Acute myocardial infarction due to the left main coronary artery occlusion: Electrocardiographic patterns, angiographic findings, revascularization and in-hospital outcomes

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Abstract

Background: Primary angioplasty improves outcomes of acute myocardial infarction (AMI). However, in the highest risk subgroups, the mortality remains high despite modern catheter-based reperfusion therapy. This study analyzed patients with AMI caused by the left main coronary artery unstable lesion, a subgroup considered to be associated with very high early mortality.

Methods: A multicenter registry enrolled 6742 consecutive patients with AMI. Ninety-seven patients (1.4% of the entire study population) had left main as the infarct related artery. Baseline clinical characteristics, ECG patterns, coronary angiographic and echocardiographic data were correlated with the revascularization therapies used and with in-hospital outcomes.

Results: Twenty-five patients (25.8%) died during the hospital stay. The deceased patients were older, had more frequently bundle branch block on the admission ECG, had higher Killip class on presentation, more frequently had TIMI flow <3 and PCI success rate was 72% (vs. 100% among survivors). Left main coronary artery (LMCA) lesion impaired distal flow (TIMI flow 0–2 on presentation) in 35 patients: the most frequent ECG presentation pattern for these LMCA occlusions was ST segment elevation (n=17), followed by RBBB (n=9; with LAH 6 and without LAH 3), LBBB (n=6) and ST segment depression (n=3). In other words: acute LMCA occlusion presents in 51% with ECG changes other than ST segment elevations. Patients with TIMI flow 0–2 had higher Killip class on admission, lower ejection fraction and higher in-hospital mortality (37% vs. 20%), when compared to those with TIMI flow 3 on the initial angiogram.

Conclusions: Despite modern interventional therapy, acute myocardial infarction caused by the left main coronary artery obstruction bears high early mortality. The presence of bundle branch block, diminished TIMI flow on the initial angiogram, higher age and Killip class are related with increased mortality.

Keywords: Acute myocardial infarction; Percutaneous coronary intervention; Left main coronary artery