MYOCARDIAL ISCHEMIA AND INFARCTION

PREDICTION OF DEATH AND CONGESTIVE HEART FAILURE USING MULTIPLE CONCOMITANT ANGIOGRAPHIC, BIOCHEMICAL AND ELECTROCARDIOGRAPHIC BIOMARKERS IN PATIENTS WITH ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION TREATED WITH PRIMARY PERCUTANEOUS CORONARY INTERVENTION

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
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Session Title: Acute Myocardial Infarction -- Risk Prediction
Abstract Category: 3. Acute Myocardial Infarction—Therapy
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Background: Although morbidity and mortality due to ST-segment elevation myocardial infarction (STEMI) has been greatly reduced with the advent of primary percutaneous coronary intervention (PCI), patients remain at considerable risk of death and development of congestive heart failure (CHF). The complex pathophysiology of STEMI reperfusion has reinforced the need for mechanistically linked biomarkers to improve risk stratification and aid in choosing adjuvant therapy. Multiple acute phase angiographic, biochemical and ECG biomarkers have been previously identified to quantitate different aspect of this disease process. Therefore, we sought to investigate the most predictive combination of early biomarkers as a "biosignature" to predict death and new onset CHF.

Methods: We analyzed 1349 patients from the CASTEMI, EMERALD, AMIHOT-I, AMIHOT-II, and DELTA-MI trials with STEMI<6 hrs who underwent primary PCI with: ST-segment recovery, from preceding peak ST-elevation, at last contrast and 240 minutes after LC on 12-lead digital Holter monitoring; angiographic post-PCI Thrombolysis in Myocardial Infarction (TIMI) graded flow and perfusion grade; and creatinin-kinase myocardial band (CK-MB) peak measurement expressed as multiples of the upper limit of normal (ULN). Variables were entered in multivariable logistic regression for their association with the composite endpoint of death or new onset CHF.

Results: After multivariable analysis, post-PCI TIMI graded flow of <3 (OR 1.98, 95% CI 1.07-3.65, p=0.029), ST-segment recovery after 240 minutes (OR [per 5%] 0.895, 95% CI 0.839-0.955, p=0.0007) and CK-MB peak measurement (OR [per 5x ULN] 1.029, 95% CI 1.004-1.055, p=0.022).

Conclusion: In this study, we found that procedural success of primary PCI by post-procedural TIMI 3 flow, myocellular recovery as seen through ST-segment recovery and myocardial necrosis by CK-MB elevation all provide independent prognostic information to predict death and new onset CHF. These findings support the use of multiple biomarkers for robust risk stratification shortly after primary PCI and identification of optimal adjuvant treatment to improve clinical outcome.