Imaging Techniques

7.1 Left Ventricular Strain in Subjects Affected from Arterial Hypertension

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Introduction. Evidence from literature suggest that indexes of myocardial deformation obtained from Tissue Doppler Imaging (TDI) and earlier with 2D-strain could represent a diagnostic tool able to determinate earlier pathologic differences of left ventricular function. There are no available data, however, on populations affected by arterial hypertension.

Aim. To analyse myocardial deformation indexes obtained with TDI and 2D-strain between a group of hypertensive patients and a control group of otherwise healthy subjects and to evaluate the correlation of the obtained data with both methods.

Methods. It was analysed a series of echocardiography registrations of patients with systemic arterial hypertension. The subjects considered, 6 women and 7 men, medium age 56,4 years old (range 49-66) doesn't presented other pathology and hadn't hospitalizations for eventual cardiovascular or metabolic complications. In the control group was selected 13 normal subjects with equal biometric characteristics. Images were obtained with an echocardiography available in commerce with 3,5 MHz probe, in several views. For the assessment of the strain the images was analysed off-line, using a particular software (EchoPac).

Results. In patients with arterial hypertension in comparison with control group: longitudinal strain measured in apical view with TDI and 2D-strain presents a significant statistically reduction of the medium and basal segment of left ventricular anterior wall; transversal strain in apical view with 2D-strain is reduced at the basal interventricular septum (-41%) and medium (-34%) and also at the basal (-63%) and medium (-46%) anterior wall; circumferential strain in the transversal view with 2D-strain is reduced in the antero-septal segment (-32%) and interventricular septum (-25%); radial strain in transversal view with 2D strain is increased in the anterior basal interventricular septum (+21%) and in the interventricular septum (+20%). In the end the patients affected from arterial hypertension presents a degree of systolic torsion less than normal subjects in more segments that are interventricular septum, antero-septal segment, anterior and lateral segments.

Conclusions. The present study showed the utility of the 2D-strain method that permits several complementary views analysing more segments in orthogonal sections. It's also important the rotation angle that could be an early index of left ventricular systolic dysfunction.