

Mechanism for abnormal thallium-201 myocardial scintigraphy in patients with left bundle branch block in the absence of angiographic coronary artery disease

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Patients with left bundle branch block (LBBB) often show abnormal images on exercise thallium (Tl)-201 scintigraphy without evidence of significant coronary stenosis. We investigated the mechanism for this phenomenon. Six patients with LBBB and without significant coronary stenosis underwent Tl-201 SPECT, ECG-gated SPECT imaging with Tc-99m-methoxyisobutyl-isonitrile (MIBI), and atrial pacing stress test. The % count amplitude in Tc-99m-MIBI images was calculated as $\{(\text{maximal counts}) - (\text{minimal counts})\} / (\text{minimal counts}) \times 100$. Though all patients had a low count in the septal and inferior wall in Tl-201 SPECT images, there was no ischemic production of lactate during an atrial pacing stress test. Nevertheless, gated SPECT images showed attenuated septal activity during systole. In patients with LBBB, the ratios of % count amplitude at the septum to that at the lateral wall at rest (0.47 ± 0.05 , mean \pm SE) were significantly less than the controls ($n = 5$, 0.83 ± 0.12 , $p = 0.014$). In conclusion, these results suggest that abnormal Tl-201 SPECT images of the septum in patients with LBBB are partially caused by impaired septal wall thickening during systole. Such an abnormal wall motion may reduce blood flow demands to the septum, resulting in reduction of coronary blood flow with little ischemia.

Key words: left bundle branch block, thallium, MIBI, gated SPECT