Incidence and Predictors of Grade 3 Ischemia in Patients with STEMI Undergoing Primary PCI


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Introduction: Grade 3 ischemia (distortion of the terminal portion of the QRS complex) is a predictor of serious complications after acute myocardial infarction. However, it is unknown which patients are more prone to present with grade 3 ischemia. Methods: Patients who were enrolled in the Ongoing Tirofiban in Myocardial Infarction Evaluation On-TIME Trial were included. The two patients were divided in two groups based on the enrolment electrocardiogram: grade 2 or grade 3 ischemia. Results: Between June 2004 and November 2007, 1308 patients with interpretable ECG’s were enrolled. Grade 2 ischemia was found in 682 patients (67.4%) and grade 3 ischemia in 426 (32.6%) patients. Patients with grade 3 were more often male (79.6% vs. 74.5%, p = 0.043), more often had diabetes (14.1% vs. 9.6%, p = 0.014), were older (63.3% vs. 60.8% vs. 61.1%, p = 0.001), more often had a TIMI risk score >3 (39.9% vs. 24.2%, p = 0.001), more often had pre-procedural TIMI 3 flow (13.5% vs. 3.3%, p = 0.001) and more often presented in Killip class >1 (14.6% vs. 10.3%, p = 0.026). One hour after PCI, residual ST-elevation was higher in patients with grade 3 ischemia compared to patients with grade 2 ischemia (3.60 ± 5.45 mm vs. 3.37 ± 5.71 mm, p < 0.001). Furthermore, grade 3 ischemia was associated with more major cardiac events (MACCE: death, MI, urgent TIMI, p = 0.002). After multivariable adjustment, grade 3 ischemia was an independent predictor of failure of ST resolution (STR) (p = 0.001), 30 day mortality (p = 0.024) and MACCE, although the latter was not significant (p = 0.06). Conclusions: Grade 3 ischemia, which may be diagnosed on the prehospital diagnostic ECG, was an independent predictor of STR and 30 day mortality. Higher age, male gender, diabetes, TIMI risk score >3, pre-procedural TIMI 3 flow and Killip class >1 were predictors of grade 3 ischemia. This simple electrocardiographic tool may help identifying high risk patients early after symptom onset.

The Importance of Prehospital Infarct Diagnosis and Therapy on Initial Patency of the Infarct-Related Vessel Before PCI in Patients with STEMI


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Introduction: Pre-hospital infarct diagnosis in the ambulance or at a referral center gives the opportunity to start anti-platelet and anti-thrombotic therapy during a PCI at a PCI center. However, this is associated with improved initial patency of the infarct related vessel (IRV) is unknown. Methods: From 1990 until 2007 all consecutive patients with STEMI were registered in a database. Initial patency, defined as TIMI 3 flow of the IRV was recorded at initial angiography and was compared between three time intervals: 1990–1995 (period A), 1996–2001 (period B), 2002–2007 (period C). Results: 7398 patients with STEMI were registered, 727 (8.6%) in period A, 2,380 in period B (32.2%) and 4,291 in period C (53%). Patients from period C were older, more often female, but less often had previous MI and less often presented in Killip class >1. Pre-hospital infarct diagnosis with early initiation of aspirin (300 mg) and heparin (5000 U) was present in 28.6% in period A, 37.4% in period B and 46% in period C. Initial patency of the IRV was 13.2% in period A, 15.9% in period B and 20.9% in period C (p = 0.001 for trend). After multivariable analysis, pre-hospital infarct diagnosis and therapy was an independent predictor of initial patency of the IRV (OR: 1.67; 95% CI 1.293 to 2.180). Patients with initial TIMI 3 flow of the IRV had a significantly lower one year mortality (3.9% vs. 7.5%, p = 0.04). Conclusions: In recent years the majority of STEMI patients underwent PCI after a pre-hospital diagnosis either in the ambulance or at a referral center. Pre-hospital infarct diagnosis with concomitant early initiation of aspirin and heparin was associated with improved initial patency of the infarct related vessel before PCI.

Relation Between Postprocedural Leukocyte Count and Myocardial Perfusion, Left Ventricular Function, and Clinical Outcomes in ST-elevated Myocardial Infarction Patients who Underwent Percutaneous Coronary Intervention

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Introduction: The pathogenic role of inflammation in the generation and development of cardiovascular disease is well established. Some studies have demonstrated baseline white blood cell (WBC) count was correlated with short-term ischemic events and death in patients presenting with ST-elevated and non-ST-elevated myocardial infarction. However, few studies have noticed the relation between the postprocedural WBC count and ischemic events/death in patients with ST-elevated myocardial infarction (STEMI) underwent primary percutaneous coronary intervention (PCI). Therefore, the aim of this study was to assess the relation between postprocedural WBC count and myocardial perfusion, left ventricular function and clinical outcomes in STEMI patients underwent PCI. Methods: 242 consecutive acute ST-elevated myocardial infarction (STEMI) patients underwent successful primary percutaneous coronary intervention (PCI) were enrolled and followed up for 1 year. WBC counts were measured within 12 hours after PCI. ST-segment resolution and myocardial blush grades (MBG) were evaluated immediately after...