B-Type Natriuretic Peptide Levels on Admission Predict Short-Term Mortality and Angiographic Success of Procedure in Patients With Acute ST Elevation Myocardial Infarction Treated With Primary Angioplasty

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Background: B-type natriuretic peptide (BNP) levels in the first days after the onset of symptoms are predictive of short-term mortality in patients with acute coronary syndromes. Few data are available for BNP levels obtained on admission in patients (pts) with acute ST elevation myocardial infarction (STEMI). Methods: Blood samples for BNP determination were obtained on admission in 117 pts (mean age 58.4±10.7 years old) with STEMI. In a 15-minute period, BNP was measured by using simple bedside test for rapid quantification of BNP before primary percutaneous coronary intervention (PCI). 30 days follow-up was performed. PCI was performed in all (100%) pts. Results: Mean for BNP was 171.8±182.8 pg/ml. Baseline level of BNP was higher among pts who died than among those who were alive at 30 days (median 541.9±247.2 pg/ml vs. 140.9±165.9 pg/ml; p<0.001). Baseline BNP in subgroups by median level showed a significant increase in mortality: 1 (1%) in inframedian group (IMG) vs. 8 (13%) in supramedian group (SMG) (p=0.005). Baseline level of BNP in subgroups by Killip class on admission was higher among pts who died than among those who were alive at 30 days (Killip class I: median, 475.8±280.6 pg/ml vs. 123.6±138.1 pg/ml p<0.05; Killip class II-IV: 257.1±362.5 pg/ml vs. 624.5±203.9 pg/ml, p<0.01). After adjustment for independent predictors of risk of death, the odds ratio for death at 30 days in SMG was 13.6 (95% confidence interval, 1.1 to 182.7). There was no difference in subgroups by median BNP in TIMI 3 flow grade before PCI (7% vs. 7%; p=NS). TIMI 3 after PCI was more often seen in pts in IMG vs. SMG (80% vs. 72%, p=0.01). BNP was higher among pts with TIMI 0, 1 or 2 after PCI than among pts with TIMI 3 after PCI (328.3±328.8 pg/ml vs. 151.3±196.7 pg/ml; p<0.01). BNP remained independent predictor for TIMI 0, 1 or 2 after PCI (odds ratio in SMG was 3.5 (95% confidence interval 1.2 to 10.8). Conclusion: BNP levels obtained on admission are powerful, independent indicator of short-term mortality and angiographic success after PCI in pts with STEMI. Rapid tests for BNP assay seem to be new tool in risk stratification of pts with STEMI.

Results: At baseline, expression of 5-lipoxygenase, MCP-1 and IL-6 was higher in chronic ischemic myocardium than in normally perfused myocardium. In response to acute ischemia and reperfusion in the normal myocardium, there was a clear trend towards increased expression of pro-inflammatory factors (e.g. 5-lipoxygenase, COX-2, CysLT2 receptor, MCP-1, IL-6). These responses were less pronounced or detectably absent in the chronic ischemic myocardium.

Conclusion: These findings suggest a discrete increase in several pro-inflammatory factors that may contribute to myocardial pathophysiology in chronic myocardial ischemia. The blunted inflammatory response to acute ischemia in the chronic ischemic myocardium may suggest altered sensitivity in signaling pathways mediating the inflammatory response.

5:15 p.m.
Women With Diabetes Mellitus Have the Greatest Reduction in Myocardial Infarction Mortality Over the Past Decade: Evaluation of 1,428,596 Patients Enrolled in the National Registry of Myocardial Infarction 2, 3, and 4 From 1994-2002

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Background: Analyses from NHANES showed a decline in cardiovascular (CV) mortality in the 1970s-80s, but among patients with diabetes mellitus (DM), the rate of decline was attenuated among men (less improvement) and women (no improvement). We sought to examine the relation between sex, DM, and hospital mortality in the setting of contemporary care for myocardial infarction (MI).

Methods/Results: We analyzed data from 1,428,596 patients with MI enrolled in NRMI 2, 3, and 4 from 1994-2002. DM was present in 410,223 patients (29%), increased in previous MI, history of diabetes, hypertension, and without DM (Figure). The risk of 30-day mortality increased with increasing tertiles of FG (P trend = 0.02), with an OR of 3.2 for patients in the upper FG tertile (95% CI 1.5-6.8, p = 0.002). Further adjustment for EF gave similar results (OR = 2.8, 95% CI 1.3-6.2, p = 0.01).

Conclusion: In patients with MI stress hyperglycemia is a strong predictor of 30-day mortality independent of infarct size and other traditional predictors of outcome. Increased risk appears to be associated even with FG in the upper normal range.