INFLAMMATION AND VENTRICULAR-VASCULAR COUPLING IN HYPERTENSIVE PATIENTS WITH METABOLIC SYNDROME

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Objective

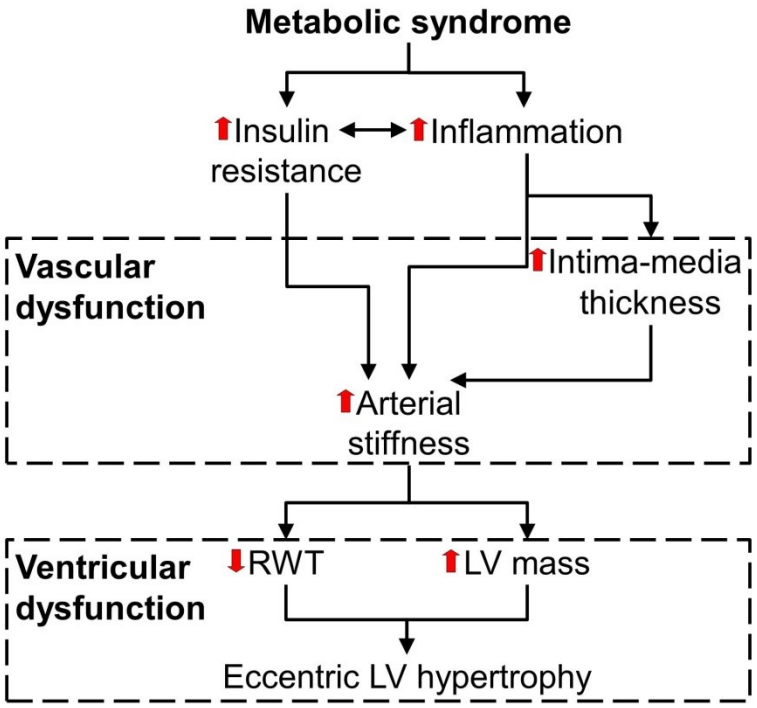
Patients with Metabolic syndrome (MetS) have an increased risk for type 2 diabetes and cardiovascular events. A part of this risk excess may be due to a cluster of additional factors associated with MetS. We have previously reported that arterial stiffness is increased in these patients. Here we aimed to investigate the role of inflammation on the ventricular-vascular coupling in patients with MetS.

Design and method

Cross-sectional study. A total of 227 hypertensive patients (106 with MetS and 121 without MetS) matched for age and gender were enrolled. Aortic pulse wave velocity (aPWV) was measured with asphygmoCor Device using the foot-to-foot velocity method, the intersecting tangent algorithm and the direct distance between the measurement sites.

Results

The relationship between insulin resistance, inflammation and ventricular-vascular coupling is reported in Figure 1. Aortic pulse wave velocity (aPWV), intima-media thickness (IMT) and high sensitivity C-reactive protein (CRP) increased according to the number of MetS components. Patients with MetS showed increased aPWV (11.5±3.7 vs. 10.3±2.5 m/s, P=0.03) compared with controls. In a model adjusted for age, sex, heart rate and mean blood pressure, aPWV resulted increased in patients with CKD (beta 1.29 m/s, 95%CI 0.61-1.96 m/s, P<0.001) and MetS (beta 0.89 m/s, 95%CI 0.28-1.51 m/s, P=0.005). After additional adjustment for CRP and IMT, the slope of aPWV was respectively reduced by 16% and 62%, suggesting that inflammation and intima-media thickening could contribute to aortic stiffening in patients with MetS. In these patients, aPWV was also associated with left-ventricular mass index (beta 0.79 g/m2.7, 95%CI 0.05-1.52 g/m2.7, P=0.05).



Conclusions

MetS is characterized by an inflammation-dependent acceleration in cardiovascular ageing. This pattern of pathophysiological abnormalities may contribute to amplify the burden of cardiovascular risk in patients with MetS.