Trends and in- hospital mortality of Acute Coronary Syndrome at Shahid Gangalal National Heart Centre, Kathmandu, Nepal during 2001-2012

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ABSTRACT

Background and aims: Acute coronary syndrome (ACS), which comprises acute ST-segment elevation myocardial infarction, non-ST segment elevation myocardial infarction and unstable angina is a major health problem and represents a large number of hospitalizations annually worldwide. We aim to describe pattern of the ACS admission and in-hospital mortality at tertiary national heart centre of the country.

Methods: A hospital database was used to analyze all 7424 patients admitted in coronary care unit of the centre for ACS from September 2001 till December 2012. We evaluated trend of ACS admission and in-hospital mortality.

Results: Five thousand three hundred ninety one (72.6%) were male and two thousand thirty three (27.4%) were female. Patient of 21years to 98 years were admitted for ACS .Four thousand five hundred and ninety nine(61.9%) patient were admitted due to ST elevation myocardial infarction, whereas one thousand nine hundred and thirteen (25.8%) were admitted for Unstable angina and nine hundred twelve (12.3%) were admitted for Non ST elevation myocardial infarction. In-hospital mortality was 5.74% for acute coronary syndrome. There was significant difference in in-hospital mortality between ST elevation myocardial infarction (7.76%), Non ST segment elevation acute coronary syndrome (3.61%) and Unstable Angina (1.88%).There is a gradual increase in Primary Percutaneous Coronary intervention as a mode of reperfusion therapy whereas there is a decrease in the rate of thrombolysis.

Conclusion: Our study provides us some important information about the trend and in-hospital mortality rate in national heart centre. Though it is a single centre study can provide us the insight of the ACS outcome.

INTRODUCTION

Atherosclerotic cardiovascular disease, manifested mainly as acute coronary syndrome (ACS),[1,2] is a major health problem and represents a large number of hospitalizations annually worldwide.[3] ACS is not only a common cause of medical consultations and admissions at emergency departments, but also is a major cause of morbidity and mortality.[4,5]It now presents as a major burden on healthcare resources.

It comprises a group of entities including acute ST-segment elevation myocardial infarction (STEMI), non-ST segment elevation myocardial infarction (NSTEMI), and unstable angina is a result of atherosclerotic and thrombotic processes.

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There are limited data on the nature and distribution of ACS in Nepal. The present study was conducted to describe pattern of the ACS admission and in-hospital mortality at tertiary national heart centre of the country.

METHODS

It was a single centre retrospective study conducted at Shahid Gangalal National heart Centre (SGNHC), Kathmandu, Nepal. A hospital database was used to analyze all 7424 patients admitted in coronary care unit (CCU) of the centre for ACS from September 2001 till December 2012. Performa was designed to collect patient information which included; age, gender, ACS diagnosis, types of reperfusion therapy used were also collected. Patients included were males and females of all age groups. The initial diagnosis was made by the attending cardiologist, based on clinical presentation, initial electrocardiographic pattern, and markers of myocardial necrosis acquired at least 6 hours after the symptom onset. We evaluated trend of ACS admission and in-hospital mortality. The study protocol was approved by the Ethics Committee of SGNHC. All the variables were entered into the Statistical Package for Social Sciences software, version 14 (SPSS Inc) for data analysis.

RESULTS

The study included all (7424) ACS patients admitted to CCU of SGNHC from September 2001 till December 2012. Five thousand three hundred ninety one (72.6%) were male and two thousand thirty three (27.4%) were female. Patient of 21years to 98 years were admitted for ACS. Four thousand five hundred and ninety nine (61.9%) patients were admitted due to STEMI, whereas one thousand nine hundred and thirteen (25.8%) were admitted for Unstable angina and nine hundred twelve (12.3%) were admitted for NSTEMI. STEMI was the most common form of ACS followed by unstable angina as shown in table 1.

Table 1. Distribution of ACS

ACS	No	%
Unstable Angina	1913	25.8
NSTEMI	912	12.3
STEMI	4599	61.9

In all forms of ACS, male predominate could be seen as shown in Table 2.

Table 2. Distribution of ACS among Male and Female

	Male		Female	
	N	(%)	N	(%)
Unstable Angina	1250	(65.4)	663	(34.6)
NSTEMI	650	(71.2)	262	(28.8)
STEMI	3491	(75.9)	1108	(24.1)

Among STEMI, Inferior wall Myocardial infarction was the most common reason for admission followed by anterior wall myocardial infarction. Table 3

Table 3 Distribution of STEMI

STEMI	No	%
Inferior	1655	35.9
Anterior	1096	23.8
Extensive Anterior	634	13.7
Antero-Septal	483	10.5
Infero-posterior	221	4.8
Inferior with RV Infraction	160	3.5
Infero lateral	96	2.1
Others	254	5.5

Among the 4599 STEMI patients, only 24.8% patients underwent reperfusion therapy. The commonly used reperfusion therapy was thrombolytic therapy. It was the mode of reperfusion therapy in 18.3% patients among STEMI patient. Only 6.4% patients underwent primary percutaneous coronary intervention (PPCI). Thrombolytic therapy constitute 74.1% of the mode of reperfusion therapy where as PPCI constitute only 25.9%.

In- hospital mortality was 5.74% for ACS. STEMI (7.76%) had the highest in hospital mortality rate followed by NSTEMI (3.61%) and Unstable Angina (1.88%).Table 4 shows the difference in the in-hospital mortality rate among male, female and overall.

Table 4 Mortality rate among Male, Female and overall

	Male	%	Female	%	Overall	%
UA	23/1250	1.84	13/663	1.96	36/1913	1.88
NSTEMI	19/650	2.92	14/262	5.34	33/912	3.61
STEMI	237/3491	6.78	120/1108	10.83	357/4599	7.76
ACS	279/5391	5.17	147/2033	7.23	426/7424	5.74

DISCUSSION

In real-life, there are substantial differences between ACS patient population and clinical trial patient population with significant heterogeneity in studies conducted in clinical practice.[6][7]In this study we provide a pattern of ACS admission and in-hospital mortality in our population of ACS patients. As our centre being the tertiary referral centre of the country, can in some extent reflect the pattern of ACS admission in the country and can be an important observation. Our study can provide a reliable contemporary picture of patients with ACS and can identify areas of possible improvement and to define strategies for optimal care delivery.

By contrast with data from developed countries, we recorded more cases of STEMI than NSTEMI and UA. The types of ACS in

our study differed from those recorded in developed countries. About 60% of patients who we assessed had STEMI, whereas in reports from developed countries, including the European Heart Surveys fewer than 40% had STEMI.[8,9,10,11]

Timely administration of reperfusion therapy by primary angioplasty or thrombolysis is the recommended treatment for most patients with STEMI.[12,13]Reperfusion treatment was administered in hospital to 27.5% of patients with STEMI. Failure to reach the hospital within 12 hours is the primary reason for not instituting the thrombolytic therapy in STEMI.

The reperfusion rates observed in this study are very low to those reported in the most recent surveys which clearly demonstrate the existing difference in our study and the developed countries. In the Global Registry of Acute Coronary Events (GRACE) registry, 47% of STEMI received thrombolytic treatment, and 18% primary PCI with an overall ratio similar to Euro Heart Survey ACS (2.6:1).However, huge differences were observed among different geographic areas, from a ratio of 1.6:1 in the USA to a ratio of 64:1 in the area Australia–New Zealand–Canada.[12]

ACS in-hospital mortality of 5.74% was comparable to the 5.53% in the Brazilian registry.[14]In-hospital mortality of STEMI patients (7.76%) in our study is lower than that reported in the National Registry of Myocardial Infarction 3 study (9%)[15] and of Brazilain registry (8.10%).[14]Likewise, in-hospital mortality of NSTEMI in our study is 3.39 % is much lower than the 7%[16] of Malaysian registry and 6.80% in Brazilian registry.[14]When we compared in-hospital mortality 1.93% of Unstable Angina is lower than the Malaysian registry which has mortality of 3%.[16]

Single centre, retrospective study is some of the limitation of our study.

CONCLUSION

The present study provides a better picture of trends and in-hospital mortality in our centre. Since the present study includes tertiary cardiac care centre of Nepal, the in-hospital mortality cannot represent the whole country. This study finding also suggests that favorable outcomes, matching the international can be achieved in the management of ACS.

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