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Original Article

Spectrum of acute coronary syndrome in North Eastern India – A study from a major center

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ABSTRACT

Aim: Spectrum of acute coronary syndrome (ACS) has not been reported from North Eastern India. The present study was undertaken to study the clinical spectrum of ACS.

Methods: We prospectively collected data of 704 ACS patients from February 2011 to August 2012 in Gauhati Medical College, a tertiary care center. We evaluated data on clinical characteristic, treatment, and outcome in ACS patients.

Results: Of the 704 ACS patients, 72.4% presented with STEMI and 27.6% presented with NSTEMI/UA. Mean age of presentation was 56.5 years. Mean time to presentation was 11.42 h and was higher in NSTEMI/UA than STEMI (12.86 h vs. 9.98 h, $p < 0.001$). Treatment for STEMI did not differ much from NSTEMI/UA with ≥90% of patients in both groups receiving antiplatelets, statin, and anticoagulants. 39% of STEMI received thrombolytic therapy and percutaneous coronary intervention (PCI) rates were higher in STEMI. The 30-day mortality was found to be 10.22%, with STEMI having higher mortality than NSTEM/UA (11.76% vs. 6.18%, $p = 0.03$).

Conclusion: These data represent the first reported study on spectrum of ACS in North Eastern India and has noted few key differences from the national registry CREATE, with greater percentage of STEMI patients, greater delay in seeking treatment, greater 30-day mortality, and lesser percentage of patients receiving reperfusion therapy.

1. Introduction

CREATE, the national registry on Indian patients with ACS, has shown that the pattern of ACS among Indians is much different from that of the Western populations [1].

The clinical spectrum of ACS is not studied in North Eastern India.

The present study was undertaken in Gauhati Medical College, a tertiary care hospital with the aim of studying the clinical presentation of the wide spectrum of ACS.

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2. Methods

All patients presenting with ACS from February 2011 to August 2012 in the emergency room (ER) were included in the study. Detailed history, physical examination, and necessary investigations were done in all patients.

Inclusion criteria

1. Patients must be greater than 18 years of age.
2. Patients must fulfill the diagnostic criteria of ACS as given below:

Diagnosis of myocardial infarction was made if there is: Typical rise and gradual fall (troponin) or more rapid rise and fall (CK-MB) of biochemical markers of myocardial necrosis with at least one of the following: [2]

(a) Ischemic symptoms;
(b) Development of pathologic Q waves on the ECG;
(c) ECG changes indicative of ischemia (ST segment elevation or depression).

Cases of ischemic symptoms with elevation of ST segment in electrocardiographic (ECG) leads/presumed new onset left bundle branch block in ECG were categorized as STEMI. Cases of ischemic symptoms without ST segment elevation were categorized as NSTEMI if their cardiac biomarkers are positive.

Unstable Angina (UA) was defined as angina pectoris (or equivalent type of ischemic discomfort) with at least one of three features:

(1) occurring at rest (or minimal exertion) and usually lasting >20 min (if not interrupted by nitroglycerin administration);
(2) being severe and described as frank pain, and of new onset (i.e., within 1 month; and
(3) occurring with a crescendo pattern (i.e., more severe, prolonged, or frequent than previously).
(4) Patients with above features without elevation in cardiac markers were categorized as UA) [3].
3. Written consent must be given

Exclusion criteria

1. Patients who were initially treated elsewhere and referred to the study center only for additional management;
2. Patients with proven non-cardiac chest pain and
3. Patients who were discharged before completion of the treatment for any reasons.

The baseline clinical characteristics, which were analyzed, were the age, gender, hypertension, diabetes mellitus, smoking status, and Body mass Index (BMI).

Mode of presentation, time of occurrence of the ACS, clinical course in the hospital, time to reach hospital, time until thrombolysis, treatments in hospital, the mean duration of hospital stay, and complications related to the ACS and its treatment were analyzed. In our study, patients were considered to have atypical presentation if they presented with dyspnea, nausea/vomiting, indigestion, fatigue, sweating, and arm or shoulder pain as presenting symptoms in the absence of chest pain.

The in-hospital outcome was analyzed. Those patients giving consent for angiography were taken up for angiography. Angiographic findings were noted. They were categorized as -

1, Normal coronaries; 2, insignificant disease (less than 50% diameter stenosis as per visual estimation); 3, single vessel disease; 4, double vessel disease; 5, triple vessel disease; 6, left main disease.

A comparison of clinical parameters, treatment received in hospital and outcome and angiographic profile between STEMI and NSTEMI/UA were done.

The authors certify that informed consent has been obtained from each patient and the study protocol conforms to the ethical guidelines as approved by the institution's human ethics committee.

3. Statistical methods

Statistical analysis was performed using the online statistical calculator, www.graphpad.com/.

Categorical variables were compared by chi-square test and the continuous variables are presented as mean (±SD) and were compared by unpaired t test. A probability value of <0.05 was considered statistically significant.

4. Results

A total of 704 consecutive cases of ACS were included in the present study. Out of 704 patients, 510 (72.4%) presented with STEMI and 194 (27.6%) presented with NSTEMI/UA. Of the 194 patients with NSTEMI/UA, 121 (62.37%) presented with NSTEMI and 73 (37.6%) presented with UA. Males outnumbered females in STEMI, but in NSTEMI/UA, both the sexes were almost equal. Mean age of presentation was 56.5 years. The mean age of NSTEMI/UA is higher than STEMI patients (57.2 years vs. 55.8 years, $p = 0.05$).

Mean time to presentation was 11.42 h and was higher in NSTEMI/UA than STEMI (12.86 h vs 9.98 h, $p < 0.001$). 45.02% were smokers, 43.75% were hypertensive, 36.36% were diabetic, and 27.98% had BMI ≥ 25. 24.5% of ACS presented with atypical presentation. We observed that patients with NSTEMI/UA have higher incidence of atypical presentation, higher incidence of diabetes, hypertension and high BMI, and higher mean time to presentation than STEMI (Ref Table 1).

On observing the treatment pattern, we observed that there was not much of a difference in treatment pattern between STEMI and NSTEMI/UA with high percentage in both groups of patients receiving standard medical therapy (Ref Table 1). However in STEMI, of the 510 patients, 39% patients received thrombolysis. Except 1 patient, all received streptokinase. The mean door to needle time was 30.12 min. The reasons for not administering thrombolytic therapy were the late presentation of cases in 281 (55.09%) patients, non-satisfactory ECG criteria in 12 (2.35%), and contra-indications for thrombolysis