Thai Registry in Acute Coronary Syndrome (TRACS) - An Extension of Thai Acute Coronary Syndrome Registry (TACS) Group: Lower In-Hospital but Still High Mortality at One-Year

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Background: *The Thai Registry of Acute Coronary Syndrome (TRACS) registry was conducted five years after the first Thai Acute Coronary Syndrome (ACS) registry.*
Objective: *To describe demographics, management practices, and in-hospital outcomes of current Thai ACS patients and to seek for any significant changes in this registry from the earlier first Thai ACS registry.*
Material and Method: *The TRACS is a multi-centers, prospective, nation-wide registration with 39 participating medical centers. Web-based data entry was used and the data were centrally managed and analyzed.*
Results: *Between October 2007 and December 2008, 2,007 patients were enrolled. Fifty-five percent had ST elevation myocardial infarction (STEMI), 33% had non-ST-elevation myocardial infarction (NSTEMI), and 12% had unstable angina (UA). Overall prevalence of diabetes was 50.7%. The STEMI group was younger, predominantly male, with less diabetes than NSTEMI. At presentation, lower percent of cardiogenic shock (7.9%) and cardiac arrest (2.8%) were noted. Sixty seven percent of the STEMI received reperfusion therapy. Thrombolysis was given in 42.6% and primary percutaneous coronary intervention (PCI) was performed in 24.7% of all STEMI patients. Median door-to-needle and door-to-balloon time were 65 and 127 minutes. The median time-to-treatment was 285 min in the thrombolysis group and 324 min in the primary PCI group. Regarding NSTE-ACS, coronary angiography was performed in 38.4% and about one-fourth received revascularization either by PCI or bypass surgery during index admission. In-hospital mortality was 5.3% for STEMI, 5.1% for NSTEMI, and 1.7% for UA. When following the patients up to 12 months, the mortality was 14.1%, 25.0%, and 13.8% respectively.*
Conclusion: *The TRACS registry showed differences in demographic, management practices and in-hospital outcomes of the Thai ACS patients. Although mortality rate in this registry decreased significantly as compared to the first Thai ACS registry, the results had to be interpreted with caution because of the difference in characteristics and severity of the enrolled patients. At 12-month follow-up, the mortality rate was significantly higher in NSTEMI than STEMI or UA patients. Practice management should be considered particularly for the invasive strategy for these groups of patients.*

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

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The first Thai Acute Coronary Syndrome (TACS) registry, which was conducted between 2002 and 2004[1], demonstrated two times higher in-hospital mortality when compared with the GRACE registry[2]. However, some baseline characteristics were different particularly the severity of patients and much higher prevalence of diabetes. The door-to-balloon time in the first registry was longer than standard guideline recommendation[3,4]. The delay reperfusion affects the worst outcomes of the patients. National Health Security Office realized this situation and set-up the network fast track for ST-elevation myocardial infarction (STEMI) to minimize the door-to-balloon time and expect to increase the reperfusion rate. This article would like to compare demographics, management practices, and in-hospital outcomes with the first TACS registry.

Material and Method

The TRACS or second Thai ACS registry is a multi-centered, prospective, nation-wide registration with 39 participating medical centers. Web-based data entry was used and the data were centrally managed and analyzed. The present study was approved by the Ethics Committee and informed consents had to be obtained before the enrollment.

Participating hospitals

Thirty-nine hospitals, governmental and private, from every region in Thailand voluntarily participated in the TRACS. Each hospital had to enroll consecutive 50 to 80 patients. The characteristics of the participating hospitals are shown in Table 1. Distribution of participating hospitals was more generalized than the first TACS registry.

Inclusion and exclusion criteria

The authors used the same inclusion criteria as described in the first TACS registry [1]. Consecutive patients were enrolled prospectively. 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 only criteria diagnosis for diabetes has been changed by including the criteria of HbA1C greater than 6.5%. The authors excluded the patients who had to be re-admitted because of ACS.

Statistical analysis

This is a descriptive study. Categorical data were summarized as frequencies and percentages. Continuous variables were reported as mean $\pm$ SD or median, 25th, and 75th percentiles. The STATA version 8 was used for data analysis.

Results

The participant hospitals in the TRACS had more distribution into regional areas and less to have

Table 1. Characteristics of participating hospitals

	1st registry (2002-2004)	2nd registry (2007-2008)
Number of hospitals	17	39
Location		
Metropolitan, n (%)	13 (76.5%)	16 (41.0%)
Government, n (%)	10 (58.8%)	10 (25.6%)
Private, n (%)	3 (17.6%)	6 (15.4%)
Regional government, n (%)	4 (23.5%)	23 (59.0%)
Government, n (%)	3 (75%)	22 (56.4%)
Private, n (%)	1 (25%)	1 (2.6%)
Number of hospital beds, median (IQR)	755 (418-1,110)	602 (100-2,279)
Number of CCU beds, median (IQR)	6 (5-8)	6 (0-22)
Number of ACS admission/year, mean (range)	275 (150-400)	428 (150-1,140)
Cardiac catheterization, n (%)	16 (94.1%)	22 (56.4%)
Emergency on call for primary PCI, n (%)	11 (64.7%)	17 (43.6%)
Open-heart surgery, n (%)	16 (94.1%)	22 (56.4%)

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

catheterization or open-heart surgery facility than the previous registry (Table 1). Between October 2007 and December 2008, 2,007 patients were consecutively enrolled. The STEMI patients were enrolled in higher percent than the previous registry (from 40.9% up to 54.9%). Average mean age had slightly decreased and males seemed to be more predominant in second registry (Table 2). Severity at presentation using Killip classification showed that patients in TRACS had less cardiogenic shock particularly in STEMI and less cardiac arrest than the first registry. Diabetes still had high prevalence in this registry (50.8%). NSTEMI had highest prevalence of diabetes (57.5%).

In the STEMI group, percent of patients who received reperfusion treatment was increased from 52.6% in first registry to 67.2% in second registry (Table 3). Of these, 42.6% received thrombolysis therapy and 24.7% received primary percutaneous coronary intervention. Median door-to-needle time has significantly improved by a decrease from 85 minutes in the first registry to 65 minutes in the second registry. However, door-to-balloon time has not changed. Streptokinase was still the thrombolysis of choice. Overall coronary angiography (CAG) was performed in only half of the patients. In non-ST elevation ACS group, CAG was also less performed than the first registry (Table 4). Only 12.9% in UA patients and 16.7% in NSTEMI patients received early invasive strategy according to the guideline. Important medications are shown in Table 5. Adenosine di-phosphate (ADP) inhibitor and statin were given in higher percent than the previous registry. However, beta-blocker and angiotensin converting enzyme inhibitor (ACEI)/ angiotensin receptor blocker (ARB) agent were still used in lower percent than the guideline recommendation.

In-hospital mortality in the second registry was significantly reduced in all categories of ACS patients when compared with the first registry (Table 6). Mortality rate in the STEMI group markedly reduced from 17.0% to 5.3%. As well as for the NSTEMI group, the mortality rate decreased from 13.1% to 5.1%. Because of the less severity in the second registry due to less cardiogenic shock and less cardiac arrest at presentation, the authors classified the severity using Killip classification and looked into the in-hospital mortality in each group. The authors found that the in-hospital mortality according to Killip class was also reduced from the first registry in almost all categories. Other outcomes such as congestive heart failure, serious cardiac arrhythmia, stroke or bleeding complications had a trend in the same direction as in-hospital mortality. Overall length of stay decreased from 10.1 $\pm$ 11.8 days to 7.4 $\pm$ 8.3 days. Fig. 1 shows the number of patients who received follow-up for six and 12 months. The mortality rate was highest in NSTEMI followed by STEMI and UA respectively (Fig. 2).

Discussion

The second Thai ACS registry (TRACS) was started five years after the first registry. There are some differences in participant hospitals and demographic data. In this registry, the distribution of participant hospitals covered the whole area of Thailand not only

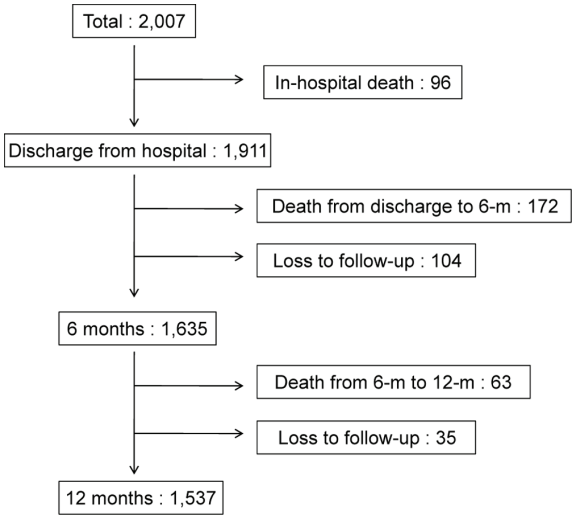

Fig. 1 Demonstrate of patients in the cohort, number of patients enrolled during admission, at discharge, 6-month follow-up and 12-month follow-up

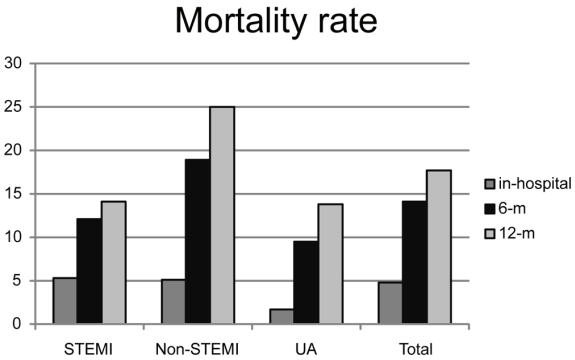

Fig. 2 Mortality rate in-hospital, 6-m and 12-m in patients with STEMI, Non-STEMI and unstable angina

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

	STEMI		NSTEMI		UA		Total	
	1st registry n = 3,836 (40.9%)	2nd registry n = 1,102 (54.9%)	1st registry n = 3,548 (37.9%)	2nd registry n = 664 (33.1%)	1st registry n = 1,989 (21.2%)	2nd registry n = 241 (12.0%)	1st registry n = 9,373	2nd registry n = 2,007
Mean age (y)	62.2 ± 12.8	60.9 ± 13.0	68.0 ± 11.6	67.1 ± 11.9	65.8 ± 11.0	65.5 ± 11.6	65.2 ± 12.3	63.5 ± 12.8
Male (%)	68.1	75.7	54.9	58.7	52.5	54.4	59.8	67.5
Presenting symptom								
Typical angina (%)	82.0	91.7	71.7	81.6	84.2	85.1	78.6	87.6
Atypical angina (%)	10.0	5.8	15.7	14.2	13.1	13.7	12.8	9.5
Shock (%)	16.3	16.3	6.3	9.5	1.2	5.8	9.3	12.8
Cardiac arrest (%)	7.3	3.81	2.7	1.96	0.9	0.4	4.2	2.79
Killip classification								
Killip I (%)	59.3	75.2	46.9	52.3	73.5	74.7	57.6	67.6
Killip II (%)	15.1	12.3	30.3	29.5	21.9	18.7	21.9	18.7
Killip III (%)	8.32	4.6	5.0	8.3	10.2	4.1	10.2	5.8
Killip IV (%)	17.3	7.9	17.8	9.9	1.2	2.5	10.3	7.9
Risk factors								
Diabetes (%)	37.2	47.6	50.9	57.4	45.5	46.5	44.2	50.7
Hypertension (%)	51.4	49.8	71.7	70.2	73.9	74.7	63.9	59.5
Dyslipidemia (%)	72.5	8.9	76.7	83.4	78.4	88.4	75.4	83.2
Smoking (%)	42.7	41.8	25.3	22.0	23.4	15.9	32.0	32.1
Family Hx of CAD	10.0	10.0	8.1	8.4	10.3	8.7	9.3	9.3
Refer (%)	54.2	54.0	31.4	42.5	25.1	33.2	39.5	49.3

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

Table 3. Reperfusion treatment in STEMI

	STEMI	
	1st registry (n = 3,836)	2nd registry (n = 1,102)
Reperfusion treatment (%)	2,018 (52.6)	741 (67.2)
Thrombolytic (%)	1,165 (30.4)	469 (42.6)
Tissue plasminogen activator (%)	68 (1.8)	4 (0.4)
Streptokinase (%)	1,097 (28.6)	454 (41.2)
Tenecteplase	0	11 (1.0)
Door to needle time (no refer)	(n = 664)	(n = 169)
- median (min)	85.0	65.0
- mean (min) ± SD	114.0 ± 96	86.5 ± 73.4
Time to treatment (no refer)	(n = 973)	(n = 169)
- median (min)	240.0	285.0
- mean (min) ± SD	283.0 ± 190.6	224.4 ± 137.6
Door to needle time within 30 min (%)	6.0	5.9
Primary-PCI (%)	853 (22.2)	272 (24.7)
Door to balloon time (no refer)	(n = 829)	(n = 162)
- median (min)	122.0	127.0
- mean (min) ± SD	171.7 ± 180.7	183.0 ± 172.5
Time to treatment (no refer)	(n = 831)	(n = 162)
- median (min)	359.0	323.5
- mean (min) ± SD	452.0 ± 299.8	409.3 ± 300.0
Door to balloon time within 90 min (%)	34	12.3
Rescued PCI (%)	128 (3.3)	30 (2.7)
Emergency CABG (%)	94 (2.5)	6 (0.5)
Elective PCI (%)	761 (19.8)	117 (10.6)
Elective CABG (%)	136 (3.6)	13 (1.2)
CAG (%)	2,406 (62.7)	552 (50.1)
Abnormal (%)	2,349 (97.6)	535 (97.5)

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

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

	NSTEMI		UA	
	1nd registry, n (%)	2nd registry, n (%)	1st registry, n (%)	2st registry, n (%)
Number of patients	3,548	664	1,989	241
Coronary angiography	1,556 (43.9)	256 (38.4)	920 (46.3)	82 (34.0)
Abnormal	1,492 (95.9)	248 (96.9)	801 (87.0)	75 (91.5)
Revascularization	938 (26.4)	177 (26.6)	492 (24.7)	55 (22.8)
PCI	701 (19.8)	146 (22.0)	382 (19.2)	43 (17.8)
Early invasive	464 (13.1)	111 (16.7)	224 (11.3)	31 (12.9)
Elective	237 (6.7)	35 (5.3)	158 (7.9)	12 (5.0)
CABG	285 (8.0)	31 (4.7)	111 (5.6)	12 (5.0)
Emergency	60 (1.7)	3 (0.5)	16 (0.8)	1 (0.4)
Elective	225 (6.3)	28 (4.2)	95 (4.8)	11 (4.6)

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	STEMI		NSTEMI		UA	
	1st registry	2st registry	1st registry	2st registry	1st registry	2st registry
Number of patients	3,836	1,102	3,548	664	1,989	241
Aspirin (%)	95.2	99.5	94.6	98.6	94.1	98.8
ADP inhibitor (%)	60.4	97.8	58.5	83.4	53.5	75.9
LMWH (%)	50.7	56.7	72.2	87.1	62.3	75.5
Unfractionated heparin (%)	28.3	39.5	21.3	28.5	16.4	21.6
GP IIb/IIIa (%)	19.5	19.5	5.3	4.5	3.2	2.5
Beta-blocker (%)	58.3	59.2	61.6	62.4	71.9	71.8
ACE inhibitor (%)	59.4	66.6	57.5	58.3	55.3	54.8
ARB (%)	5.3	6.3	8.8	11.6	11.2	12.0
Statin (%)	77.5	96.1	81.5	91.4	81.7	92.5

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, 6-m and 12-m mortality in patients with unstable angina, non-ST elevation myocardial infarction and ST elevation myocardial infarction

Outcomes	STEMI		NSTEMI		UA		Total	
	1st registry	2st registry	1st registry	2st registry	1st registry	2st registry	1st registry	2st registry
Number of patients	3,836	1,102	3,548	664	1,989	241	9,373	2,009
CHF (%)	44.1	27.1	56.2	50.3	27.4	28.6	45.1	34.9
CHF after 48 hrs (%)	7.8	2.4	5.5	2.6	2.9	3.3	6.0	2.5
Serious cardiac arrhythmia (%)	29.1	17.1	10.6	7.5	3.2	3.3	16.6	12.2
Heart block	11.5	6.2	3.1	1.7	1.4	1.7	6.2	4.1
Ventricular arrhythmia	19.4	8.8	8.1	1.2	1.8	1.2	11.4	6.8
Both		2.1		0.3		0.4		1.3
Stroke (%)	2.5	1.6	2.1	0.3	0.8	0	2.0	1.2
Ischemic	1.9	0.9	1.7	0.8	0.8	0	1.6	0.7
Hemorrhagic	0.6	0.7	0.1	0	0	0	0.3	0.4
Both		0		0.2		0		0.1
Unknown		0		0.2		0		0.1
Major bleeding	7.9	5.3	6.0	4.1	2.0	1.7	5.9	4.4
Length of stay (days)								
Mean ± SD	9.4 ± 12.3	6.7 ± 7.5	11.8 ± 12.6	8.8 ± 9.7	8.6 ± 8.8	6.4 ± 6.6	10.1 ± 11.8	7.4 ± 8.3
Median	6.0	4.9	8.0	5.6	6.0	4.2	6.8	5.0
Death								
In-hospital	17.0	5.3	13.1	5.1	3.0	1.7	12.6	4.8
Killip I	8.0	2.8	7.2	3.2	1.9	0.6	6.1	2.6
Killip II	13.1	6.7	11.6	3.6	2.5	2.2	10.2	4.5
Killip III	18.8	11.8	17.1	5.5	8.8	10.0	16.8	8.6
Killip IV	50.5	23.0	47.3	19.7	54.2	16.7	49.6	21.4
Cardiac	14.7	4.4	8.6	4.4	2.4	1.7	9.8	4.1
Non-cardiac	2.2	0.8	4.5	0.8	0.6	0	2.8	0.7
6-month		12.1		18.9		9.5		14.1
12-month		14.1		25.0		13.8		17.7

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

metropolitan area, more general hospitals but also less catheterization laboratory and CABG facility. The enrollment required informed consent for this registry, which may cause selection bias by excluding the seriously conditioned patients out of the present study. Cardiogenic shock and cardiac arrest at presentation were less than the first registry. This may cause the much lower in-hospital mortality in this registry. Nevertheless, the improvement of median door-to-needle time from 85 minutes to 65 minutes can contribute to lower in-hospital mortality. As the authors know that, lower the pain-to-treatment or door-to-treatment time can lower the mortality[5-12]. The authors would like to give this credit to the Fast Track committee of National Health Security Office to setup network of STEMI management. This committee was developed after the first result TACS registry outcomes; unaccepted door to needle time and two to three time higher mortality than the GRACE registry[2]. This project potentiates and encourages the physicians to make rapid diagnosis and treatment for STEMI patients in Thailand.

Diabetes is still a problem for our patients in the present registry. Many reports showed poor short- and long-term outcomes[13-24]. Because of using new American Diabetes Association criteria diagnosis for diabetes including the HbA1C level more than 6.5%[25], the prevalence of diabetes in this registry has increased up to 50%. Nevertheless, a higher percent of diabetes does not affect the in-hospital mortality. Anyway, the authors need to post hoc subgroup analysis in this field. In terms of medication utilization, higher percent of the patients received ADP inhibitor particularly in the STEMI as well as statin was given in more than 90% of each category of ACS. The cost of the clopidogrel is not the issue because the government started the compulsory license policy for this medication. Most of the ACS patients can be assessed under this policy. Nevertheless, beta-blocker and ACEI/ARB are still underused.

Coronary angiography in this registry was performed less than the first registry. The latest guideline[3,4] recommended primary PCI is the reperfusion therapy of choice and pharmaco-invasive strategy within 24 hours for almost STEMI patients after thrombolysis. For high-risk non-ST elevation ACS patients as in most cases of our registry, early invasive strategy is recommended. As previously mentioned, the participant hospitals have catheterization facility less than in the first TACS registry, this may be the reason to explain the reduction of rate of CAG for these groups of patients.

Many questions came to the present study about the low in-hospital mortality as mentioned previously caused by the participant hospitals itself. The authors had post hoc analysis between old participant centers versus new participant centers. The authors selected the important factors to compare the outcomes between the old and new centers (Table 7). The in-hospital mortality was significantly lower in old centers than new centers even some of poor prognostic factors seemed to be higher in the old centers. The management practices were significantly difference. The old sites have strategy of reperfusion by using primary PCI in the majority of the patients but the new centers used thrombolysis in most cases. CAG was also performed in three fourth of the patients in old centers whereas 14.1% were performed in new centers.

At 6-month and 12-month follow-up, the mortality rate was significantly higher in the NSTEMI than STEMI or UA. The new centers also had higher mortality rate than the old centers during follow-up. Less aggressiveness perform CAG may be the factor contributing to intermediate outcome particularly in NSTEMI.

Limitations

The most consideration for this registry is all patients required informed consent. This can cause selection bias by excluding some very high-risk patients out of the present study. However, when the authors looked into the in-hospital mortality, the authors can minimize this effect by using the severity classification (Killip) to determine the mortality rate instead of overall mortality. Small sample is another issue. This registry contained sample sizes of only one-fifth of the first registry, however, the authors counteracted by enrolling more general hospitals and distributed to the whole country. Because of budget constraint, the authors hypothesized that two thousand patients do not behave differently when compared with ten thousand patients.

Conclusion

The second Thai ACS registry (TRACS) showed differences in demographic, management practices and in-hospital outcomes of the Thai ACS patients. Although mortality rate in this registry decreased significantly as compared to the first TACS registry, the results had to be interpreted with caution because of the difference in characteristics and severity of the enrolled patients. However, at the 12-month

Table 7. In-hospital outcome according to participant hospital

	2nd ACS regtistry (TRACS)		
	Old centers (n = 15)	New centers (n = 24)	p-value
Total number of patients	978	1,029	
Mean age (y)	63.6 ± 12.8	63.5 ± 12.8	0.876
Male gender (%)	67.6	67.4	0.946
Killip classification			<0.001
Killip I	62.9	72.0	
Killip II	23.9	13.8	
Killip III	5.4	6.1	
Killip IV	7.8	8.1	
Cardiac arrest (%)	3.6	2.0	0.037
Diabetes (%)	58.7	43.2	<0.001
LV EF (%)	48.6 ± 14.6	49.4 ± 14.7	0.419
Refer (%)	43.1	55.3	<0.001
Reperfusion indicated (%)	76.0	83.1	0.305
Received thrombolysis	41.3	65.2	<0.001
Received 1-PCI (%)	21.7	5.8	<0.001
CAG perform	76.2	14.1	<0.001
Mortality			
In-hospital	4.6	5.0	<0.001
6-month	11.4	16.6	0.001
12-month	14.8	20.5	0.001

LV EF = left ventricular ejection fraction; 1-PCI = primary percutaneous coronary intervention; CAG = coronary angiography

follow-up, the mortality was significantly increased particularly in the NSTEMI patients.

Contributors

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Potential conflicts of interest

None.

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ทะเบียนผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันของไทย (TRACS) - การศึกษาเพิ่มเติมจากการศึกษาก่อนหน้า (TACS): อัตราเสียชีวิตในโรงพยาบาลลดลงแต่การเสียชีวิตที่ 1 ปี ยังคงสูง

สุพจน์ ศรีมหาโชตะ, สมนพร บุณยะรัตเวช, รังสฤษฎ์ กาญจนะวณิชย์, ปิยมิตร ศรีธรา, รุ่งโรจน์ กฤตยพงษ์, รพีพล กุญชร ณ อยุธยา, ปิยทัศน์ ทัศนาวิวัฒน์, สำหรับคณะวิจัย TRACS

ภูมิหลัง: *การศึกษาทะเบียนผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลัน (TRACS) เป็นการศึกษา 5 ปีหลังจากเริ่มเก็บข้อมูลทะเบียนผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันครั้งแรก (TACS)*

วัตถุประสงค์: *เพื่อศึกษาลักษณะข้อมูลพื้นฐาน การรักษา และ อัตราตายของผู้ป่วยกล้ามเนื้อหัวใจขาดเลือดเฉียบพลัน นอกจากนี้ ยังศึกษาความแตกต่างของผู้ป่วยกลุ่มนี้เมื่อเทียบกับการศึกษาทะเบียนผู้ป่วยครั้งแรก*

วิธีการศึกษา: *TRACS เป็นการศึกษาไปข้างหน้าแบบสหสถาบันทั่วประเทศไทย 39 สถาบัน โดยใช้การลงข้อมูลผ่านทางเว็บไซต์ และประมวลและวิเคราะห์ข้อมูลที่ส่วนกลาง การเก็บข้อมูลจะต้องได้การยินยอมจากผู้ป่วยหรือญาติ*

ผลการศึกษา: *การเก็บข้อมูลเริ่มตั้งแต่เดือนตุลาคม พ.ศ. 2550 ถึงเดือนธันวาคม พ.ศ. 2551 โดยมีผู้ป่วยจำนวน 2,007 ราย เข้าร่วมการศึกษา ร้อยละ 55 เป็นผู้ป่วยที่มี STEMI โดยที่ ร้อยละ 33 เป็นผู้ป่วย non-STEMI และร้อยละ 12 เป็น unstable angina พบผู้ป่วยเบาหวานร้อยละ 50.7 ผู้ป่วยกลุ่ม STEMI จะมีอายุน้อยกว่า เป็นผู้ชายมากกว่า แต่มีเบาหวานน้อยกว่า เมื่อเปรียบเทียบกับทะเบียนครั้งแรก พบว่า ผู้ป่วย STEMI มีภาวะช็อก (7.9%) และหัวใจหยุดเต้น (2.8%) น้อยกว่าร้อยละ 67 ของผู้ป่วย STEMI ได้รับการรักษาด้วย reperfusion โดยที่ร้อยละ 42.6 ได้ยาละลายลิ่มเลือด และร้อยละ 24.7 ได้รับการทำบอลลูนขยายหลอดเลือดทันที ค่ามัธยฐานของเวลา door-to-needle และ door-to-balloon เท่ากับ 65 และ 127 นาที ค่ามัธยฐานของเวลา time-to-treatment ในผู้ป่วยได้ยาละลายลิ่มเลือด และผู้ที่ได้รับการทำบอลลูนเท่ากับ 285 และ 324 นาทีตามลำดับ สำหรับผู้ป่วย non-STE-ACS พบว่าได้รับการฉีดสีดูหลอดเลือดหัวใจเท่ากับร้อยละ 38.4 และประมาณ 1 ใน 4 ได้รับการทำบอลลูน หรือ การทำผ่าตัดต่อหลอดเลือดระหว่างที่อยู่ในโรงพยาบาล อัตราตายในโรงพยาบาลเท่ากับร้อยละ 5.3, 5.1 และ 1.7 สำหรับผู้ป่วย STEMI, non-STEMI และ unstable angina เมื่อติดตามผู้ป่วยเป็นเวลา 12 เดือน พบอัตราตาย ร้อยละ 14.1, 25.0 และ 13.8 ตามลำดับ*

สรุป: *ทะเบียนผู้ป่วย TRACS แสดงให้เห็นความแตกต่างของข้อมูลพื้นฐาน การรักษาและอัตราตายในโรงพยาบาลเมื่อเทียบกับฐานข้อมูลครั้งแรก ในการศึกษาครั้งนี้ อัตราตายในโรงพยาบาลน้อยแต่การแปลผลต้องใช้ความระมัดระวังเนื่องจากความรุนแรงของผู้ป่วยไม่เหมือนกัน และเมื่อติดตามการรักษาไป 1 ปี พบว่า ผู้ป่วยทั้ง STEMI, non-STEMI และ unstable angina ยังมีอัตราตายที่สูงอยู่ ทำให้ต้องคำนึงถึงการรักษาผู้ป่วยกลุ่มนี้เป็นพิเศษ โดยเฉพาะการพิจารณาทำการฉีดสีดูหลอดเลือดหัวใจ*