



NT-proBNP LEVELS AND THEIR CLINICAL RELEVANCE IN ACUTE CORONARY SYNDROME

General Medicine

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ABSTRACT

Acute coronary syndrome is associated with significant morbidity and mortality. NT-proBNP is released in response to myocardial wall stress and has been evaluated as a prognostic marker in patients with acute coronary syndrome. This study assesses the clinical relevance of NT-proBNP levels and their association with short-term outcomes in patients presenting with acute coronary syndrome.

KEYWORDS

NT-proBNP, Acute Coronary Syndrome, Prognosis, Biomarker

INTRODUCTION

Acute coronary syndrome encompasses a spectrum of clinical conditions resulting from acute myocardial ischemia. Despite advances in diagnosis and treatment, predicting outcomes following ACS remains challenging. Biomarkers reflecting myocardial stress may help in identifying patients at higher risk for adverse outcomes. NT-proBNP is released from ventricular myocardium in response to pressure and volume overload and may provide valuable prognostic information in ACS.

MATERIALS AND METHODS

Study Design: Prospective observational study.

Study Population: Sixty patients diagnosed with first-time acute coronary syndrome.

Inclusion Criteria: Adults presenting with STEMI, NSTEMI, or unstable angina within 24 hours of symptom onset.

Exclusion Criteria: Known chronic kidney disease, significant anemia, valvular heart disease, or prior myocardial infarction.

Methodology: NT-proBNP levels were measured within 2–24 hours of symptom onset using immunoassay methods. Patients were followed for six months for adverse clinical outcomes.

RESULTS

Table 1: Baseline Characteristics Of Study Population (n = 60)

Parameter	Number (%)
Mean age (years)	54.6 ± 8.9
Male	42 (70%)
Female	18 (30%)
STEMI	36 (60%)
NSTEMI	14 (23.3%)
Unstable Angina	10 (16.7%)
Hypertension	34 (56.7%)
Diabetes Mellitus	28 (46.7%)

Table 2: Distribution Of NT-proBNP Levels

NT-proBNP Level (pg/ml)	Number (%)
<100	18 (30%)
100–500	26 (43.3%)
>500	16 (26.7%)

Table 3: NT-proBNP Levels And Clinical Outcomes During Follow-up

Outcome	<100 pg/ml	100–500 pg/ml	>500 pg/ml
Recurrent angina	2	8	9
Dyspnea	1	7	10
Rehospitalization	1	6	11
LV dysfunction	0	5	9

Mortality	0	0	3
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Table 4: NT-proBNP Levels And Overall Adverse Outcomes

NT-proBNP Category	Patients with ≥1 Adverse Event (%)
<100 pg/ml	3 (16.7%)
100–500 pg/ml	14 (53.8%)
>500 pg/ml	14 (87.5%)

DISCUSSION

The present study highlights the clinical importance of NT-proBNP as a prognostic biomarker in patients presenting with acute coronary syndrome. Elevated NT-proBNP levels were associated with increased severity of clinical presentation and a higher incidence of adverse outcomes during follow-up. NT-proBNP reflects myocardial wall stress and neurohormonal activation, both of which play a central role in the pathophysiology of acute ischemic events.

Patients with higher NT-proBNP concentrations experienced greater rates of recurrent angina, dyspnea, and hospital readmissions. This suggests that elevated NT-proBNP identifies individuals with persistent myocardial dysfunction and ongoing ischemic burden. Similar observations have been reported in major clinical trials such as GUSTO-IV, OPUS-TIMI, and TACTICS-TIMI, where natriuretic peptides provided prognostic information independent of conventional risk markers.

The association between NT-proBNP levels and left ventricular dysfunction supports its role as a marker of ventricular remodeling following myocardial injury. Patients with markedly elevated NT-proBNP levels showed poorer functional recovery, emphasizing the importance of early risk stratification. NT-proBNP measurement may thus complement echo cardiographic assessment in identifying patients at risk of heart failure.

Mortality during follow-up was observed predominantly among patients with significantly elevated NT-proBNP levels. This finding underscores the value of NT-proBNP in identifying high-risk patients who may benefit from more intensive monitoring, aggressive pharmacological therapy, and closer follow-up after discharge.

Overall, the findings reinforce the utility of NT-proBNP as an independent prognostic marker in acute coronary syndrome. Incorporation of NT-proBNP measurement into routine clinical practice may enhance risk stratification and aid in tailoring management strategies, particularly in resource-limited settings.

CONCLUSION

NT-proBNP levels have significant clinical relevance in patients with acute coronary syndrome. Early measurement aids in risk stratification and identification of high-risk patients who may benefit from intensive monitoring and individualized management strategies.

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