Early identification of complications based on measurement of N-terminal pro-brain natriuretic peptide in patients with STEMI (ST Segment Elevation Myocardial Infarction) and NSTEMI (non ST Segment Elevation Myocardial Infarction)

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Introduction: Coronary artery disease and its different manifestation is still the leading cause of death all over the world. Optimal risk stratification of patients with acute coronary syndrome (ACS) is of paramount importance to deliver appropriate care according to risk categories in patients both with and without persistent ST-segment elevation. The measurement of both BNP and NT-pro BNP has been shown to be useful in detecting LV (left ventricular) dysfunction, particularly after acute myocardial infarction (AMI), and to be related to poor outcome. It was recently shown that BNP and NT-proBNP also provided important prognostic information in patients with non-ST-segment elevation AMI or unstable angina pectoris.

Aim: The aim of our study was to identify prognostic role of N-terminal pro-brain natriuretic peptide (NT-proBNP) in early identification of LV dysfunction in patients with acute myocardial infarction with or without persistent ST-segment elevation.

Methods: The NT-proBNP was measured at a median time of three hours after symptom onset in 50 patients. Resting ECG was recorded in all patients. Myocardial infarction (MI) was documented according to Troponin-I (cTnI) level. Left ventricular dysfunction was assessed with the help of echocardiography. The samples were then centrifuged, and serum was stored frozen in aliquots at 70°C within 30 minutes. Serum NT-proBNP and troponin-I measurements were performed by local laboratory using commercial assays.

Results: The study end point was the occurrence of death at 30 days. Secondary end points were recurrent ischemic events and severe heart failure. Follow-up was performed by outpatient visit in 90% of surviving patients and by telephone interview in the remaining 10%. Statistical data analysis was performed using the Statistical Package for Social Sciences (SPSS 10.1) software (SPSS Inc.). During follow-up we had not a single case of death. The NT-proBNP was independently associated with recurrent episodes of ischemia and heart failure which included clinical variables, ECG, EF and cTnI (cardiac troponin) in patients either with (95%, p<0.001) or without (96%, p<0.001) persistent ST-segment elevation. NT-proBNP was elevated in 35.7% of hospitalized patients who hadn't symptoms of heart failure.

Conclusion: The measurement of NT-proBNP on admission improves the early risk stratification of patients with ACS, suggesting the need for the development of targeted therapeutic strategies.

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