title:** Vasopressin, atrial natriuretic peptide and adrenomedullin as markers of hypoxic stress in patients with obstructive sleep apnoea syndrome

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**Body:** Background: Hypoxia has been suggested to increase circulating vasopressin and atrial natriuretic peptide (ANP) concentrations as well as up-regulate adrenomedullin (ADM) expression via the HIF-1 pathway. We hypothesize that intermittent chronic hypoxia within obstructive sleep apnoea syndrome (OSAS) leads to an increase of these peptides and that their circulating levels correlate with clinical important outcomes. Methods: Prospectively, longitudinal multicentre study including 250 patients with suspected OSAS undergoing a diagnostic work-up in a dedicated sleep laboratory. Vasopressin precursor copeptin (AVP), ANP and ADM levels were assessed at baseline, 1 and 6 months after institution of CPAP therapy. Results: Baseline data of 150 patients (54.1 ± 13.6 years, 69% male, BMI 32 ± 6) have been analyzed so far. Median [95% CI] ODI was 14 [6-27] and AHI was 17 [10-31]. There was a significant correlation between the AHI with AVP (rho 0.261, p=0.006), ADM (rho 0.285, p=0.002) and ANP (rho 0.218, p=0.021). In contrast, the ODI correlated with AVP (rho 0.265, p=0.005) and ADM (rho 0.226, p=0.018) but not ANP (rho 0.104, p=0.280). Circulating values of all three peptides were higher in patients with diagnosed OSAS as compared to those with a normal polygraphy/polysomnography. AVP provided the highest differentiation between the two patients groups (7.7 nmol/L [5.1-11.1] vs. 4.9 nmol/L [2.8-5.4], p=0.002) with an AUC for the identification of patients with OSAS of 0.760 [0.614-0.905], p=0.002. Conclusions: Vasopressin, adrenomedullin and atrial natriuretic peptide correlate with the severity of OSAS and might be potential markers of therapeutic success.