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Title: Diastolic dysfunction in patients with overlap syndrome – An early sign of a high cardiovascular risk?

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Body: Introduction: COPD and obstructive sleep apnea (OSA) are independent cardiovascular risk factors. Recent data showed an increased cardiovascular mortality in patients with both disorders (overlap syndrome (OS)). The aim of the study was to determine whether left ventricular diastolic dysfunction (DD) could be detected in patients with OS as a first sign of a high cardiovascular risk. Methods: We performed a retrospective study in 66 patients with OS and 35 patients with OSA, who underwent a polysomnography and were treated with nasal continuous positive airway pressure in our sleep center from 01/2010 to 04/2012. DD was assessed in the echocardiography by ratio of peak early (E) to peak atrial (A) Doppler mitral valve flow velocity and tissue Doppler evaluation of the early diastolic (e') lengthening velocity. Results: Apnea-hypopnea-index (/h) (OS: 34,5±22,5 vs OSA: 42,7±22,0), age (years) (61,2±10,0 vs 59,0±6,9) and body mass index (kg/m²) (34,8±6,9 vs 33,9±5,2) showed no differences. Cardiovascular risk factors as arterial hypertension (78,4% vs 62,1%; p=0,177), diabetes mellitus (35,1% vs. 27,6%; p=0,599) and coronary artery disease (21,6% vs. 20,7%; p=1,000) were equally distribute in both groups. We found a significantly increased incidence of diastolic dysfunction (56,2% vs. 20,7%; p=0,008) in patients with OS. This was also observed in both groups with normal pulmonary artery pressure (50,0% vs. 28,5%; p=0,0473). Conclusions: The early detection of a diastolic dysfunction in patients with OS could alert the clinician to focus on a more intensive therapy. An increased right ventricular afterload seems not to be obligatory for the development of a diastolic dysfunction.