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Effect of obstructive sleep apnea on aortic elastic parameters: relationship to left ventricular mass and function.

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BACKGROUND: Obstructive sleep apnea (OSA) syndrome has a critical association with cardiovascular mortality and morbidity. Aortic elastic parameters are important markers for left ventricular (LV) function and are deteriorated in cardiovascular disease. METHODS AND RESULTS: Aortic elastic parameters and LV functions and mass were investigated in 40 patients with OSA (apnea - hypopnea index (AHI) >or=5) (mean age 51.3 +/-9 years, 32 males) and 24 controls (AHI <5) (mean age 51.9+/-5.2 years, 19 males). All subjects underwent polysomnographic examination and recordings were obtained during sleep. They also underwent a complete echocardiographic examination and systolic and diastolic aortic measurements were noted from M-mode traces of the aortic root. There were no significant differences in the demographic data of the patients with OSA and the controls. Subjects with OSA demonstrated higher values of aortic stiffness (7.1+/-1.88 vs 6.42+/-1.56, p=0.0001), but lower distensibility (9.47+/-1.33 vs 11.8+/-3.36, p=0.0001) than the controls. LV ejection fraction was significantly lower in patients with OSA when compared with the control group (61.3+/-5.2% vs 65.9+/-8.4%, p=0.0001). LV diastolic parameters were also compared and were worse in the subjects with OSA than in the control subjects (mitral E/A: 0.91 +/-0.42 vs 1.35+/-0.66, p=0.001; Em/Am: 0.86+/-0.54 vs 1.23+/-0.59, p=0.021). Respiratory disturbance index had a positive correlation with aortic stiffness (r=0.63, p=0.0001 and negative correlation with distensibility (r=-0.41, p=0.001). CONCLUSION: Aortic elastic parameters are deteriorated in OSA, which has an extremely high association with cardiovascular disease. Increased aortic stiffness might be responsible for the LV systolic and diastolic deterioration in OSA syndrome.

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