Original Articles

Correlation of clinical diagnosis and in-hospital outcomes of the out of site cardiac catheterization for Saraburi's patients at Thammasat university Cardiac Center

Pitha Promlikitchai*, Dilok Piyayotai**

Abstract

Introduction: To evaluate the correlation of coronary artery disease (CAD), the proper diagnosis between pre and post cardiac catheterization, and the numbers of in-hospital outcomes of the Out of site Cardiac Catheterization for Saraburi's patients at Thammasat university Cardiac Center (OCCSTCC)

Method: The data were collected from retrospective registry of all patients who attended the OCCSTCC between September 1, 2006 to August 31, 2011.

Result: 493 Saraburi's patients were enrolled to the OCCSTCC. The mean age was 63.97 ± 10.51 years and 54.2% were males. Pre-cardiac catheterization diagnosis of clinically suspected CAD, clinically unsuspected CAD and elective percutaneous coronary intervention (PCI) was 76.06%, 15.01% and 8.92% respectively. Post-cardiac catheterization diagnosis showed significant CAD in 68.35% and non-obstructive coronary artery in 31.65%. The correlation of CAD diagnosis between pre and post cardiac catheterization had a moderate level of agreement (Kappa value was 0.487, $p < 0.001$). The sensitivity and specificity were 94.5% and 37.2% respectively. Overall, the procedural success rate was 98.38%, major adverse cardio-cerebrovascular event was 2.03% (mortality rate 0.4%, periprocedural myocardial infarction 1.42%, emergency coronary artery bypass graft surgery (CABG) 0.2%). No patient had periprocedural stroke or need for repeat PCI in the same admission. Of 113 patients were referred to cardiovascular thoracic surgeon for CABG and 37 patients received cardiac valvular surgery or atrial septal defect closure. 98.8% of patients discharged from Thammasat university cardiac center returned to follow up at Saraburi hospital.

Discussion and Conclusion: The correlation of CAD diagnosis between pre and post cardiac catheterization in the OCCSTCC was at a moderate level of agreement. The result of cardiac catheterization had high success rate and low in-hospital complications which was quite similar to the results from previous literatures.

Key words: Cardiac catheterization, Coronary artery disease (CAD)

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* Department of Medicine, Saraburi Hospital Cardiac Center, Saraburi, Thailand

** Cardiology Unit, Department of Medicine, Faculty of Medicine, Thammasat University, Pathumthani, Thailand

Corresponding Author: Pitha Promlikitchai Department of Medicine, Saraburi Hospital Cardiac Center, Saraburi 18000, Thailand. Phone & Fax: 036-317-337 E-mail: pitha8133@gmail.com

Introduction

Cardiac catheterization is the standard management for cardiac patients because it is regarded as the gold standard for making the diagnosis of coronary artery disease (CAD)[1] and it has the ability to manage obstructive coronary lesions by percutaneous coronary intervention (PCI). However, in the real world practice, they are not available in most regions of Thailand, including Saraburi hospital. Due to the limitation in financial statements, health care officers, and interventional cardiologists, cardiac catheterization has not been widely introduced. There were 100 cases of ST segment elevation acute coronary syndrome (STE-ACS) and 500 to 600 cases of non ST segment elevation acute coronary syndrome (NSTE-ACS) were admitted annually at Saraburi hospital[2]. All ACS patients who needed re-vascularization by PCI cannot be follow up to the standard guidelines of Western countries[3, 4]. This limitation of management results in clinical outcome unsatisfactory, high mortality rate of 20%, Killip IV heart failure 45% in STE-ACS patients and 25% of high re-admission rate in NSTE-ACS patients within 28 days after discharge[2]. In order to get rid of this limitation, we created a proposal on the Out of site Cardiac Catheterization for Saraburi's patients at Thammasat university Cardiac Center (OCCSTCC) to achieve quicker results compared to the routine, conventional management system. Thammasat university cardiac center is the nearest laboratory where located 90 kilometers away from Saraburi hospital, taking up only one and a half hour. Once permission is given to allow the creation of OCCSTCC from the director of Thammasat university cardiac center, we send our cardiologist to attend, practice, and perform cardiac catheterization procedures for patients. Furthermore, we can as well arrange appropriate schedules for a quota of 2 cases per day, 4 to 6 days per month. Currently, more than 500 patients have been through the OCCSTCC at Saraburi hospital. The objective of this study was to evaluate the correlation of CAD diagnosis between pre and post cardiac catheterization and in-hospital outcomes of the OCCSTCC being performed.

Statistical analysis

Continuous variables were expressed as mean ± SD or median when appropriate, discrete variables are expressed as percentages. The correlation between pre-cardiac catheterization diagnosis for suspected significant CAD and post-cardiac catheterization diagnosis by coronary angiographic finding for significant CAD was analyzed by Kappa analysis. A p-value less than 0.05 was considered statistically significant.

Method

The data were collected from retrospective registry of all patients who attended the OCCSTCC between September 1, 2006 to August 31, 2011.

The Out of site Cardiac Catheterization for Saraburi's patients at Thammasat university Cardiac Center (OCCSTCC) follows up three steps. First, the pre-cardiac catheterization included clinical diagnosis, scheduling and the arranging of cues, and providing patients education at Saraburi hospital. Secondly, all patients will be admitted and will go through the cardiac catheterization at Thammasat University Cardiac Center. Lastly, the process of post-cardiac catheterization will be able to evaluate complications at puncture sites and prescribed long-term medication at Saraburi hospital. Clinically suspected of CAD is defined as non ST elevation myocardial infarction (NSTEMI), unstable angina (UA), chronic stable angina, post cardiac arrest and positive noninvasive cardiac test. Clinically unsuspected of CAD is defined as heart failure (HF) with poor left ventricular ejection fraction (LVEF) or suspected dilated cardiomyopathy (DCM), cardiac arrhythmia with abnormal resting EKG, equivocal standard exercise treadmill stress test (EST) and preoperative evaluation for cardiac surgery. Angiographic success was defined as a residual stenosis < 20% in the presence of grade 3 Thrombolysis In Myocardial Infarction (TIMI) flow. Periprocedural MI was defined as a new CK-MB which rises more than 5 times the upper limit of normal. Contrast-induced nephropathy (CIN) was defined as creatinine rising from baseline > 25% or > 0.5 mg/dL within 48 hours after PCI, patients with history of renal

failure on dialysis are excluded. Major bleeding is defined as intracranial, intraocular, retroperitoneal hemorrhage, any hemorrhage requiring a transfusion or surgical intervention that results in a hematocrit decrease of greater than 15% or hemoglobin decrease of greater than 5 g/dl. Major hematoma is defined as hematoma of at least 5 cm in diameter at access sites. Major adverse cardio-cerebrovascular event (MACCE) was including myocardial infarction, death, stroke, emergency coronary artery bypass grafting, and repeated PCI at the same admission.

Result

507 of Saraburi's cardiac patients were enrolled to the OCCSTCC. However, data of 14 patients were missing. The mean age was 63.97 ± 10.51 years, in which 54.2% were male. The majority of patients (60%) were covered under of universal coverage scheme and civil servant reimbursement (33.1%), following by social security scheme 6.5%, and self-payment patients for only 0.4% (Figure 1). Half of all were known cases CAD 57%; which were previous MI 44.8%, previous PCI 12%, and previous CABG 0.2%. The most common atherosclerosis risk factor was hypertension 70.8%, following by dyslipidemia 59.8% and diabetes mellitus 36.1%. The co-incidence rate of atherosclerosis arterial disease was 8.4% including peripheral arterial disease 3.9% and cerebrovascular accident (CVA) and the transient ischemic attack (TIA) of 4.5%. The mean of LVEF ± SD, serum creatinine and length of stay was 53.74 ± 15.86%, 1.49 ± 1.46 mg/dl (median = 1.2 mg/dl, range 0.1-16.5 mg/dl), and 3.14 ± 6.30 days (median = 2 days, range 1-81 days) (Table 1).

Table 1 Baseline clinical characteristics of patients

Patient characteristics	Number (%)
Male (%)	267 (54.2%)
Age (years) mean ± SD	63.97 ± 10.51
Atherosclerosis risk factors	
Hypertension (%)	349 (70.8%)
Dyslipidemia (%)	295 (59.8%)
Smoking: current (%)	79 (16%)
Diabetes mellitus (%)	178 (36.1%)
Family history of premature CAD (%)	65 (13.2%)
Known cases of CAD (%)	281 (57%)
Previous MI > 7 days (%)	221 (44.8%)
Previous PCI (%)	59 (12%)
Previous CABG (%)	1 (0.2%)
Atherosclerosis arterial disease (%)	41 (8.4%)
Previous CVA/TIA (%)	22 (4.5%)
Peripheral artery disease (%)	19 (3.9%)
Chronic renal failure (%)	41 (8.3%)
Mean LVEF (%)	53.74 ± 15.86
Mean serum creatinine level (mg/dl)	1.49 ± 1.46
Length of stay (days)	3.14 ± 6.30

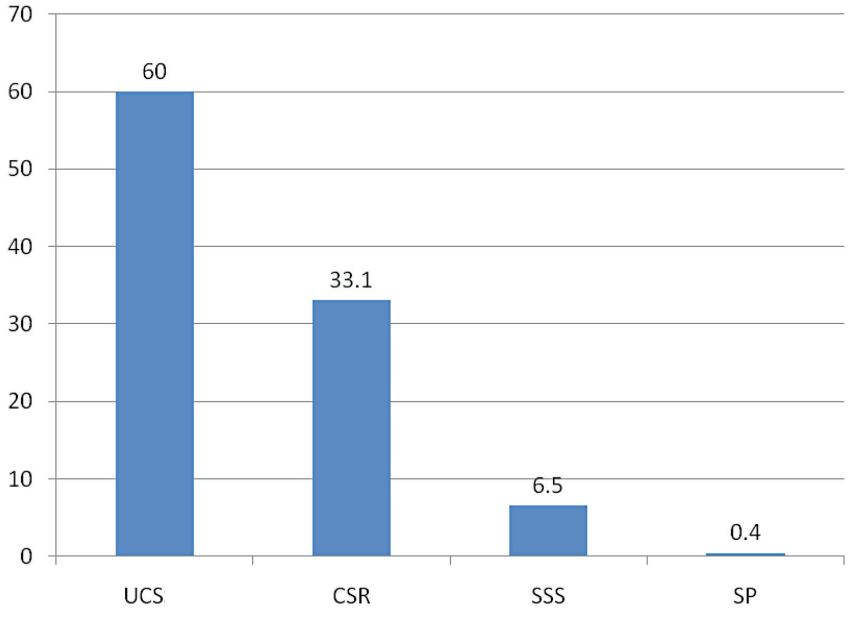
Myocardial Infarction (MI)

Percutaneous Coronary Intervention (PCI)

Coronary Artery Bypass Graft (CABG)

Cerebro Vascular Accident /Transient Ischemic Attack (CVA/TIA)

Left Ventricular Ejection Fraction (LVEF)



UCS = Universal Coverage Scheme

CSR = Civil Servant Reimbursement

SSS = Social Security Scheme

SP = Self Payment

Figure 1 Type of payers

Pre-cardiac catheterization diagnosis was defined as clinically suspected of CAD was 76.06% (NSTEMI 24.34%, high-risk UA 22.51%, chronic stable angina with failed medical treatment of 27.58%, positive noninvasive cardiac test of 16.83% and post-cardiac arrest of 1.62%), clinically unsuspected of CAD was 15.01% (heart failure 4.46%, severe impaired LV systolic function or suspected dilated cardiomyopathy of 2.21%, cardiac arrhythmia with abnormal resting EKG of 0.4% and preoperative for cardiac surgery of 7.91%) and elective PCI was at 8.92% (Table 2). Post-cardiac catheterization diagnosis defined as significant CAD was at 68.35% (LM disease of 9.1%, triple vessels disease 24.7%, double vessels disease 19.7%, and single vessel disease 23.7%) and non-obstructive coronary artery was 31.65% (non-significant CAD 13%, normal coronary 18.9%) (Table 3). The correlation of CAD diagnosis between pre and post cardiac catheterization was at a moderate level of agreement (Kappa Value of 0.487, $p < 0.001$) (Figure 2). The sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of pre-cardiac catheterization's CAD diagnosis were of 94.5%, 37.2%, 73.9%, and 78.4% respectively (Table 4).

Table 2 Pre-cardiac catheterization clinical diagnosis

Pre-cardiac catheterization clinical diagnosis	Number (%)
Clinically suspected of CAD	375 (76.06%)
Non ST elevation myocardial infarction (NSTEMI)	120 (24.34%)
Unstable angina (high risk UA)	111 (22.51%)
Chronic stable angina with failed medical treatment	136 (27.58%)
Positive noninvasive cardiac test	83 (16.83%)
Positive EST	77 (15.61%)
CCTA	6 (1.21%)
Post cardiac arrest	8 (1.62%)
Clinically unsuspected of CAD	74 (15.01%)
Heart failure	22 (4.46%)
Impaired LV systolic function or suspected DCM	11 (2.21%)
Cardiac arrhythmia with abnormal resting EKG	2 (0.4%)
Preoperative CAG for cardiac surgery	39 (7.91%)
Elective PCI	44 (8.92%)

Coronary Artery Disease (CAD)
Exercise Stress Test (EST)
Coronary Computed Tomography Angiography (CCTA)
Dilated Cardiomyopathy (DCM)
Electrocardiogram (EKG)
Coronary Angiography (CAG)
Percutaneous Coronary Intervention (PCI)

Table 3 Post-cardiac catheterization coronary angiographic findings

Result	Number (%)
Significant coronary artery disease	337 (68.35%)
Left main disease	45 (9.1%)
Isolated Left main disease	1 (0.2%)
Left main disease with TVD	29 (5.88%)
Left main disease with DVD	11 (2.23%)
Left main disease with SVD	4 (0.81%)
Triple vessels disease (TVD)	122 (24.7%)
Double vessels disease (DVD)	97 (19.7%)
Single vessel disease (SVD)	117 (23.7%)
Non-obstructive coronary artery	156 (31.65%)
Non-significant CAD	64 (13%)
Normal coronary artery	93 (18.9%)
Coronary AV fistula	1 (0.2%)

Table 4 Sensitivity and specificity of pre-cardiac catheterization clinical diagnosis compared to post-cardiac catheterization coronary angiographic

	Coronary angiographic finding			
	Significant CAD	Non-obstructive coronary artery	Total	
Clinically suspected of CAD	277	98	375	PPV 73.9%
Clinically unsuspected of CAD	16	58	74	NPV 78.4%
Total	293	156	449*	
	Sensitivity 94.5%	Specificity 37.2%		

PPV = Positive predictive value
NPV = Negative predictive value
* excluded 44 patients of elective PCI

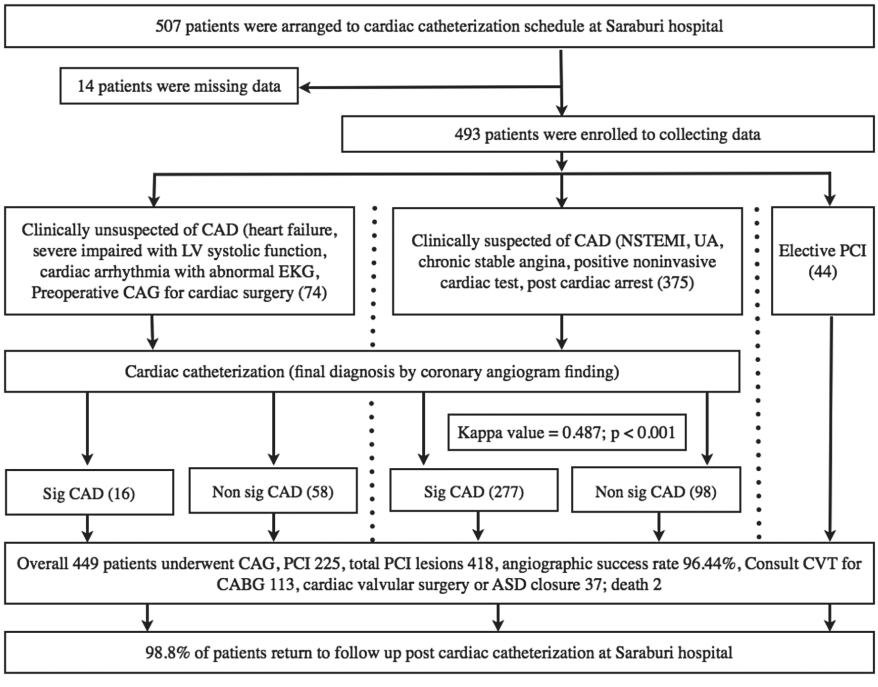


Figure 2 Algorithm of the out of site cardiac catheterization for Saraburi's patients at Thammasat university cardiac center

Overall, the in-hospital clinical outcomes were composed of procedural success rate of 98.38%, MACCE 2.03%, and non MACCE 5.48%. Non MACCE in PCI procedure were bleeding or hematoma at puncture site 3.6%, allergic reaction to contrast agent of 0.4%, vaso-vagal reaction 0.4% and CIN 1.36% (2 in remained 147 PCI cases; 12 patients with history of renal failure on dialysis and 66 cases of missing data are excluded). Coronary angiogram (CAG) was performed in 268 patients with one hundred percent success rate without any number of MACCE. The complication of CAG was non MACCE 3% which composed of bleeding or hematoma at

puncture site 1.9%, minor bleeding or echymosis 0.4%, and allergic reaction to contrast agent 0.4%. PCI was performed in 225 patients and in 418 lesions (stage of PCI was 19.65%, Ad hoc PCI of 80.35%) with angiographic success rate 96.44%. MACCE rate was 4.4% while non MACCE was 8.4%. The mortality rate was 0.9%, peri-procedural MI 3.1%, emergency CABG 0.4%, no patients were found to have peri-procedural stroke or were required to repeat PCI at the same admission. However, no patients needed acute hemodialysis (Table 5). 113 patients were referred to cardiovascular thoracic surgeon (CVT) for coronary artery bypass graft surgery (CABG); 37 patients went for cardiac valvular surgery or ASD closure. 98.8% of patients were discharged from Thammasat university cardiac center and returned to follow up at Saraburi hospital (Figure 2).

Table 5 In-hospital outcomes according to cardiac catheterization procedures

In-hospital outcomes	All cardiac procedures (493)	CAG (268)	PCI (225)
Procedural success rate	485 (98.38%)	268 (100%)	217 (96.44%)
MACCE	10 (2.03%)	0	10 (4.4%)
Death	2 (0.4%)	0	2 (0.9%)
Periprocedural MI (CK-MB >5 times)	7 (1.42%)	0	7 (3.1%)
Emergency coronary artery bypass graft surgery	1 (0.2%)	0	1 (0.4%)
Stroke	0	0	0
Repeated PCI at the same admission	0	-	0
Non MACCE	27 (5.48%)	8 (3%)	19 (8.4%)
Bleeding/hematoma	13 (2.64%)	5 (1.9%)	8 (3.6%)
Non-entry site major bleeding	0	0	0
Minor bleeding or echymosis	9 (1.83%)	1 (0.4%)	8 (3.6%)
Ventricular tachycardia/fibrillation	1 (0.2%)	0	1 (1.3%)*
Cardiac tamponade	0	0	0
Congestive heart failure	1 (0.2%)	0	1 (0.4%)
Cardiogenic shock	1 (0.2%)	0	1 (0.4%)
Contrast-induced nephropathy (CIN)**	2 (0.4%)	NA	2 (1.36%)
ARF needed hemodialysis	1 (0.2%)	0	1 (0.4%)
Allergy to contrast agents	1 (0.2%)	1 (0.4%)	1 (0.4%)
Vaso-vagal reaction	1 (0.2%)	0	1 (0.4%)

* 1 case developed VF after adenosine intra-coronary injection during fractional flow reserve evaluation, the other 2 cases had VF during PCI.

** For peak minus baseline creatinine ≥ 0.5 mg/dl or creatinine rising from baseline > 25% within 48 hours after PCI; patients with history of renal failure on dialysis were excluded (12 cases); missing data (66 cases) remain 147 cases, ARF = acute renal failure.

Table 6 The percentage of patients who had high risk for CIN according to the risk score for prediction of CIN in patients undergoing PCI

Risk factors	Score	Number (%)*
Hypotension	5	0 (0%)
IABP	5	0 (0%)
Clinical CHF before PCI	5	0 (0%)
Age > 75	4	18 (12.24%)
Anemia	3	NA
Diabetes	3	59 (40.13%)
Contrast volume (ml)		
0 - 100	1	22 (14.97%)
101 - 200	2	78 (53.06%)
201 - 300	3	44 (29.93%)
301 - 400	4	3 (2.04%)
Serum creatinine > 1.5 (mg/dl)	4	28 (19.04%)

Summation of risk score was < 5, 6-10, 11-16 and >16 there was percentage of CIN prediction equal 7.5%, 14%, 26.1% and 57.3% respectively, NA = data were not available, * patients with history of renal failure on dialysis were excluded (12 cases); missing data (66 cases) remain 147 cases.

Discussion and conclusion

The correlation of CAD diagnosis between pre and post cardiac catheterization in the OCCSTCC was at a moderate level of agreement. The result of cardiac catheterization had high success rate and low in-hospital complications which were quite similar to the results from previous literatures.

Many baseline demographic data, such as atherosclerosis risk factors, and indications for cardiac catheterization of patients in the present study were similar to those previous literatures[5, 6]. Common atherosclerosis risk factors were hypertension, dyslipidemia, diabetes, and current smoking[5, 6]. As Saraburi hospital is owned by the government, the majority of patients (60%) which were mainly the middle to working class patients were covered under universal coverage scheme. The correlation of CAD diagnosis between pre and post cardiac catheterization was at a moderate level of agreement (Kappa value of 0.487, $p < 0.001$)[7] (Figure 2). This was explained by the only 16.83% of patients in the present study had been documented as significant CAD by non-invasive cardiac test (positive treadmill EST 15.61%) or the coronary computed tomography angiogram (CCTA) (1.21%). The other clinically suspected of CAD patients should be evaluated by non-invasive cardiac stress testing in order to document significant CAD before performing the invasive management by cardiac catheterization diagnosis; however, they did not have such test. This is one of the limited medical facilities of rural hospitals in Thailand; where treadmill EST is the only method available for non-invasive cardiac stress test. The treadmill EST had several limitations to confirm the CAD diagnosis especially in women, patients with immobility, initial un-interpreted EKG due to pathological Q wave, left bundle branch block, and left ventricular hypertrophy with strain pattern or WPW syndrome[8]. Most patients who were not suitable for treadmill EST due to the limitations mentioned above proceeded directly to cardiac catheterization as other non-invasive cardiac tests such as CCTA, supine bicycle exercise stress-test,

dobutamine stress echocardiogram, pharmacologic stress in nuclear medicine test (Technetium (Tc) 99m Sestamibi) or cardiac magnetic resonance imaging (cardiac MRI), which are available only in medical university hospitals and some major private hospitals in large cities, are not available in Saraburi hospital. The sensitivity of pre-cardiac catheterization clinically suspected of CAD diagnosis was high (94.5%) but the specificity was low (37.2%). The PPV was 73.9% and NPV was 78.4%. This number may represent the proper clinical diagnosis of CAD patients in limited medical facilities of Thailand's rural hospitals. As CAD is a serious though treatable disease, the lack of diagnosis is unacceptable. It is then important to identify CAD patients to develop further management. Keeping the clinically suspected of CAD patients facilitated by enrolling them into the OCCSTCC to get gold standard of CAD diagnosis[1], leads to the increase in comfort and speed which is more suitable than referring to the non-invasive cardiac stress test in urban hospital centers. However, the overall percentage of coronary angiographic findings of significant CAD in the OCCSTCC still, was slightly higher than the data obtained from Western countries or other rural hospitals in Thailand which was 68.35% versus 60.9%[5] and 68.35% versus 59%[6] respectively. This information may as well indicate: pre-cardiac catheterization clinically suspected of CAD diagnosis in the OCCSTCC did not over-diagnose compared to previous literatures[5, 6].

The clinical in-hospital outcomes in the OCCSTCC process showed that the overall success rate of cardiac catheterization procedure was at a high percentage of 98.38% and had a low percentage of MACCE 2.03%. The most common cardiac catheterization complication was: bleeding or hematoma process at access artery puncture site which corresponds to previous literatures[9, 10]. In the CAG group, the percentage of this complication was only at 1.9% and 3.6% in PCI group; similar to the data from Western countries which was 3.6% versus 3.37%[11]. CAG was performed in 268 patients with a hundred percent success rate without MACCE. PCI was performed in 225 patients and 418 significant stenosis coronary lesions with high angiographic success rate that was similar to contemporary results from other studies in which was 96.44% versus 91 - 98%[12 - 17] with low MACCE. The mortality rate was comparable to the overall unadjusted in-hospital death rate analyses from large numbers of registries of 0.9% versus 0.4 - 1.9%[16 - 19]. Two death cases were NSTEMI with poor LVEF and developed HF. Their CAG showed multivessel disease with a high syntax score (≥ 33). PCI was performed due to denial of CABG. The first death case needed emergency CABG due to an abrupt vessel closure and no reflow from coronary dissection at a mid-large RCA and developed cardiogenic shock. The second case included a sudden cardiac death within 24 hours after the PCI process with drug eluting stent (DES) at proximal LAD during the close monitoring in CCU. The suspected cause of death was probably defined as early stent thrombosis.

The incidence of emergency CABG and periprocedural MI had no difference from other literatures respectively (0.4% versus 0.4-1.6%[12, 19, 20] and 3.1% versus 0.4-4.9%[12, 17, 18]. No patient had major bleeding, periprocedural stroke or either needed to repeat the PCI process at the same admission. This was because the number of patients in the present study might be too small to declare these rare complications. The probable stent thrombosis rate was 0.4% which was similar to the data obtained from Western countries 0.4% versus 0.9%[21] but the incidence of CIN in the present study was 1.36% which was rather lower than the data from previous published literature 1.36% versus 3.3[22]. Even though the overall incidence of CIN in the general population has been estimated to lie between 1% - 6%[23] but the incidence of CIN might rise up to 19% in selected patient subsets, especially in patients undergoing primary PCI for STEMI[24]. The incident of CIN in the present study was quite lower than those in previous studies because most patients who attended to the OCCSTCC were low risk of CIN according to the simple risk score for prediction of CIN after PCI[25]. There were no any ACS patients (STEMI or NSTEMI who received initial invasive strategy management) or patients with hypotension or IABP insertion or clinical CHF before PCI. The percentage of

patients who had serum creatinine level higher than 1.5 mg/dl was only 19.04%, elderly patients were older than 75 years was only 12.24% and those with diabetes were 40.13%. More than half of PCI patients received contrast media less than 200 ml (Table 6). Most numbers of patients (98.8%) were discharged from Thammasat university's cardiac center came back to follow up at Saraburi hospital. This data may clearly illustrate comfort to long term follow up directly at Saraburi hospital rather than taking around one and a half hour or 90 kilometers to reach Thammasat university's cardiac center.

In the limited medical facilities of Saraburi hospital where cardiac catheterization laboratory is not available, the OCCSTCC process was created especially for our cardiac patients to get a golden standard for management system to allow quick and convenient response compared to those of the routine, conventional management system. The present study has showed that even though the diagnosis of significant CAD between pre and post cardiac catheterization in the OCCSTCC was at a moderate level of agreement due to the limitations of non-invasive cardiac stress test, the percentage of significant CAD diagnosed by coronary angiographic findings was similar to the data obtained from other previous literatures. The clinical in-hospital outcomes proved high success rate of cardiac catheterization procedure with low MACCE. Therefore, it is considered best to continue the OCCSTCC for all Saraburi's cardiac patients. However, 5 years of the OCCSTCC can support the cardiac patients in Saraburi hospital partially. Still, the process may be further away from perfection as many of the patients in the waiting list will need to wait roughly for 2 - 3 months before real treatment. None of our STE-ACS patients was performed primary PCI as the transferring time to Thammasat university cardiac center will take up more than 90 minutes of standard door to balloon time[3]. None of our NSTE-ACS patients was managed as initial invasive strategy even though they had TIMI risk score more than 3[4]. These reasons are the main influence to clinical unsatisfactory outcomes in spite of the OCCSTCC performed continuously. The mortality rate and Killip IV heart failure rate of STE-ACS patients in Saraburi hospital were still at a high percentage of 21.6% and 44.8%[26] respectively. Furthermore, there is as well high re-admission rate within 28 days for NSTE-ACS patients. The data from the present study have demonstrated the benefits of the OCCSTCC process. However, these benefits were still not large enough to result in improved clinical outcomes for cardiac patients in Saraburi hospital. Further improvement in cardiac care facilities in Saraburi hospital is necessary in order to significantly improve patients' clinical outcomes. A cardiac catheterization laboratory in Saraburi hospital is essential for the care of cardiac patients and should be established.

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บทคัดย่อ

การประเมินความสอดคล้องของการวินิจฉัยโรคหลอดเลือดหัวใจตีบ และผลการรักษาของผู้ป่วยในช่องทางการสวนหัวใจผู้ป่วยโรคหัวใจจังหวัดสระบุรีที่ศูนย์หัวใจโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ

พิธา พรหมลิขิตชัย*, ดิลก ภิยโยทัย**

* ศูนย์โรคหัวใจ โรงพยาบาลสระบุรี ตำบลปากเพรียว อำเภอเมืองสระบุรี จังหวัดสระบุรี

** ภาควิชาอายุรศาสตร์ คณะแพทยศาสตร์ มหาวิทยาลัยธรรมศาสตร์

บทนำ: เพื่อประเมินความสอดคล้องของการวินิจฉัยโรคหลอดเลือดหัวใจตีบก่อนและหลังการสวนหัวใจ รวมถึงผลการรักษาของผู้ป่วยที่รับการรักษาผ่านช่องทางการสวนหัวใจผู้ป่วยโรคหัวใจจังหวัดสระบุรีที่ศูนย์หัวใจโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ

วิธีการศึกษา: เป็นการศึกษาแบบ retrospective study ในผู้ป่วยโรคหัวใจจังหวัดสระบุรีที่รับการรักษาผ่านช่องทางการสวนหัวใจผู้ป่วยโรคหัวใจจังหวัดสระบุรีที่ศูนย์หัวใจโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ ตั้งแต่วันที่ ๑ กันยายน พ.ศ. ๒๕๔๙ จนถึงวันที่ ๓๑ สิงหาคม พ.ศ. ๒๕๕๔

ผลการศึกษา: ผู้ป่วยโรคหัวใจจังหวัดสระบุรีจำนวน ๔๙๓ คน อายุเฉลี่ย ๖๓.๙๗ ± ๑๐.๕๑ ปี ร้อยละ ๕๔.๒ เป็นเพศชาย ข้อบ่งชี้ในการสวนหัวใจประกอบด้วย clinically suspected coronary artery disease (CAD), clinically unsuspected CAD และ elective percutaneous coronary intervention ร้อยละ ๗๖.๐๖, ๑๕.๐๑ และ ๘.๙๒ ตามลำดับ การวินิจฉัยหลังการทำหัตถการสวนหัวใจประกอบด้วย significant CAD ร้อยละ ๖๘.๓๕, non-obstructive coronary artery ร้อยละ ๓๑.๖๕ พบความสอดคล้องในการวินิจฉัยโรคหลอดเลือดหัวใจตีบอย่างมีนัยสำคัญก่อนและหลังการสวนหัวใจอยู่ในระดับปานกลาง (Kappa value 0.487, $p < 0.001$) มีค่าความไวและความจำเพาะเท่ากับร้อยละ ๙๕.๕ และ ๓๗.๒ ตามลำดับ พบความสำเร็จในการทำหัตถการร้อยละ ๙๘.๓๘ พบ major adverse cardio-cerebrovascular event ร้อยละ ๒.๐๓ ซึ่งประกอบด้วย อัตราการเสียชีวิต ร้อยละ ๐.๔, periprocedural myocardial infarction ร้อยละ ๑.๔๒, emergency coronary artery bypass graft ร้อยละ ๐.๒ ไม่พบผู้ป่วยที่มีภาวะ periprocedural stroke หรือจำเป็นต้องได้รับการสวนหัวใจซ้ำในช่วงนอนโรงพยาบาล ส่งผู้ป่วยปรึกษาศัลยแพทย์ทรวงอกเพื่อผ่าตัดตัดต่อหลอดเลือดหัวใจ ๑๑๓ คน ผ่าตัดโรคลิ้นหัวใจหรือผนังกั้นห้องหัวใจรั่ว ๓๗ คน ร้อยละ ๙๘.๘ ของผู้ป่วยที่จำหน่ายจากโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติกลับมาติดตามการรักษาที่โรงพยาบาลสระบุรี

วิจารณ์ และสรุปผลการศึกษา: ความสอดคล้องของการวินิจฉัยโรคหลอดเลือดหัวใจตีบของผู้ป่วยในช่องทางการสวนหัวใจผู้ป่วยโรคหัวใจจังหวัดสระบุรีที่ศูนย์หัวใจโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติอยู่ในระดับปานกลาง พบอัตราความสำเร็จในการทำหัตถการสูง ผลข้างเคียงระยะสั้นก่อนออกจากโรงพยาบาลต่ำซึ่งไม่แตกต่างจากการศึกษาอื่น

คำสำคัญ: การสวนหัวใจ, โรคหลอดเลือดหัวใจ