Analysis of LV Dyssynchrony by Phase Analysis of GSPECT in Normal, Ischemic and Infarcted Studies

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Purpose: Recently, phase analysis software has been developed to assess mechanical left ventricular (LV) dyssynchrony from gated SPECT using the Emory Cardiac Toolbox. Phase parameters reported to correlate with wide QRS and low LVEF. Our aim is to examine the relation of LV dyssynchrony with myocardial scar and ischemia.

Methods: Between 01/2010 and 09/2010, in all consecutive patients who referred to stress rest Tc sestamibi gated SPECT, phase analysis software was applied. In the phase analysis, LV dyssynchrony was measured by phase standard deviation (SD) and histogram bandwidth (BW).Gated SPECT were assessed by 17 segments analysis.

Results: From 178 patients,3 groups were examined: 87 patients was used as control group (EF>50%, QRS<100, and normal perfusion scan), 25 patients was ischemic group and 66 patients was scar group. The comparisons between the 3 groups are shown in the table. Significant correlations were found between SD and BW measures and QRS width, LVEF, end systolic volume (ESV), end diastolic volume (EDV) and scar size between the 3 groups. However, QRS width, LVEF, ESV, were the independent predictors of SD or BW measures.

	A Control	B Ischemia	C Scar
Number	87	25	66
Phase SD*	18.38±10	23.64±13†	38.66±23‡
Bandwidth*	46.54±28	55.56±26	112.53±78‡
LVEF*	61.84±7	57.52±6†	44.06±15‡
EDV*	73.47±23	82.6±21	122.66±37‡
ESV*	29.05±12	35.84±13	74.3±29‡
QRS width*	80.89±7	90.6±23	108.86±33‡

*(Mean±SD), †p=(<0.001), p=(<0.05) =comparisons between A and B, ‡p=(<0.0001)= comparisons between A and C.

Conclusions: Significant LV dyssynchrony was observed in patients with ischemia and moreover in patients with infarction. However, QRS duration, LVEF, ESV, were the only independent predictors of LV dyssynchrony.