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ARTYKUŁ ORYGINALNY / *ORIGINAL ARTICLE*

NT-proBNP for prognostic and diagnostic evaluation in patients with acute coronary syndromes

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Abstract

Background and aim: N terminal-proB-type natriuretic peptide (NT-proBNP) is synthesised and secreted from the ventricular myocardium. This marker is known to be elevated in patients with acute coronary syndromes (ACS). We evaluated NT-proBNP as a significant diagnostic marker and an important independent predictor of short-term mortality (one month) in patients with ACS.

Methods: NT-proBNP and cardiac troponin I (cTI) were assessed in 134 consecutive patients (median age 66 years, 73% male) hospitalised for ACS in a cardiological university department. The patients were classified into ST-elevation ACS (STE-ACS, n = 74) and non-ST-elevation ACS (NSTE-ACS, n = 60) groups based on the ECG findings on admission. Patients with Killip class ≥ II were excluded.

Results: The serum level of NT-proBNP on admission was significantly higher ($p < 0.0005$), while there was no difference in cTI serum level in the NSTE-ACS patients compared to STE-ACS patients. There was a significant positive correlation between NT-proBNP and cTI in the NSTE-ACS ($r = 0.338$, $p = 0.008$) and STE-ACS ($r = 0.441$, $p < 0.0005$) patients. There was a significant difference in NT-proBNP ($p < 0.0005$) and cTI ($p < 0.0005$) serum level between ACS patients who died within 30 days or who survived after one month. The increased NT-proBNP level is the strongest predictor of mortality in ACS patients, also NT-proBNP cut-point level of 1,490 pg/mL is a significant independent predictor of mortality.

Conclusions: We demonstrated the differences and the correlation in the secretion of NT-proBNP and cTI in patients with STE-ACS vs. NSTE-ACS. Our results provide evidence that NT-proBNP is a significant diagnostic marker and an important independent predictor of short-term mortality in patients with ACS.

Key words: acute coronary syndromes, NT-proBNP, troponin I, prognosis

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INTRODUCTION

B-type natriuretic peptide (BNP), cardiac neurohormone, and its N-terminal fragment (NT-proBNP) are synthesised and secreted from the ventricular myocardium. It is well known that stimulus for their release is the increase in left ventricular wall stress [1, 2]. These markers are known to be elevated in patients with acute coronary syndromes (ACS). In this regard, ventricular dysfunction and/or myocardial ischaemia per se can cause an increase in cardiac NT-proBNP expression followed by augmented secretion [3–6]. Also, these markers are closely linked to the prognosis as a powerful predictor of both short and long-term mortality [7–10]. It has been shown that BNP and NT-proBNP levels predict heart failure and death after myocardial infarction (MI) [11, 12].

Cardiac troponin (cT) is a regulatory protein which consists of three subunits I, T and C. Cardiac troponin I (cTI) is the biomarker of choice for the detection of myocardial necrosis as it is more specific and sensitive than classic cardiac enzymes (creatine kinase, CK, CK-MB) [13]. Also, the determination of cTI is useful for estimating the extent of necrosis. For the patients with ACS, cTI is a prognostic indicator and allows the stratification of risk of cardiac events and mortality [14].

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