Demographic, Management Practices and In-Hospital Outcomes of Thai Acute Coronary Syndrome Registry (TACSR)†: The Difference from the Western World

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Background: *To establish a national registration of acute coronary syndrome (ACS) registry in Thailand by networking health service institutions to determine the demographic, management practices, and in-hospital outcomes of patients with ACS.*
Material and Method: *The Thai ACS registry is a multi-center prospective project of nationwide registration in Thailand. Institutions were invited to participate in the registry through members of the Heart Association of Thailand. A series of workshops were organized to ensure standardization and quality control of the data and conduct of the present study. Web-based double data entry was used and the data were centrally managed and analyzed.*
Results: *The enrollment of the patients started in August 2002. After three years, records of 9,373 patients were collected from 17 hospitals. The patients were classified as ST elevation myocardial infarction (STEMI) (40.9.%), non-ST-elevation myocardial infarction (NSTEMI)(37.9%) and unstable angina (UA)(21.2%). The STEMI group was younger, predominantly male, with a fewer number of diabetes than NSTEMI or UA. About half of the STEMI patients (52.6%) received reperfusion therapy. Primary percutaneous coronary intervention (PCI) was performed in 22.2% of STEMI. The median door to needle and door to balloon time were 85.0 and 122 minutes respectively. The median times to treatment were 240 minutes in the thrombolysis group and 359 minutes in the primary PCI group. Nearly half of NSTEMI and UA went to coronary angiography and about one-fourth of them received revascularization either PCI or coronary artery bypass grafting in the same admission. The total mortality rate was high in STEMI (17.0%) followed by NSTEMI (13.1%) and UA (3.0%).*
Conclusion: *Thai ACS registry provides a detail of demographic, management practices, and in-hospital outcomes of patients with ACS. Time from onset to admission, door to needle time and door to balloon time were considered as suboptimal. Overall, in-hospital mortality is higher than reports from Western countries. The raising awareness among the general population about urgency of seeking medical attention for chest pain and concerted effect to improve in-hospital time delay is warranted. These data may have an impact on our health care system and alert the government to adopt an appropriate policy to solve these problems.*

Keywords: *Acute coronary syndrome registry, ST-elevation myocardial infarction, Non-ST-elevation myocardial infarction, Unstable angina*

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Acute coronary syndrome (ACS) is a serious medical condition associated with high morbidity and mortality. The Thai ACS registry is aimed to be a multicenter, prospective registry that collects data about epidemiology, management practices, and in-hospital outcomes of the ACS patients in Thailand. The registry works through the mechanism of networking of health services institutions. The present article reports the main initial findings, clinical and demographic characteristics of the patients, initial management, practice variations (including important medications and interventional procedures), and in-hospital outcomes. These data may support the evidence-based practices and may be used to develop the new clinical practice guideline for the country.

Material and Method

Participating hospitals

Seventeen hospitals, governmental and private, from every region in Thailand voluntarily participated in The Thai ACS registry. The characteristics of the participating hospitals are shown in Table 1. A series of workshops was organized to standardize and control quality of the data and conduction of the present study.

Inclusion and exclusion criteria

Consecutive patients were enrolled prospectively. The inclusion criteria were admitted patients with the discharge diagnosis of acute coronary syndrome. The index ACS symptoms, e.g. chest pain or angina equivalents, had to occur within 14 days before enrollment and accompanied by electrocardiographic ST segment deviations or T wave changes. At discharge, the patients were classified into one of the following categories: ST-segment elevation myocardial infarction (STEMI), non-STEMI (NSTEMI), or unstable angina (UA). The authors excluded the patients who had to be re-admitted because of ACS.

Diagnostic criteria for acute myocardial infarction and unstable angina

Acute myocardial infarction (AMI). Symptoms felt to be consistent with cardiac ischemia within 24 hours of hospital presentation and at least one of the following: increase in cardiac enzymes (based on laboratory values at local participating hospitals) (1) total creatine phosphokinase or creatine kinase MB fraction > 2 times upper limit of the hospital's normal range and/or (2) positive troponin I or T results (if performed).

ST segment elevation acute myocardial infarction (STEMI) is defined as new or presumed new ST-segment elevation at the J point in 2 or more contiguous leads with greater than or equal to 0.2 mV in V1, V2, or V3 or greater than or equal to 0.1 mV in other leads or presence of a new left bundle branch block in the setting of positive cardiac enzyme results.

Non-ST-segment elevation myocardial infarction (NSTEMI) is defined as occurrence of acute myocardial infarction in the setting of positive cardiac enzyme results with accompanying electrocardiographic changes other than ST segment elevation.

Unstable angina (UA). Symptoms felt to be consistent with acute cardiac ischemia within 24 hours of hospital presentation with ST-T wave changes and serial enzymes negative for myocardial infarction.

Baseline characteristics

Age, gender and race were recorded. Diabetes was diagnosed when the patients had a history of diabetes controlled by diet and/or anti-diabetic medications, or a fasting plasma glucose was 126 mg/dl or higher at least on two occasions. Hypertension was documented by a history of hypertension previously diagnosed and treated with medications or life style modification, or blood pressure greater than 140 mmHg systolic or 90 mmHg diastolic on at least 2 occasions. Dyslipidemia was diagnosed if 1) the patient was previously diagnosed and/or treated with lipid lowering agents. 2) Total cholesterol > 200 mg/dl or LDL cholesterol ≥ 130 mg/dl or HDL cholesterol < 40 mg/dl. Smoking was defined as non-smoker if the patients never smoked or quit smoking equal or more than 2 years, ex-smoker when the patients quit smoking for less than 2 years, current smoker if the patients still habitually smoked. History of stroke was documented if previously diagnosed by physicians and/or had a history of neurological function loss caused by a vascular event with residual symptoms at least 24 hours after onset. Family history was positive if the patients had any direct relatives (parents, siblings, and children) who had angina or myocardial infarction or sudden death without obvious cause at age less than 55 years (male) or less than 65 years (female).

Clinical presentation

Typical angina chest pain was defined as chest pain typical of myocardial ischemia (chest, arm, or jaw pain/pressure aggravated by exertion or stress, and relieved by rest or nitroglycerine). Atypical angina chest pain was chest pain that could not be

characterized as typical angina. Cardiogenic dyspnea was noted if the patient had shortness of breath on exertion and/or orthopnea and/or paroxysmal nocturnal dyspnea. Palpitation was defined as the patient's sense of abnormal heart rhythm. Syncope was defined as transient loss of consciousness with spontaneous recovery without neurological deficit. Congestive heart failure (or Killip class II) was defined as bibasilar rales in $\leq$ 50% of lung fields or presence of an S3 gallop. Killip class III was defined as bibasilar rales in > 50% of lung fields. Cardiogenic shock (Killip class IV) was defined as symptomatic hypoperfusion with systolic blood pressure < 90 mm Hg.

Reperfusion

Reperfusion either thrombolysis or primary percutaneous coronary intervention (PCI) was used in patients with STEMI. NSTEMI and UA patients who received revascularization were classified as early invasive or elective. The early invasive group was defined when the patients received revascularization within 7 days of onset of chest pain.

Outcomes

Death was recorded if the patients died during hospitalization and classified as cardiac death or non-cardiac death. Congestive heart failure during hospitalization was defined as none, within the first 48 hours or after 48 hours. Major bleeding was defined as overt clinical bleeding (or documented intracranial or retroperitoneal hemorrhage) requiring blood transfusion or associated with a drop in hemoglobin of greater than 5 g/dL or hematocrit of greater than 15%. Serious cardiac arrhythmia was classified as heart block (at least 2nd degree AV block) or ventricular arrhythmia (either ventricular tachycardia or ventricular fibrillation).

Data management

The data collection was extracted from medical records by trained critical care nurses and re-checked by principle investigators at each site. Web-based double data entries were used to prevent the data entry error. Internal and external auditing at every site was regularly performed every 3-6 months. Data were entered into the data-management center at the Heart Association of Thailand. Then the data were clean and analyzed.

Statistical analysis

Categorical data were summarized as frequencies and percentages. Continuous variables were reported as mean $\pm$ SD or median and 25th and 75th percentiles. Differences between patient groups were examined using chi square tests for categorical variables. Differences in continuous variables between groups were analyzed using either analysis of variance or t tests. All tests were double-sided and considered statistically significant at $p < 0.05$. The analysis was performed with STATA/SE 8 software package (StataCorp LP, Texas, USA).

Results

The Thai ACS registry program started to register patients in August 2002 involving 17 medical centers. The characteristics of participant hospitals are shown in Table 1. After 3 years, 9,373 patients with 10,342 episodes were enrolled. Using the discharged diagnosis criteria described previously, the patients

Table 1. Characteristics of participating hospitals

Characteristics of participating hospitals	number	(%)
Number of hospitals	17	
Location		
- Metropolitan, n (%)	13	(76.5%)
Government, n	10	(76.9%)
Private, n	3	(23.1%)
- Regional government, n (%)	4	(23.5%)
Number of hospital beds, median (IQR)	737	(335-976)
Number of CCU beds, median (IQR)	6	(5-8)
Number of ACS admission/year, median (IQR)	231	(168-261)
Cardiac catheterization, n (%)	16	(94.1%)
Emergency on call for primary PCI, n (%)	11	(64.7%)
Open-heart surgery, n (%)	16	(94.1%)

ACS - acute coronary syndrome; PCI - percutaneous coronary intervention; IQR - interquartile range

Table 2. Baseline characteristics of the patients according to discharge diagnosis

	UA n = 1,989 (21.2%)	NSTEMI n = 3,548 (37.9%)	STEMI n = 3,836 (40.9%)	Total n = 9,373	p-value
Median age, (yrs)	66.6	68.8	62.9	66.4	<0.001
Age (yrs)					
< 45 (%)	3.7	3.0	9.5	5.8	
45-54 (%)	14.1	11.3	21.7	16.2	
55-64 (%)	26.9	21.9	23.9	23.8	
65-74 (%)	35.2	35.0	28.8	32.5	
≥ 75 (%)	20.1	28.8	16.0	21.7	
Mean age (yrs) ± SD	65.8 ± 11.0	68.0 ± 11.6	62.2 ± 12.8	65.2 ± 12.3	<0.001
Male (%)	52.5	54.9	68.1	59.8	<0.001
Presenting symptom					
: Chest pain (%)	96.7	86.0	91.6	90.6	<0.001
: Typical angina (%)	84.2	71.7	82.0	78.6	<0.001
: Atypical angina (%)	13.1	15.7	10.0	12.8	<0.001
: Dyspnea (%)	24.0	41.3	24.8	30.8	<0.001
: Shock (%)	1.2	6.3	16.3	9.3	<0.001
: Cardiac arrest (%)	0.9	2.7	7.3	4.2	<0.001
Killip classification					<0.001
: Killip I (%)	73.5	46.9	59.3	57.6	
: Killip II (%)	21.9	30.3	15.1	21.9	
: Killip III (%)	10.2	15.0	8.32	10.2	
: Killip IV (%)	1.2	7.8	17.3	10.3	
Risk factors					
: Diabetes (%)	45.5	50.9	37.2	44.2	<0.001
: Hypertension (%)	73.9	71.7	51.4	63.9	<0.001
: Dyslipidemia (%)	78.4	76.7	72.5	75.4	<0.001
: Smoking (%)	23.4	25.3	42.7	32.0	<0.001
: Family Hx of CAD (%)	10.3	8.1	10.0	9.3	<0.001
Refer (%)	25.1	31.4	54.2	39.5	<0.001
Time to admission	n = 1,286	n = 2,076	n = 1,532	n = 4,894	
- median (hr)	4.17	4.99	3.00	4.00	
- mean (hr) ± SD	21.41 ± 46.0	18.07 ± 33.5	12.11 ± 30.8	17.38 ± 36.6	<0.001

UA-unstable angina; NSTEMI-non-ST-elevation myocardial infarction; STEMI-ST-elevation myocardial infarction; CAD-coronary artery disease

were subsequently divided into 3 groups, STEMI (40.9%), NSTEMI (37.9%) and UA (21.2%). The baseline characteristics of the patients are shown in Table 2. Approximately half of the patients were older than 65 years old (range 23-105 years). Patients who presented with STEMI were younger than those who presented with NSTEMI or UA (62.2 vs. 68.0 vs. 65.8, $p < 0.001$). There were a higher proportion of patients presenting with NSTEMI and UA in the older age group when compared with the younger age group (Fig. 1). Males were significantly predominant in STEMI than the other groups.

There was a high prevalence of diabetes (44.2%), 63.9% had hypertension, 75.4% had dyslipidemia and 32.0% were either current smokers or ex-smokers. Importantly, 12.5% of the diabetic patients and 38% of patients with of dyslipidemia were newly diagnosed cases at the time of presentation. The proportion of smokers was significantly higher in STEMI compared to NSTEMI and UA. Smoking was an important risks factor in males especially the younger age group (73.32% in males younger than 45 years old vs. 29.2% in males older than 75 years old).

The presenting symptom was somewhat varied in each group. The typical angina was a less common presentation in NSTEMI patients who presented more commonly with atypical angina as well as cardiogenic dyspnea.

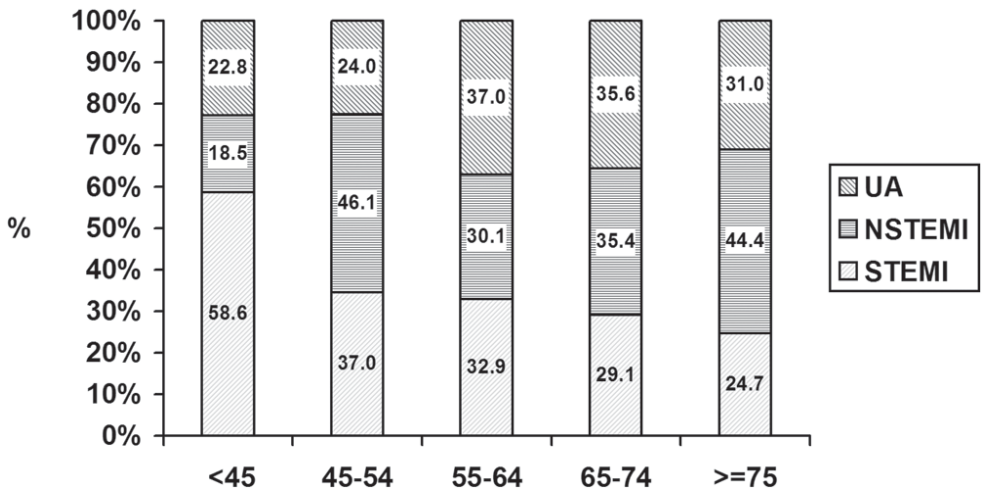

Fig. 1 Frequency of discharge diagnosis according to age group
UA-unstable angina; NSTEMI-non-ST-elevation myocardial infarction; STEMI-ST-elevation myocardial infarction

Table 3. Reperfusion treatment in STEMI

	STEMI n = 3,836	(%)
Reperfusion treatment	2,018	52.6
: Thrombolytic	1,165	30.4
- Tissue plasminogen activator	68	1.8
- Streptokinase	1,097	28.6
: Door to needle time (no refer, n = 664)		
- median (min)	85.0	
- mean (min) ± SD	114.0 ± 96	
: Time to treatment (no refer, n = 973)		
- median (min)	240.0	
- mean (min) ± SD	283.0 ± 190.6	
: Primary PCI	853	22.2
: Door to balloon time (no refer, n = 829)		
- median (min)	122.0	
- mean (min) ± SD	171.7 ± 180.7	
: Time to treatment (no refer, n = 831)		
- median (min)	359.0	
- mean (mean) ± SD	452.0 ± 299.8	
: Rescued PCI	128	3.3
: Emergency CABG	94	2.5
Elective PCI	761	19.8
Elective CABG	136	3.6
CAG	2,406	62.7
: Abnormal	2,349/2,406	97.6

Reperfusion treatment indicated the patient who presented within 12 hours from onset of chest pain or more than 12 hours but within 24 hours with persistent chest pain
STEMI-ST-elevation myocardial infarction; PCI-percutaneous coronary intervention; CABG-coronary artery bypass grafting; CAG-coronary angiography

In the STEMI group, cardiogenic shock and cardiac arrest were significantly more common than the NSTEMI and UA. The median onset of pain to admission was less in STEMI (3 hrs for STEMI versus 5.0 hrs for NSTEMI versus 4.2 hrs for UA). About 52.6% of STEMI received reperfusion therapy either thrombolytic or primary percutaneous coronary intervention (PCI) (Table 3). In STEMI patients, 30.4% received thrombolysis with a median door-to-needle time of 85 minutes. Only 9% of the patients received thrombolysis within 30 minutes. Streptokinase is the agent commonly used. Nearly one-fourth of STEMI received primary PCI. Median door to balloon time for those receiving primary PCI was 122 minutes, which translated into 34% receiving it within 90 minutes. Elective PCI was performed in 19.8% of the patients in this group. Only 3.6% of the patients have undergone coronary artery bypass grafting (CABG) in the same admission. The utilization of catheterization and revascularization during hospitalization in patients with NSTEMI and UA are shown in Table 4. There was no significant difference among the employed strategies of revascularization either early invasive or elective.

With regard to pharmacological treatments during hospitalization (Table 5), more than 90% of the patients received aspirin. The ADP inhibitor (clopidogrel or ticlopidine) was prescribed more often in STEMI than NSTEMI or UA while low molecular weight

Table 4. The utilization of catheterization and revascularization during hospitalization in patients with NSTEMI and UA

	UA n, (%)	NSTEMI n, (%)	p-value
Number of patients	1,989	3,548	
Coronary angiography	920 (46.3)	1,556 (43.9)	0.085
: Abnormal	801/920 (87.1)	1,492/1,556 (95.9)	<0.001
Revascularization	492 (24.7)	938 (26.4)	
: PCI	382 (19.2)	701 (19.8)	
- Early invasive	224 (11.3)	464 (13.1)	0.619
- Elective	158 (7.9)	237 (6.7)	0.043
: CABG	111 (5.6)	285 (8.0)	
- Emergency	16 (0.8)	60 (1.7)	0.132
- Elective	95 (4.8)	225 (6.3)	0.001

UA-unstable angina; NSTEMI-non-ST-elevation myocardial infarction; PCI-percutaneous coronary intervention; CABG-coronary artery bypass grafting

Table 5. Pharmacological treatment during hospitalization

Medications	UA n (%)	NSTEMI n (%)	STEMI n (%)	p-value
Number of patients	1,989	3,548	3,836	
Aspirin	1,871 (94.1)	3,358 (94.6)	3,651 (95.2)	0.188
ADP inhibitor	1,064 (53.5)	2,076 (58.5)	2,317 (60.4)	<0.001
LMWH	1,239 (62.3)	2,561 (72.2)	1,945 (50.7)	<0.001
Unfractionated heparin	327 (16.4)	754 (21.3)	1,085 (28.3)	<0.001
GP IIb/IIIa inhibitor	64 (3.2)	188 (5.3)	748 (19.5)	<0.001
Beta-blocker	1,431 (71.9)	2,185 (61.6)	2,237 (58.3)	<0.001
ACE inhibitor	1,099 (55.3)	2,039 (57.5)	2,278 (59.4)	0.009
ARB	222 (11.2)	311 (8.8)	205 (5.3)	<0.001
Statin	1,626 (81.7)	2,891 (81.5)	2,972 (77.5)	<0.001

UA-unstable angina; NSTEMI-non-ST-elevation myocardial infarction; STEMI-ST-elevation myocardial infarction; ADP-adenosine di-phosphate; LMWH-low molecular weight heparin; GP-glycoprotein; ACE-angiotensin converting enzyme; ARB-angiotensin receptor blocker

Table 6. Hospital outcomes in patients with unstable angina, non-ST elevation myocardial infarction and ST elevation myocardial infarction

Outcomes	UA	NSTEMI	STEMI	Total	p-value
Number of patients	1,989	3,548	3,836	9,373	
CHF (%)	27.4	56.2	44.1	45.1	<0.001
CHF after 48 hrs (%)	2.9	5.5	7.8	6.0	<0.001
Serious cardic arrhythmia (%)	3.2	10.6	29.1	16.6	<0.001
: Heart block	1.4	3.1	11.5	6.2	
: Ventricular arrhythmia	1.8	8.1	19.4	11.4	
Stroke (%)	0.8	2.1	2.5	2.0	<0.001
: Ischemic	0.8	1.7	1.9	1.6	
: Hemorrhagic	0	0.1	0.6	0.3	
Major bleeding (%)	2.0	6.0	7.9	5.9	<0.001
Death (%)	3.0	13.1	17.0	12.6	<0.001
: Killip I	1.9	7.2	8.0	6.1	
: Killip II	2.5	11.6	13.1	10.2	
: Killip III	8.8	17.1	18.8	16.8	
: Killip IV	54.2	47.3	50.5	49.6	
: Cardiac	2.4	8.6	14.7	9.8	
: Non-cardiac	0.6	4.5	2.2	2.8	
Length of stay (days)					
: mean $\pm$ SD	8.6 $\pm$ 8.8	11.8 $\pm$ 12.6	9.4 $\pm$ 12.3	10.1 $\pm$ 11.8	0.001
: median	6.0	8.0	6.0	6.8	

UA-unstable angina; NSTEMI-non-ST-elevation myocardial infarction; STEMI-ST-elevation myocardial infarction; CHF-congestive heart failure

heparin (LMWH) was remarkably prescribed more in NSTEMI than STEMI or UA. About 19.5% of STEMI received glycoprotein IIb/IIIa inhibitor while only 3.2% of UA received this medication. Statins were given in more than 75% of each group.

Overall in-hospital case fatality rate for ACS was 12.6%. Case fatality rate was significantly higher in STEMI than in NSTEMI and UA (17.0%, 13.1%, and 3.0% respectively) (Table 6). Congestive heart failure, cardiogenic shock, serious cardiac arrhythmia and major bleeding were also significantly more common in STEMI. NSTEMI had significantly longer hospital stay than STEMI or UA ($p < 0.001$). By excluding referral cases, the median length of stay (LOS) for ACS patients was 6.8 days. Higher median LOS was seen in NSTEMI patients as compared to STEMI and UA (8.0 versus 6.0 versus 6.0 days, $p < 0.001$).

Discussion

This is the first formally organized multicenter registry for ACS initiated by members of the Heart Association of Thailand with co-support mainly from the Thai Health Promotion Foundation, Health System Research Institute and Clinical Research Collaboration Network in Thailand. The data of the present study are quite impressive and demonstrate the difference of real-life practices from the standard clinical practice guidelines[1,2]. The main objective of the present study was to show the demographic, management practice and clinical in-hospital outcomes. The data also have some differences from the GRACE and NRMI registry[3,4]. First, 70.1% of participant hospitals in this registry are academic/medical teaching hospital and 94.1% of these have catheterization laboratory and facilities for open-heart surgery when compared with the participant hospitals in the GRACE registry in which only 50% are academic/medical teaching hospitals, 66% have catheterization laboratory facility and 47% can perform open heart surgery. It means that most of the presented participating hospitals are tertiary and referral centers. About 39.5% of the patients were referred from another hospital and more than 50% of the STEMI patients were sent to the participant hospitals. Secondly, the inclusion criteria in this registry enrolled all the patients if he or she has any symptoms suggestive of ACS with ST-T changes, whereas the GRACE registry had excluded subjects with co-morbidity, trauma, or surgery. Thirdly, the presence of cardiogenic shock

(Killip 4) in the present study is more frequent than in the GRACE registry (17.3% versus 7.0% for STEMI). The mortality in this group of patients is almost 50%. Fourthly, the number of diabetic patients in this registry is unexpectedly high but the percentage of smokers or history of smoking is lower. It is not surprising since GRACE had excluded those with co-morbidity, therefore it is very likely that they will have a lower percentage of diabetic patients (37.2% versus 21.0% for STEMI; 50.9% versus 27.0% for NSTEMI; 45.5% versus 25 for UA). This is important since the present study clearly shows that the presence of diabetes conferred more complications, longer hospital stay, and higher mortality. Also of note, 12.5% were newly diagnosed diabetes cases whose ACS attack might have been partially preventable. Fifth, the pain onset to admission is longer than the GRACE registry, then reperfusion therapy was initiated in a smaller percentage than the GRACE registry (52.6% versus 62.0%). The door to needle time, an indicator of health care quality, remained unexpectedly long (85.0 minutes) compared to that the Western institutes but it was similar to the recent published data from Saudi Arabia[5]. Importantly, of those receiving thrombolysis, only 9% received it within the 30 minutes benchmark, a far cry from British Heart Foundation recommendation whose set goal was that more than 75% of the patients should receive thrombolysis within 30 minutes. As well as the door to balloon time, the TACSR (median time = 122 minutes) is still higher than recommended by the guideline. Hence, the outcomes, particularly cardiogenic shock and mortality rate in the present study is high. Most cases receive streptokinase as a thrombolytic therapy. It is different from the ESC guideline[2] recommendation and data from the GUSTO study[6]. This may be due to financial reasons. However, nearly half of the patients received primary PCI for reperfusion treatment. Many data have demonstrated the higher rate of reperfusion, lower rate of reinfarction and mortality when compared with thrombolytic treatment[7-12]. The utilization of catheterization and revascularization in NSTEMI and UA are not much different from the GRACE registry (43.9% versus 53.0% for NSTEMI and 46.6% versus 42.0% for UA). However, the utilization was less in the STEMI group when compared with the NRMI-2[13]. The utilization of catheterization in uncomplicated first acute myocardial infarction treated with thrombolysis was up to 78%. The rate of use of glycoprotein IIb/IIIa inhibitor as an adjunctive treatment is also less than in GRACE or NRMI[14]. Because of the higher beneficial evidence of the use of statin treatment[14-18] in coronary artery disease, the number of patients who received statin is much higher than the GRACE registry (75% versus 47%).

What have the authors learned from the Thai ACS registry? The unimpressive mortality rate of the presented patients has to be considered. The late presentation of the patients to hospital should be improved by giving more education to the general public. Aggressive treatments should be considered in cardiogenic shock patients. Diabetes is another important factor to have effect on the in-hospital mortality. The pattern of the disease in the patients may be different from the West. These problems may impact the health care system and alert the government to make a strategy for the coronary artery disease prevention.

Study limitations

There are some limitations for the Thai ACS registry. First, most of the participant hospitals are tertiary care centers; the severity of the patients seems to be higher than the other registries and may not reflect the true demographic and outcomes of community-based hospitals. Secondly, some data in this registry are not completely recorded on the medical form, particularly for the referred patients. However, the authors attempted to complete the data as much as possible.

Contributors

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ปัจจัยพื้นฐาน การรักษา และผลที่เกิดขึ้นในโรงพยาบาลในโครงการลงทะเบียนผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันแห่งประเทศไทย: ความแตกต่างจากโลกตะวันตก

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ภูมิหลัง: *เพื่อสร้างฐานข้อมูลการลงทะเบียนผู้ป่วย acute coronary syndrome (ACS) แห่งชาติ โดยอาศัยเครือข่ายความร่วมมือของสถาบันที่ให้บริการทางการแพทย์ ในการศึกษาลักษณะประชากร, แนวทางการรักษา และผลการรักษาในผู้ป่วย ACS ที่รับไว้ในโรงพยาบาล*

วัสดุและวิธีการ: *การลงทะเบียนผู้ป่วย Thai ACS เป็นโครงการการศึกษาไปข้างหน้าแบบสหสถาบันทั่วประเทศไทย สถาบันที่เข้าร่วมได้รับเชิญผ่านทางสมาคมแพทย์โรคหัวใจแห่งประเทศไทยในพระบรมราชูปถัมภ์ มีการจัดประชุมเชิงปฏิบัติการหลายครั้ง เพื่อสร้างมาตรฐานและควบคุมคุณภาพของข้อมูล ข้อมูลทั้งหมดจะลงผ่านทางเว็บไซท์และเป็นการลงข้อมูล 2 ครั้ง เพื่อป้องกันการผิดพลาด ข้อมูลจะถูกเก็บและบริหารจัดการที่ส่วนกลาง*

ผลการศึกษา: *การเก็บข้อมูลเริ่มตั้งแต่เดือนสิงหาคม พ.ศ. 2545 หลังจากการเก็บข้อมูลเป็นเวลา 3 ปี มีจำนวนผู้ป่วยทั้งหมด 9,373 คนจาก 17 โรงพยาบาล แบ่งเป็นผู้ป่วย STEMI 40.9%, non-STEMI 37.9% และ unstable angina (UA) 21.2% ผู้ป่วย STEMI มีอายุน้อยกว่า เป็นเพศชายมากกว่า แต่สัดส่วนของผู้ป่วยเบาหวานน้อยกว่าในกลุ่ม non-STEMI และ UA ประมาณครึ่งหนึ่งของผู้ป่วย STEMI (52.6%) ได้รับการรักษาเพื่อเปิดหลอดเลือด (reperfusion) โดยเป็นการทำบอลลูนขยายหลอดเลือด (primary PCI) 22.2% มัธยฐานเวลา door to needle และ door to balloon เท่ากับ 85 และ 122 นาทีตามลำดับ ส่วนค่ามัธยฐานเวลา door to treatment เท่ากับ 240 และ 359 นาที สำหรับการให้ยาละลายลิ่มเลือดและการทำ primary PCI ตามลำดับ เกือบครึ่งของผู้ป่วย non-STEMI และ UA ได้รับการทำการฉีดสีดูหลอดเลือดหัวใจ โดยที่หนึ่งในสี่ได้รับการทำ revascularization ด้วยวิธี PCI หรือการทำผ่าตัดต่อหลอดเลือดในขณะที่อยู่โรงพยาบาล อัตราตายของผู้ป่วย STEMI เท่ากับ 17.0% ตามด้วย non-STEMI 13.0% และ UA 3.0%*

สรุป: *โครงการลงทะเบียนผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันแห่งประเทศไทยให้รายละเอียดเกี่ยวกับข้อมูล demographic แนวทางการรักษา และ outcomes ในโรงพยาบาล ระยะตั้งแต่เจ็บหน้าอกจนมาถึงโรงพยาบาล และได้รับการรักษายังต่ำกว่ามาตรฐาน อัตราตายในโรงพยาบาลสูงกว่าข้อมูลที่รายงานจากประเทศตะวันตก การให้ความรู้แก่ประชาชนในการที่จะรีบมาโรงพยาบาลเมื่อมีอาการเจ็บหน้าอกรุนแรง และการบริหารจัดการในโรงพยาบาลเพื่อที่จะลดระยะเวลาที่สูญเสียไปจะทำให้ผู้ป่วยได้รับการรักษาที่เร็วขึ้น อาจทำให้อัตราตายในโรงพยาบาลลดลง ข้อมูลต่าง ๆ เหล่านี้สามารถใช้เป็นแนวทางเพื่อพัฒนาระบบสาธารณสุขและวางแนวนโยบายของรัฐบาลเพื่อแก้ปัญหาเหล่านี้*