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Left bundle branch block activations for primary percutaneous coronary intervention: non-specific finding or a marker for increased mortality?

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Background: The activation criteria for primary percutaneous coronary intervention (PCI) includes chest pain in association with either ST-segment elevation (STE) or new-onset left bundle branch block (LBBB) on the ECG. However, defining LBBB as new is challenging acutely and the poor specificity of indeterminate chronicity LBBB may result in unnecessary PCI activations. Published data are conflicting with regard to the utility of LBBB as a triage criterion for PCI and the subsequent outcomes are undefined.

Methods: Consecutive patients attending a single UK tertiary centre for presumed PCI between September 2008 and December 2011 were included (n=2192). The activation ECG was obtained from the hospital PCI database, as were demographic data. Outcome data were obtained from notes and national databases. MACE was defined as a composite of mortality and unplanned revascularisation. Two interventionists blinded to patient outcome reviewed the angiographic images and adjudicated if the activation was appropriate.

Results: Chest pain with LBBB (LBBB-activation) occurred in 120 patients (5.5%) of the overall PCI cohort. Comparing LBBB-activations to those with STE demonstrated that LBBB-activations were older (mean age 70.7±12.2 vs 64.6±13.4 years; p<0.001) and less likely to be male (66.7% vs 76.8%; p=0.004). Other baseline demographics were similar. 21 (17.5%) patients presenting with LBBB-activation had an acute thrombotic coronary occlusion confirmed at angiography and received PCI. The final adjudicated diagnoses for LBBB-activations were acute coronary syndrome (ACS) (39.2%), non-ACS cardiac (33.3%) and non-cardiac (27.5%). One-year mortality and MACE were higher for appropriate LBBB-activations than the STEMI activations (31.3% vs 7.2%; p=0.002 and 40.0% vs 11.9%; p=0.007 respectively).

Conclusions: Less than half of LBBB-activations had an ACS and, of these, only half had a thrombotic coronary occlusion requiring PCI. However, LBBB-activations have a significantly worse prognosis and merit urgent referral. Enhanced triage methods are required to correctly identify acute MI requiring PCI in those with LBBB.