Abstract: P301

Diagnostic value of myocardial perfusion SPECT in left bundle branch block and associated artifacts

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Introduction: Left bundle branch block (LBBB) may cause imaging artifacts in myocardial perfusion scintigraphy with single photon emission computed tomography (SPECT). These artifacts, consisting of perfusion defects on the septal wall, with corresponding wall motion abnormalities, have been previously interpreted as false positives for coronary artery disease (CAD) detection.

Purpose: To determine the diagnostic value of gated myocardial perfusion SPECT (MPS) for CAD in patients with LBBB, using coronary angiography as the gold-standard.

Methods: Every patient with LBBB who underwent MPS with 99mTc-tetrofosmin in our department, from March 2008 to March 2018, was retrospectively analyzed. MPS was performed under pharmacological stress protocol with adenosine. Patients with a known history of CAD, isolated non-septal defects on MPS and/or no coronary angiography performed in the year following MPS, were excluded. CAD was defined as >50% stenosis in coronary angiography. LBBB-associated artifacts (LBAA) were defined as small (SSS<10), fixed (SDS<5) defects, affecting adjacent septal segments, with corresponding hypomotility in gated analysis.

Results: Three hundred and forty-four patients were analyzed, 33 of which met the inclusion criteria. MPS was normal or with criteria for LBAA in 9 patients (21.2%), 2 of which had a positive coronary angiography. Out of the remaining 24 patients with criteria for CAD on MPS, 9 had a positive angiography for CAD (37.5%), and 15 were deemed false positives, having no detectable CAD (62.5%). The sensitivity and specificity for CAD was of 81.8% and 31.8%, respectively.

Conclusions: Most patients with CAD detected in coronary angiography had a previously positive MPS. On the other hand, and despite establishing parameters to define artifacts associated with LBBB, more than half of the patients with positive MPS had no detectable CAD, confirming the diagnostic challenge of patients with LBBB. Further studying in this field is warranted, namely to try and improve the detection of false perfusion defects in patients with LBBB.