

## A study of ventricular contraction sequence in complete right bundle branch block by phase analysis

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Twenty-four patients with complete right bundle branch block (CRBBB) combined with and without left axis deviation (LAD) on ECG, were compared with 17 normal subjects to evaluate the right ventricular contraction sequence and pattern in detail. Blood pool scintigrams were obtained in the left anterior oblique projection, and these images were analyzed by first component Fourier harmonics.

In the normal subjects, the phase value distribution representing the pattern of ventricular contraction was almost homogeneous in both the right and left ventricles (RV&LV). In the CRBBB patients without LAD, the phase images showed apparent phase delay in the right ventricle. In the CRBBB patients with LAD, the phase images showed many different contraction patterns varying from normal to RV phase delay, owing to the effects of the hemiblock. Quantitative analysis of the absolute values, showed that the mean (RV-LV) value was  $6.6 \pm 8.4$  msec in the normal subjects. In the CRBBB patients without LAD, the duration of the QRS complex correlated with the mean (RV-LV) value, whereas no difference was observed between the duration of the QRS complex and the standard deviation of the right ventricle. Using phase analysis the degree of the RBBB can be determined from the phase images, and can be quantitatively analyzed as in electrical studies.

**Key words:** phase analysis, first harmonic Fourier method, right bundle branch block, multigated blood pool scintigram, ventricular contraction sequence