Nonterminal Pro B-Type Natriuretic Peptide in Patients With Chronic Heart Failure: Correlation With B-Type Natriuretic Peptide and Left Ventricular Structure and Function

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Background: Plasma levels of B-type natriuretic peptide (BNP) and non terminal pro BNP (NT-pro BNP) are increased in patients with systolic and diastolic left ventricular (LV) dysfunction and are important prognostic markers of chronic heart failure. The relation between NT-pro BNP, BNP, and LV structure and function in patients with chronic heart failure has not been studied.

Methods: 523 patients (434 male, 89 female, mean age 60.7±11.4 years, LV ejection fraction (EF) >40%, systolic blood pressure >110 mmHg) were studied. LV endystolic and enddiastolic volumes (ESV, EDV) were measured using magnetic resonance imaging, echocardiography, stroke volume, cardiac output, and wall stress calculated. Plasma NT-pro BNP was measured using a newly developed sandwich enzyme-linked immunosorbent assay (ELISA). Receiver operated curve was 0.96. At a cut-off point of 270 pg/ml, the specificity and sensitivity were 92% and 88% respectively. NT-pro BNP correlated significantly with BNP (r=0.79, p<0.001). LV ejection fraction (r=0.40, p=0.001), ESV (r=0.24, p=0.001), and wall stress (r=0.32, p<0.001). NT-pro BNP levels were significantly higher in patients who died (6 months, 21/523 patients), compared to the controls [942 (492-1977) versus 101 (61-163) pg/ml, p<0.0001]. Area under the curve was 0.55. NT-pro BNP above the median, and in the third and fourth quartile were associated with reduced survival (p<0.05). At a cut-off point of 270 pg/ml, the specificity and sensitivity were 92% and 88% respectively. NT-pro BNP correlated significantly with BNP (r=0.79, p<0.001). LV ejection fraction (r=0.40, p=0.001), ESV (r=0.24, p=0.001), and wall stress (r=0.32, p<0.001). NT-pro BNP levels were significantly higher in patients who died (6 months, 21/523 patients), compared to the controls [942 (492-1977) versus 101 (61-163) pg/ml, p<0.0001]. Area under the curve was 0.55. NT-pro BNP above the median, and in the third and fourth quartile were associated with reduced survival (p<0.05). Conclusion: NT-pro BNP correlates well with BNP and LV volumes and is a significant predictor of mortality in patients with chronic heart failure.