

### Characteristics of the Doppler myocardial imaging in patients with myocardial hypertrophy

Dae-Woo Hyun\*, Kee-Sik Kim, Hyoung-Seob Park, Hyuck-Jun Yoon, Young-Soo Lee, Seong-Wook Han, Seung-Ho Hur, Yoon-Nyun Kim, Kwon-Bae Kim

Cardiovascular Medicine, Keimyung University College of Medicine, Daegu, Korea

**Background:** Myocardial Doppler imaging has allowed the quantification of regional myocardial motion. The aim of this study was to characterize regional left ventricular systolic and diastolic function by myocardial Doppler imaging (velocity and deformation) in patient with healthy, concentric hypertrophy due to hypertension and hypertrophic cardiomyopathy (HCM). **Method:** In forty-five patients (healthy 15, concentric hypertrophy 15, HCM 15), We assessed the time velocity integral (systolic, early and late diastolic), systolic strain and strain rate (SR) (systolic, early and late diastolic) at apical 4 chamber view (basal septum, midseptum, apical septum, apex, apicolateral, midlateral, basallateral). **Result:** The mean interventricular septal dimensions of healthy, concentric hypertrophy and HCM were 0.96mm, 1.31mm and 1.73mm ( $p < 0.01$ ). Patients with HCM reduced peak systolic strain, systolic SR, early diastolic SR and late diastolic SR at midseptum (-0.58%, -0.92/sec, 0.37/sec, 1.06/sec) compared with healthy and concentric hypertrophy (-20.27%, -1.71/sec, 1.58/sec, 1.94/sec,  $p < 0.01$  and -14.37%, -1.01/sec, 1.31/sec, 1.73/sec,  $p < 0.01$ ). In the HCM group, strain in midseptum (-0.58%) was significantly less than at the basal, apical septum and apical, mid, basal lateral wall (-14.21%, -18.47%, -8.81%, -9.00%, -8.58%,  $p < 0.05$ ). In the concentric hypertrophy group, the average peak systolic strain of septal and lateral wall (-16.88%, -5.82%) were reduced compared with healthy group (-21.19%, -14.40%,  $p < 0.05$ ). The interventricular septal dimension was significant correlation between midseptal systolic strain, systolic SR, early diastolic SR, late diastolic SR ( $r = 0.707$   $p < 0.01$ ,  $r = 0.689$   $p < 0.01$ ,  $r = -0.687$   $p < 0.01$ ,  $r = -0.554$   $p < 0.01$ ) in all 45 patients. **Conclusion:** Hypertrophied myocardium had abnormality of myocardium deformation related to the degree of hypertrophy, especially HCM. Myocardial Doppler imaging offer a approach to quantify regional systolic and diastolic dysfunction.

### Correlation between intima-media thickness (IMT) in carotid artery and the plaque burden of left main coronary artery (LM) by ultrasonography

Dae-Woo Hyun\*, Kee-Sik Kim, Young-Soo Lee, Seong-Wook Han, Seung-Ho Hur, Yoon-Nyun Kim, Kwon-Bae Kim

Cardiovascular Medicine, Keimyung University College of Medicine, Daegu, Korea

**Background:** The common carotid IMT is correlated with angiographically determined coronary artery stenosis. However, their correlation is weak and there is no reported relationship between carotid and coronary IMT measured by ultrasonography. The aim of this study was to evaluate the correlation between carotid and LM IMT. **Method:** In forty patients (male 28 (70%), mean age 60.41(0.3) with coronary artery disease (CAD), we evaluated the atherosclerosis risk factor and coronary angiography was taken. The carotid IMT was measured in the far wall of both common carotid arteries (CCA) with a 10 MHz linear probe, and the value of maximal and mean IMT was automatically calculated by a programmed software (M'ATH, Metris, France). We also evaluated the presence of plaque in the carotid artery. LM IMT or plaque was measured by intravascular ultrasound. We measured the maximal thickness and area of the plaque, percentage of the plaque area at 2mm intervals and calculated the average value. **Result:** See table. **Conclusion:** There were significant correlations between the CCA IMT and the plaque burden of LM in CAD patients. This finding suggests that CCA IMT measurement can be useful in patient suspected plaque burden of LM in angiographic normal and in clinical practice.

LM plaque \ CCA IMT	Right		Left	
	Maximal	Mean	Maximal	Mean
Maximal thickness (mm)	r value	.305	.221	.089
	p value	.028	.085	.292
% of maximal thickness	r value	.411	.374	.126
	p value	.004	.009	.219
Plaque area (mm <sup>2</sup> )	r value	.341	.235	.170
	p value	.016	.072	.147
% of plaque area	r value	.489	.464	.261
	p value	.001	.001	.052

#: percentage