Comprehensive biomarker profiling in patients with obstructive sleep apnea


OBJECTIVES
The pathophysiological links between obstructive sleep apnea syndrome (OSAS) and cardiovascular mortality are incompletely understood. We aimed to contribute to a better characterization by using comprehensive biomarker profiling quantifying hemodynamic cardiac stress, cardiomyocyte injury, inflammation, endothelial function, matrix turnover and metabolism.

DESIGN AND METHODS
In 65 patients with moderate or severe OSAS [apnea-hypopnea index (AHI) 39 ±20/h] and 33 patients with no or mild OSAS (AHI 8+4/h), B-type natriuretic peptide (BNP), N-terminal-pro-BNP (NT-proBNP), high-sensitivity cardiac troponin I (hs-cTnI), interleukin-6 (IL-6), vascular endothelial growth factor (VEGF), matrix metalloproteinase-9 (MMP-9), and insulin were measured before and after sleep. In a subgroup measurements were repeated in a second night with continuous positive airway pressure (CPAP).

RESULTS
Patients with moderate/severe OSAS had higher insulin before sleep [median (interquartile range), 36.4 (21.9-52.1) vs. 20.8 (10.6-32.8) mU/mL; p=0.006], higher IL-6 after sleep [1.00 (0.73-1.58) vs. 0.72 (0.48-0.94) pg/mL; p=0.005], and larger relative overnight reduction in BNP [-9 (-35-0) vs. -3 (-21-13)%; p=0.04] than those with mild/no OSAS. Insulin before sleep was the only independent predictor of moderate/severe OSAS. Insulin before and IL-6 after sleep were independent predictors of severe OSAS, and when combined provided high diagnostic accuracy for severe OSAS (area under the receiver operator characteristic curve 0.80; 95%-confidence interval 0.69-0.91). In contrast, there were no significant differences in NT-proBNP, hs-cTnI, VEGF, and MMP-9 between moderate/severe and mild/no OSAS. Short-term CPAP had no impact on biomarker concentrations before and after sleep.

CONCLUSIONS
Significant OSAS is characterized by a distinct biomarker profile including high insulin before and high IL-6 after sleep.
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