

Quantification of Left Ventricular Regional Phase Asynchrony in Patients with Left Bundle Branch Block Using Tissue Doppler Echocardiography

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Regional LV asynchrony from LBBB adversely affects LV ejection efficiency. LV pacing may improve asynchrony in heart failure pts with LBBB, however methods to quantify asynchrony are limited. To test the hypothesis that tissue Doppler (TD) can quantify LV asynchrony, 17 pts with LBBB (11 with heart failure) and 10 normal controls were studied. Phase analysis from 4 anterior and 4 posterior sites was done from mid-LV short-axis 2D cineloops; TD sampling rate=12 msec (GE/Vingmed System V). Paired time-velocity plots were assessed for motion-correlation between -1 (out of phase) and 1 (in phase) over the cardiac cycle. Mean phase was $-0.75 \pm 0.2^*$ for LBBB pts and 0.43 ± 0.3 for normal control, $*p < 0.05$. Anterior and posteriolateral sites were the best discriminators of phase asynchrony and also correlated with QRS duration from simultaneous digitized ECG ($r = -0.73$). **In Conclusion**, tissue Doppler measures of regional wall velocity appear to be a promising new means to quantify regional LV asynchrony in LBBB and may play a role in the selection of heart failure patients for pacing therapy.

