18.3.1 - Biomarkers

# Prognostic value of BNP in STEMI patients

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**Introduction:** Brain natriuretic peptide (BNP) is a highly sensitive and specific biomarker on the extension of myocardial infarction, strongly related to short and long-term prognosis in patients with ST elevation myocardial infarction (STEMI).

**Objective:** To evaluate diagnostic and prognostic value of BNP levels in a Portuguese cohort of STEMI patients.

**Material and methods:** Retrospective analysis of patients admitted with STEMI included in the Portuguese Registry of Acute Coronary Syndromes between 2010-19. Patients were divided in three groups regarding BNP: Group 1 if BNP <100 pg/ml; Group 2 100 ≤ BNP < 400 pg/ml and Group 3 ≥400 pg/ml. Independent predictors of a composite of all-cause mortality and rehospitalization for cardiovascular causes were assessed by multivariate logistic regression.

**Results:** 1650 patients were included, mean age 64 ± 13 years, 75.4% male. 39.0% (n = 643) integrated group 1, 39.5% (n = 652) group 2 and 21.5% (n = 355) group 3. Group 3 patients were significantly older (58 ± 11 vs 66 ± 13 vs 72 ± 12 years, p < 0.001), had more classic cardiovascular risk factors, except for smoker status, and more previous history of cardiovascular disease, chronic kidney disease, chronic obstructive pulmonary disease and cancer. Anterior STEMI was the most frequent location (51.1%), however group 3 patients presented with lower systolic blood pressure (136 ± 30 vs 140 ± 31 vs 131 ± 28 mmHg, p < 0.001) and higher heart rate (76 ± 17 vs 77 ± 19 vs 84 ± 26 bpm, p < 0.001) and KK class (KK class > I 5.6 vs 9.5 vs 28.5%, p < 0.001). They also presented higher levels of creatinine (1 ± 0.5 vs 1.2 ± 0.9 vs 1.5 ± 1 mg/dl, p < 0.001) and the lowest levels of hemoglobin (13.5 ± 1.6 vs 12.6 ± 1.9 vs 11.7 ± 2.1 g/dl, p < 0.001). Mean ejection fraction (EF) was lower in group 3 (58 ± 11 vs 53 ± 12 vs 44 ± 13%, p < 0.001). Multivessel disease was more common in group 3 (34.8 vs 44.8 vs 51.3%, p < 0.001), where a higher percentage was proposed to medical therapy (2.8 vs 3.5 vs 8.5%, p < 0.001). In the patients proposed to revascularization, although not statistically significant, there was a trend towards surgical revascularization or hybrid approach. In-hospital complications were more frequent in group 3, especially heart failure (HF) (18.9% mean vs 45.4%, p < 0.001), and mortality was seven times superior in group 3 versus group 1 (1.2% vs. 8.5%, p < 0.001). The composite endpoint of 1-year mortality and cardiovascular rehospitalization occurred in 12%. After propensity score application, the 1-year endpoint total mortality rate and cardiovascular readmission was 20.3%, and higher BNP was associated with higher rates (p < 0.001). Predictor factors for the composite endpoint, evaluated through Cox multivariate regression were previous HF, multivessel disease, EF < 30% and the use of nitrates and aldosterone antagonists. The use of aspirin was a protector factor.

**Conclusion:** BNP levels during index hospitalization were a powerful prognostic biomarker for all-cause mortality MACE in patients admitted with STEMI.