HYPERTENSION, LIPIDS AND PREVENTION

CORONARY MICROCIRCULATION DYSFUNCTION IS ACCOMPANIED BY AN IMPAIRMENT OF LEFT VENTRICULAR DIASTOLIC PROPERTIES IN MALE HYPERTENSIVES

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Background: Coronary flow reserve (CFR) is associated with left ventricular (LV) remodeling and arterial stiffness but the data are rather scarce regarding its relation with myocardial diastolic dysfunction in arterial hypertension.

Methods: For this purpose, we studied 30 hypertensive patients who underwent coronary angiography due to chest pain or positive exercise stress test. The study population consisted of 16 patients (aged 55 years, office BP 150/95mmHg) who had not significant stenosis in the epicardial arteries. CFR was calculated by a 0.014 in. Doppler guidewire in the LAD in response to bolus intracoronary administration of adenosine (60μg) as the ratio of hyperemic to basal average peak velocity of the distal vessel. In all participants, LV mass index and relative wall thickness were also determined, while LV diastolic function was evaluated by means of transmitral flow (E, A, E/A ratio) and tissue Doppler imaging (TDI), averaging early and late diastolic mitral annular peak velocities (Em, Am) from four separate sites of measurement (septal, lateral, anterior and inferior walls).

Results: CFR was negatively correlated with aortic pulse pressure (PP) measured during catheterization (r=-0.678, p=0.011) and heart rate (r=-0.693, p=0.009) while no correlation was observed with age, sex, anthropometric characteristics as well as LV mass index and relative wall thickness. In contrast, CFR was positively correlated with transmitral E (r=0.690, p=0.013) and E/A ratio (r=0.718, p=0.009), as well as TDI-derived Em (r=0.633, p=0.027), Em/Am (r=0.605, p=0.037). In addition, aortic PP measured during catheterization was negatively correlated with transmitral E (r=0.713, p=0.009) and TDI-derived Em (r=0.691, p=0.013).

Conclusions: CFR is closely associated with indices of LV diastolic function and aortic stiffness assessed by means of TDI and central PP, respectively. Myocardial diastolic impairment has to be taken into account as a possibly influence on coronary flow reduction, contributing to the interpretation of diastolic dysfunction-related cardiovascular risk.