

Telecardiology: A Modern Approach to Manage Acute Coronary Syndrome Problems in Indonesia

R. Alessandro^{1*}, M.G. Pratama², I.R. Kirana², F. Nadhira², B.C. Sinurat²,
Y.R. Tsai³, T.G.D. Shakita⁴

1 Faculty of Medicine, Tarumanagara University, Indonesia

2 Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Indonesia

3 Department of Nursing, National Taiwan University, Taiwan

4 Department of Pediatrics, Adventist Medical Center Manila, Philippines

*correspondence: rioalexandro1993@gmail.com

ABSTRACT

Background: Acute Coronary Syndrome (ACS) is an emergency case associated with high morbidity and mortality. Ischemic heart disease causes around 7 million deaths worldwide (42.3% of all cardiovascular disease). The early and accurate diagnosis has been a problem in Indonesia, as we are unable to perform an ideal door-to-balloon time. To overcome this problem, ESC recommends the use of prehospital telecardiology ECG to give a better outcome in addressing patient with ACS. Telecardiology is the promising solution for Indonesia to keep up with the world standard.

Objective: This study aims to review the effectiveness and benefit of telecardiology as a promising solution for managing acute coronary syndrome problems in Indonesia

Method: This study use literature review based on several articles. Data retrieval strategy is based on completed research on 2003 - 2018.

Result: The use of telecardiology by using 12-lead ECG has 97.4% sensitivity, 89.5% specificity, and 86.9% accuracy. This diagnostic tool allows early diagnosis of ACS by transmitting prehospital 12-lead ECG directly to the cardiologist, result in significant decrease of door-to-PCI time by 63 minutes ($p < 0.001$), resulting in lower peak troponin I ($p = 0.005$) and higher left ventricular ejection fractions ($p = 0.004$). The end result was reduced hospital readmission and mortality rates lessened from 12.3% to 7.1%.

Conclusion: Early diagnosis by telecardiology proves to have tremendous subsequent benefit in managing patient with acute coronary syndrome.

Keywords: telemedicine; telecardiology; ACS, emergency

3-D Printing Coronary Model: Applications in the Field of Medical Education, Cardiovascular Surgery, and Structural Intervention

F.B. Satria^{1*}, P.P.R. Gharini²

¹General Practitioner, Universitas Gadjah Mada Academic Hospital, Yogyakarta, Indonesia

²Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada-Dr Sardjito General Hospital, Universitas Gadjah Mada Academic Hospital, Yogyakarta, Indonesia

*correspondence: f.bayusatria@gmail.com

ABSTRACT

Background: Coronary Heart Disease (CHD) is a major cause of death and disability in developed countries. The education for better recognition and management of this case plays an important role amongst patient or clinicians. Visualization of 3-dimensional structure of heart for the importance of examination, management or education is not fully comprehensive describe toward the complexity of anatomical structure and also toward the illustration of a medical procedure for patients and clinicians.

Objective: Identifying the potential application of coronary 3D printing for the enhancement of case understanding for both patients and clinicians. The development of a patient-specific 3D model of coronary disease is one of the strategic plans for the advantage of medical procedural planning or intervention in future.

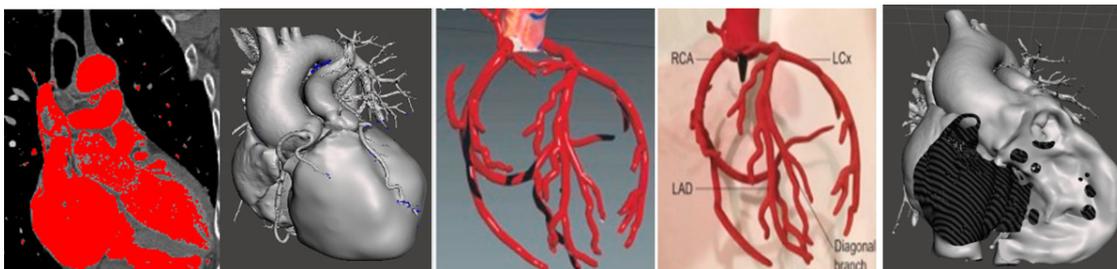
Method and Design: We retrieved data from patients' CT scan hospitalized in Universitas Gadjah Mada Academic Hospital, Yogyakarta from May 2018 to Agustus 2018. Our focus is on coronary artery disease. Data from CT scan results are exported into Digital Imaging and Communications format (DICOM), then dimension measurement and threshold segmentation are performed using Mimics Medical 20.0 (Materialise) application. Finally, the file must be exported into STL format due to final process to cut the desirable parts using Mesh editing application. After the final model has been done, then it will be printed by fuse deposition method to make a 3D object. Fuse Deposition Method (FDM) is chosen because of the needs of accuracy, appearance, surface object, and the strength of ingredients property.

Results: To create a model for medical education using 3D printing is defined the educational objective. In this research, some imaging files of coronary heart disease are needed. The model then will be selected and cut based on which structure abnormality region of interest. For planning the 3D prototype, there are some essential characteristics of the model should be considered with the educational need. There are size, surrounding structures, surgical manipulation, accuracy and resolution of the model.

Conclusions: Coronary 3D printing enhances communication about CAD between patient, families and doctors. This application also has significant potential for development of new medical education or interventional planning in other cases

Keywords: 3D-printing; coronary artery disease; CT-scan; fuse deposition method; medical education

Images:



Diagnostic Value of Simple Modified Diamond and Forrester Score to Predict Acute Coronary Syndrome in Emergency Department Setting

F.B Satria,^{1,*} F.F.A.Lutfie,² R.A. Gumilang²

¹General Practitioner, Universitas Gadjah Mada Academic Hospital, Yogyakarta, Indonesia

²Cardiologist, Universitas Gadjah Mada Academic Hospital, Yogyakarta, Indonesia

*correspondence: f.bayusatria@gmail.com

ABSTRACT

Background: Diagnosis of Acute Ischemic Heart Disease or Acute Coronary Syndrome remains a challenging in the setting of emergency room, especially in the patient with unknown history of Coronary Artery Disease (CAD) or in the patient which is came into emergency room with atypical symptoms of ACS.

Objective: Predicting the possibility of patient diagnosed with ACS, whether the symptoms is typical or atypical with Simple Modified Diamond and Forrester Score (SMDF Score).

Method: The data is taken from May 2018 until July 2018. We collect 60 patients randomly from electronic medical history with chief complaint of chest pain or indigestion (epigastric pain) which has undergone an electrocardiography (ECG) in emergency department.

Results: We got 34 men and 26 women. After that, we entered the data of patient's characteristic to the score we made. The score is based on Diamond and Forrester score with some additional scores adapted from the common finding in our experience. We divided the interpretation category into 3 level of risk. There are low (<15), intermediate (15-85), and high (>85). Our additional scores were made to increase or decrease the possibility of the total score for getting lower or higher. When the total of score include in low or high risk, the sensitivity and the specificity is absolutely high (100%), But, we can not calculate the specific analysis data if the result is in intermediate because the analysis was so dependent on how much the patients that undergo an ECG and also the ECG result itself whether it will show an ACS pattern or not. Thus, the physician should do an ECG examination to ensure the diagnosis in a patient.

Conclusions: This SMDF score can help the clinician to rule out myocardial infarction inpatient. Prospective validation is necessary at the point of patient assessment, in conjunction with application of the SMDF score to help the general physician in decision making.

Keywords: acute coronary syndrome; emergency room; Diamond and Forrester Score; ECG

Image:

Age, y	Non-angina Chest pain (0-1 of 3 criteria)		Atypical Angina (2 of 3 criteria)		Typical Angina (3 of 3 criteria)		Chest pain criteria
	Men	Women	Men	Women	Men	Women	
30-39	4	2	34	12	76	26	1. Substernal chest discomfort with characteristic quality and duration 2. Provoked by exertion or emotional stress 3. Relieved promptly by rest or nitroglycerin
40-49	13	3	51	22	87	55	
50-59	20	7	65	31	93	73	
> 60	27	14	72	51	94	86	Tender to palpation in the epigastric region Any history of relieve by taking stomachache drug Any history of heart disease before Any risk factor (smoker/hypertension/diabetes) Any history of taking massage or scratching by coin in chest/stomach region
	-6	-1	-20	-8	-2	-1	
	-6	-1	-20	-8	-2	-1	
	2	1	14	35	9	12	
	2	1	14	35	9	12	
Total Score							
Interpretation							
<15	Small risk possibility of ACS, doesn't need ECG routinely, just treat the symptoms						
15-85	Intermediate risk possibility of ACS, ECG examination is suggested to confirm the diagnosis						
>85	High risk possibility of ACS, ECG examination is needed immediately to confirm the diagnosis						

S MDF Score	Case	Non-ACS	ACS	Statistical Analysis
Low Risk	10	10	0	Specificity: 100%
Intermediate Risk	8	3	5	indetermined
High Risk	16	0	16	Sensitivity: 100%
Total	34 men	13 men	21 men	

S MDF Score	Case	Non-ACS	ACS	Statistical Analysis
Low Risk	17	17	0	Specificity: 100%
Intermediate Risk	6	3	3	indetermined
High Risk	3	0	3	Sensitivity: 100%
Total	26 women	20 women	6 women	

Mean Platelet Volume as A Predictor of Atherosclerotic Severity Degrees in Patients Acute Miokardial Infarction with Non ST Elevation

Y. Astuti *, B.Y. Setianto, N. Taufiq.

Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada – Dr. Sardjito Hospital, Yogyakarta Indonesia

*correspondence: yastuti7169@gmail.com

ABSTRACT

Background: Acute Myocardial Infarction (AMI) is the leading cause of death in the world. AMI is classified into ST Elevation and Non ST Elevation. Diagnosis and prediction of severity of atherosclerotic in AMI Non ST Elevation and unstable angina pectoris is a challenge. Despite the risk stratification, 14-20% of patients that underwent coronary angiography have normal or non significant coronary heart disease (CHD). The role of platelet and the extent of atherotrombosis in patients with NSTEMI interested field of research. Mean platelet volume (MPV) reflects platelet size and reactivity, can be used as a diagnostic marker and may have predictive value. This study aims to prove the increasing role of MPV can be a predictor of the degree of atherosclerotic based on SYNTAX score in patients NSTEMI performed coronary angiography

Methods: This is a cross sectional study with of 86 subjects. Blood samples were taken at the time of admission to the ER. MPV is checked by automated machine. Statistical analysis was used to prove a high prevalence of MPV ratios as a predictor of degree of severity of atherosclerotic based on SYNTAX score.

Results: Chi-Square analysis showed that high MPV could not be used as a predictor of the severity of atherosclerotic based on SYNTAX score in NSTEMI patient ($P= 0.5$, prevalence ratio 1.15 with 95% IK: 0.755-1.753). From multivariate analysis known to smoking has an independent relationship with SYNTAX Score $p= 0.047$; OR =2.531 and 95% CI 1.012-6.328.

Conclusions: High MPV can not be used as a predictor of the severity of atherosclerosis based on SYNTAX score in NSTEMI patients performed by coronary angiography.

Keywords : NSTEMI; MPV; SYNTAX Score

Relationship Between Endothelial Microparticles Level with Random Blood Sugar Level in Patients with Acute Coronary Syndrome when Admitted for Hospitalization

J. Lihartanadi^{1*}, H. Mumpuni², I.A. Arso²

¹ Faculty of Medicine, University of Gadjah Mada, Yogyakarta

² Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada – Dr. Sardjito Hospital, Yogyakarta Indonesia

*correspondence: jimbojuventus@gmail.com

ABSTRACT

Background: The American Heart Association (AHA) stated that in 2003, 71.3 million Americans suffered from various forms of cardiovascular disease. AHA estimated that 700,000 Americans would experience their first coronary event in 2006 and 500,000 of them will be recurrent. Acute coronary syndromes that occur due to rupture and plaque erosion are often found in patients with high blood sugar (hyperglycemia). The incidence rate also increases, because in hyperglycaemic patients, acute myocardial infarction that is rarely complained or with a non-specific complaint. Therefore, it is important to detect Coronary Artery Disease in hyperglycemic patients without symptoms or signs that lead to coronary artery disease.

Methods: Cross-sectional study, this study was conducted at Intensive Cardiac Care Unit (ICCU) and Heart Care Wards in Dr.Sardjito Central General Hospital, Yogyakarta. The samples of the research were taken from April to August 2010. The analysis of microparticle content was conducted in the clinical pathology laboratory of Medical Faculty of Gadjah Mada University in August-October 2010. The data analyzed were collected and presented in the form of tables and graphs.

Results: In this study there were a total of 38 patients with acute coronary syndromes, but due to extreme data, only 34 samples were used. The result showed a positive correlation of 0.020, but not statistically significant ($p > 0.05$).

Conclusion: The higher the random blood sugar level in patients with acute coronary syndrome when admitted to hospital, the higher the endothelial microparticle levels.

Keywords: acute coronary syndrome; endothelial microparticle; random blood glucose; year 2010.

The Performance of The GRACE, HEART, and TIMI Score in Predicting Hospitalization Mortality in Patient with Acute Coronary Syndrome

Yustye^{1*}, M.S. Tiyantara², O.M.S. Nasution¹, D. Herdianto³, M. Furqon³, D.P. Asmoro³

¹General Practitioner, Abdul Wahab Sjahranie Hospital, Samarinda, Indonesia

²Faculty of Medicine, University of Mulawarman, Samarinda, Indonesia

³Department of Cardiology and Vascular Medicine, Abdul Wahab Sjahranie Hospital, Samarinda, Indonesia

*correspondence: yustye_ad@yahoo.com

ABSTRACT

Introduction: Risk stratification for patients with acute coronary syndrome (ACS) is recommended at the health care center to assess the prognosis of the patients and help to determine the treatment strategy. There are some risk stratification scores for ACS, but it showed different performance in each different study. This study aims to assess the performance of GRACE, HEART, and TIMI score in predicting mortality during hospitalization in patients with ACS.

Methods: This was retrospective study with consecutive sampling using medical record data during patient admission and hospitalization in Abdul Wahab Sjahranie Hospital Samarinda. Data were collected from January to December 2016. The subjects were patients diagnosed with ACS spectrums that include of ST-elevation myocardial infarction (STEMI), non-ST-elevation myocardial infarction (NSTEMI), and unstable angina pectoris (UAP). Subjects were divided into Group A that include the patients who died during the hospitalization, and Group B that include the patients who did not die. The performance of GRACE, HEART, and TIMI score were compared using the receiver operating characteristic (ROC) curves and area under the curve (AUC).

Results: A total of 115 subjects were included in this study. The subject characteristics of the Group A were more male gender, older age, faster heart rate, lower blood pressure, higher respiratory rate, and higher Killip class. The mean of the GRACE (group A=184±46; group B=116±34), HEART (group A=8±2; group B=5±2), and TIMI score (group A=3±1; group B=2±1) were higher in group A. GRACE score had the better performance (AUC=0.881, 95%CI: 0.789-0.975) than HEART score (AUC=0.818, 95%CI: 0.691-0.946) and TIMI score (AUC=0.752, 95%CI: 0.591-0.913). GRACE score cut off point 128.5 had 92% sensitivity and 63% specificity in predicting hospitalization mortality.

Conclusion: The GRACE score had the best performance than HEART score and TIMI score in predicting in-hospital mortality in patients with ACS.

Keywords: acute coronary syndrome; GRACE score; HEART score; risk stratification; TIMI score

Beneficial Pleiotropic Antihypertensive Effect of Xanthine Oxidase Inhibitor Febuxostat and Allopurinol: A Systematic Review and Meta-Analysis of 11 Studies

Y. Azmi^{1,*}, R.A.Nugraha²

¹ Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia

² Semen Gresik General Hospital, Gresik, Indonesia

*correspondence: yusuf_azmi@ymail.com

ABSTRACT

Introduction: Various clinical and experimental studies have shown that high level of serum uric acid is a risk factor for hypertension and subsequent cardiovascular events. Therefore, xanthine oxidase inhibitor such as febuxostat and allopurinol that is commonly used to lower serum uric acid have been suggested to have pleiotropic effects that are likely to reduce blood pressure and cardiovascular risk in selective patients.

Aim: The aim of this meta-analysis was to assess the pleiotropic antihypertensive effect of febuxostat and allopurinol. Primary outcomes were systolic and diastolic blood pressure.

Method: We searched PubMed, Embase, and Cochrane databases from their inception to August 20th, 2018. The quality of articles was assessed using the Newcastle-Ottawa Scale. Study heterogeneity was examined using the χ^2 -based Cochran Q statistic and I^2 . A random-effects meta-regression model was used to calculate pooled estimates and explore heterogeneity across studies.

Results: Eleven studies were included, with 397 patients in treatment group and 395 patients in control group for allopurinol. Compared with the control group, patients treated with allopurinol had greater reduction in SBP (standardized difference in means [SDM] = 0.51, 95% confidence interval [CI]: 0.13 to 0.90, P = .010), DBP (SDM = 0.38, 95% CI: 0.07 to 0.69, P = .002) than control. While patient treated with febuxostat also had fair reduction in SBP (standardized difference in means [SDM] = 0.13, 95% confidence interval [CI]: -0.13 to 0.39, P = .034), DBP (SDM = 0.27, 95% CI: 0.04 to 0.50, P = .002) than control.

Conclusion: Based on the limited evidence available, xanthine oxidase inhibitor is associated with significant blood pressure reduction. Allopurinol has greater antihypertensive effect compared to febuxostat. The additional properties and pleiotropic activity of these drugs determine their wide range of applications in cardiovascular prevention.

Keywords: allopurinol; febuxostat; hypertension; blood pressure; xanthine oxidase inhibitor

Fig. 1 - Reduction of Systole Blood Pressure using Allopurinol

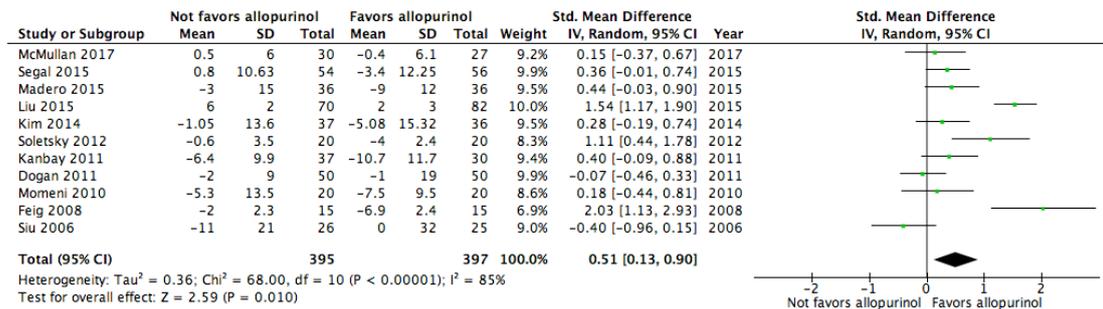


Fig. 2 - Reduction of Diastole Blood Pressure using Allopurinol

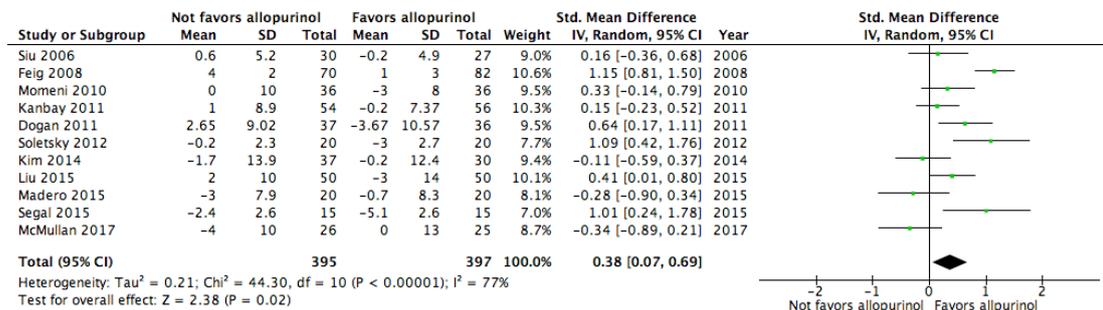


Fig.3 - Reduction of Systole Blood Pressure using Feboxostat

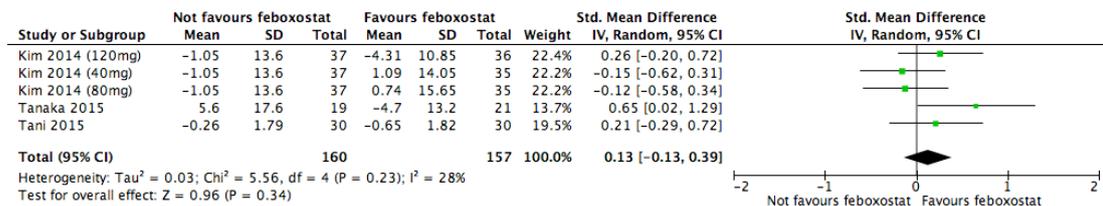
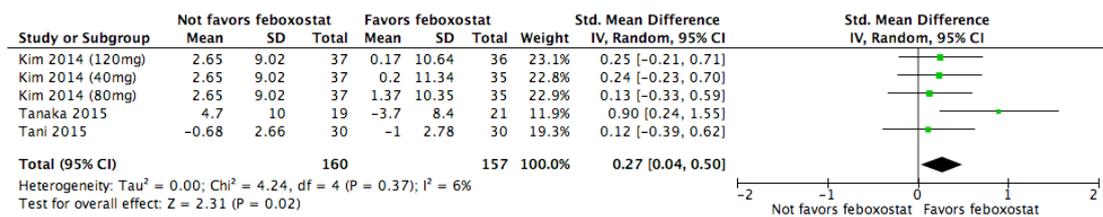


Fig.4 - Reduction of Diastole Blood Pressure using Feboxostat



On-admission Endothelin-1 Level Increases Risk of In-hospital Adverse Cardiac Events in Non ST-Elevation Acute Myocardial Infarction

A.B. Hartopo^{1,*}, I. Sukmasari², I. Puspitawati², B.Y. Setianto¹

1. Department of Cardiology and Vascular Medicine, Faculty of Medicine Universitas Gadjah Mada - Dr. Sardjito Hospital, Yogyakarta, Indonesia

2. Department of Clinical Pathology, Faculty of Medicine Universitas Gadjah Mada - Dr. Sardjito Hospital, Yogyakarta, Indonesia

*correspondence: a_bhartopo@ugm.ac.id

ABSTRACT

Introduction: Serum endothelin-1 is increased in acute myocardial infarction, due to necrotic cardiomyocytes release. In non ST-elevation acute myocardial infarction (NSTEMI), increased serum endothelin-1 on-admission may have clinical significance during acute events.

Objective: The purpose of this study is to investigate whether increased serum endothelin-1 level associate with adverse cardiac events in patients hospitalized with NSTEMI.

Methods: The design of this research is a cohort study. Consecutive subjects with NSTEMI undergoing symptom onset \leq 24 hour are enrolled and observed during intensive hospitalization. Endothelin-1 is measured from peripheral blood taken on-admission. In-hospital adverse cardiac events are composite of death, acute heart failure, cardiogenic shock, reinfarction and resuscitated VT/VF.

Results. Among 38 subjects, the incidence of in-hospital adverse cardiac events is 21.1 %. The endothelin-1 level is significantly higher in patients undergoing in-hospital adverse cardiac events as compared with those without (4.6 ± 2.1 pg/mL versus 2.6 ± 1.3 pg/mL, $p < 0.001$). Unadjusted OR to develop in-hospital adverse cardiac events is 2.1 (95% CI: 1.2 – 3.6, $p = 0.011$) in subjects with increased serum endothelin-1 on-admission.

Conclusion. Increased level of serum endothelin-1 on-admission is associated with subsequent in-hospital adverse cardiac events in patients with NSTEMI.

Keywords: endothelin-1; adverse cardiac events; NSTEMI

Left Distal Transradial Access in Invasive Coronary Procedures: An Early Indonesian Experience

A.K. Suryadharma*, A. Utami, A.F. Yahya, J.W. Martha, M.R. Akbar

Department of Cardiology and Vascular Medicine, Universitas Padjajaran, Dr. Hasan Sadikin General Hospital, Bandung, West Java, Indonesia

*correspondence: andrea.suryadharma@gmail.com

ABSTRACT

Introduction: Left distal transradial access (ldTRA) is known to offer some advantages for an immediate ambulation, less tortuosity, and less bleeding site complication after invasive coronary procedure. Left distal transradial access can be a new promising access with less complications. This access also brings greater convenience to patient and operator during the procedure. We report the first documented Indonesian experience of the left distal transradial access for coronary angiography and intervention

Aim: To investigate a new access for coronary angiography and percutaneous coronary intervention (PCI)

Method: Coronary angiography and intervention was performed through ldTRA access on 40 consecutive patients in Hasan Sadikin General Hospital, Bandung between June 2017 and March 2018. The pulse on left distal transradial artery were checked. The procedures were performed by single interventionist as an operator. During the hospital stay, demographic features and complications were recorded.

Results: Mean age of patients was 57 years and 97.5% were male. Most of them with multiple risk factors such as hypertension in 70% followed by ex smokers in 47.5%, dyslipidemia in 40%, smoker in 30%, diabetes mellitus type 2 in 25%, family history in 17.5%, and menopause in 2.5% of the subjects. There were 16 patients (40%) admitted to the hospital with acute coronary syndrome while the others (60%) with stable coronary artery disease. 5 patients (12.5%) underwent primary PCI, 17 patients (42.5%) with elective PCI, and 18 patients (45%) with angiography only. Most interventions were done in left anterior descending artery (12 patients) with 3 of them underwent multivessel PCI. They all underwent successful left distal transradial access for coronary angiography and intervention. There were no cases of active bleeding, hematome, or hand numbness after the procedure. Hemostasis was achieved by manual compression or radial band.

Conclusion: Our experiences demonstrated feasibility and safety of left distal transradial access in invasive coronary procedures. More studies are needed for further exploration in this novel access.

Keywords: left distal transradial (ldTRA); invasive; coronary angiography; percutaneous coronary intervention

The Risk factors for Three-Vessel Disease in Patient with Stable Coronary Artery Disease

A.D.R. Paramytha^{1,*}, A.B. Hartopo², F.S. Tetradewi³, J. Fachiroh⁴, I.A. Arso²

1. Research Assistant, Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada – Dr. Sardjito Hospital
2. Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada – Dr. Sardjito Hospital
3. Department of Health Behaviour, Environment and Social Medicine, Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada
4. Department of Histology and Cell Biology, Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada Yogyakarta, Indonesia

*correspondence: adysti.dhian@gmail.com

ABSTRACT

Introduction: In Indonesia, Coronary Artery Disease (CAD) is one of the leading cause of death. Many factors can increase the risk of developing CAD. Risk factors that contribute to CAD are either modifiable and non-modifiable. Poor prevention of risk factors can lead to further progression and more severe CAD, which all three vessels affected.

Aim: To analyze the significant risk factors to predict three-vessels disease (3VD) in stable CAD patients.

Method: This was a cross-sectional study. This study enrolled stable CAD patients who underwent coronary angiography in Dr. Sardjito Hospital Yogyakarta from March-August 2018. Traditional risk factors were recorded by anamnesis and physical examination. Physical activity was assessed with Global Physical Activity Questionnaire (GPAQ), obesity was determined by BMI, and waist-hip ratio (WHR) was determined by the ratio of the circumference of the waist to the hip. Number of vessels that affected was assessed by interpretation of coronary angiography. The subjects were divided into two groups: subjects with 3VD and without 3VD. The risk factors were compared between two groups using bivariate and multivariate analysis.

Results: Among 101 subjects, 49(48.5%) patients had 3VD. In subjects with 3VD majority was male (85.7%) and the mean age was 60.22±9.366 years old. All of the 3VD patient had multiple or at least two risk factors. Bivariate analysis showed that smoking history ($p<0.001$), high WHR ($p=0.001$), and insufficient physical activity ($p=0.001$) had significant relation with 3VD. Multivariate analysis showed that smoking history (OR=4.220; 95%CI:1.558-11.430, $p=0.005$), and insufficient physical activity (OR=3.086; 95%CI:1.246-7.642, $p=0.015$) were independent risk factor which predict 3VD in stable CAD.

Conclusion: Smoking history, high WHR and insufficient physical activity were significantly associated with 3VD. Smoking history and insufficient physical activity were statistically significant as an independent risk factor of 3VD in patient with stable CAD.

Keywords: coronary artery disease; three-vessels disease; risk factor

Optimal Timing of Fibrinolytic Therapy in STEMI Patients in Dr. Sardjito General Hospital

N.S.Utomo^{1,*}, M.T. Ismail², N. Taufiq², A.B. Hartopo²

1. Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada

2. Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada-Dr. Sardjito Hospital, Yogyakarta, Indonesia

*correspondence: natashasantoutomo@gmail.com

ABSTRACT

Background: In 2013 coronary heart disease (CHD) is the most common cause of death in the world with 8.14 million deaths, 8.6 million experienced myocardial infarction and 3 million ST segment elevation. In Indonesia cardiovascular disease accounts for 37% of deaths and is the highest cause of death in Yogyakarta Province hospitals with an increase in number from year to year. Myocardial infarction with ST segment elevation is caused by the presence of myocardial ischemia for more than 20 minutes due to total occlusion of the coronary artery and revascularization should be done immediately with the fibrinolytic agent. Research has shown that there is circadian variation on the effectiveness of fibrinolytic agents due to thrombus resistance for lysis at 00.00 - 12.00 as a result of elevated plasminogen activator inhibitor (PAI-1). The purpose of this study was to determine the relationship between time of fibrinolytic therapy with the success of therapy in STEMI patients in Dr. Sardjito Hospital Yogyakarta.

Method: This cross sectional study was conducted using medical record data of Dr. Sardjito Hospital Yogyakarta. Data were taken from STEMI patients post fibrinolytic therapy period January 2016 – October 2017. Total samples in this study were 61, with 36 patients success in fibrinolytic and 25 patients failure in fibrinolytic. The relationship between time of fibrinolytic therapy and the success of the fibrinolytic therapy was analyzed using bivariate and multivariate analysis.

Result: There was significant relationship between time of fibrinolytic therapy and the success of the fibrinolytic therapy on bivariate analysis ($p=0.018$). Based on the multivariate analysis with logistic regression showed STEMI patient treated with fibrinolytic between 12.00 – 23.59 has relative risk 3.435 times (95% CI= 1.101 – 10.658) greater chance for successful fibrinolytic than STEMI patient treated between 00.00 – 11.59.

Conclusion: From this study it was found that there is significant relationship between time of fibrinolytic therapy and the success of the fibrinolytic therapy in STEMI patients. The result of fibrinolytic therapy between the time of 12.00 – 23.59 increase the successful rate of fibrinolytic.

Keywords: fibrinolytic; STEMI; circadian rhythm; myocardium infarction; ST segment elevation

Patient's Profile Accross Our Intensive Cardiac Care Unit : A Single Center Study at Sardjito Hospital

F. Hidayati*, R.F.Huda, H.P. Bagaswoto, N.Taufiq, B.Y. Setianto

*Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr. Sardjito Hospital, Yogyakarta, Indonesia

*correspondence: fera.hidayati@gmail.com

ABSTRACT

Background: Sardjito Hospital is one of national referral hospital, includes for cardiovascular services. In patient's criteria for intensive cardiac care unit (ICCU) still varies widely among hospitals. Duration of ICCU stay is an important parameter for hospital performance. We aim to assess the variation in length of stay (LOS) and identify the patient's clinical profile.

Methods: We conducted a descriptive research with cohort study design. Patients with cardiovascular emergencies problems who have been registered on Sardjito Cardiovascular Intensive Care (SCIENCE) registry since February to December 2017 were recruited as subject. We excluded patient with incomplete data.

Results: There were 860 patients who admitted to ICCU, 73% (624) among them were male. Subjects were categorized as ACS and non-ACS, each consisting of 633 (74%) and 227 (26%) patients. Mean age for ACS group were 60.71 ± 11.49 yo, meanwhile non-ACS group were 60.05 ± 12.84 yo. For ACS group, we identified ST elevation myocardial infarction (STEMI), non-ST elevation myocardial infarction (NSTEMI), and unstable angina pectoris (UAP) patients at 449 (53%), 98 (11%), and 86 (10%), respectively. Non-ACS diagnosis consisted of acute decompensated heart failure (ADHF), acute limb ischemia (ALI), arrythmia (conduction disorder), and post cardiac surgeries. The median LOS for STEMI, NSTEMI, UAP, and non-ACS were 6, 7, 6, and 11 days respectively. The inhospital mortality were 40 (4.65%), 11 (1.28%), 3 (0.35%), and 33 (3.84%) in each group of STEMI, NSTEMI, UAP, and non-ACS.

Conclusion: The majority of patients hospitalized at ICCU were ACS group which more than half were diagnosed as STEMI. The longest median LOS were non-ACS group whereas the highest inhospital mortality were STEMI patients.

Keywords: intensive cardiac care unit; acute coronary syndrome; length of stay; inhospital mortality

Catheter Directed Thrombolysis vs Surgical Embolectomy for Acute Limb Ischemia : Outcome of Acute Limb Ischemia Patient in Sardjito Hospital

B.A. Prabowo^{1,*}, M.T. Ismail², H. Hariawan²

1 Resident of Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada

2 Staff of Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada,

Yogyakarta, Indonesia

*correspondence: baskoro27@gmail.com

ABSTRACT

Background: Acute Limb ischemia (ALI) is an emergency condition to the limb and life. Rapid recognition and treatment are paramount to prevent mortality and limb amputation. There are two primary management of ALI in Sardjito Hospital, Catheter Directed Thrombolysis and Surgical Embolectomy.

Aim: To compare outcome of Catheter Directed Thrombolysis and Surgical Embolectomy on ALI Patients at Sardjito Hospital

Methods: This retrospective study was performed to patients diagnosed as ALI which collected from 2014 to 2018 that had complete medical record. There are 78 patients were diagnosed as ALI by clinical signs and symptoms. 54 Patient were performed either CDT (29 patients) or Surgical Embolectomy (25 patients). Patient in hospital mortality and amputation status were observed during in hospital treatment.

Results: For 29 patients performed CDT, 10 (34%) patients underwent amputation. 25 patients which performed embolectomy, 15 (60%) patients underwent amputation. In hospital mortality rate for CDT patients are 12 (41%) and 14 (56%) for Surgical embolectomy. No significance difference between two groups

Conclusion: ALI patient which underwent embolectomy procedure were higher rate for amputation and in hospital mortality comparing with CDT patients.

Pathological Q Wave in Relationship with Major Adverse Cardiac Event in STEMI Patients Treated with Fibrinolytic and Percutaneous Coronary Intervention

M.A. Wibawa¹, A.B. Hartopo^{2,*}, H. Mumpuni²

1. Resident, Department of Internal Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada-Dr. Sardjito Hospital

2. Staff Division of Cardiology, Department of Internal Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada-Dr. Sardjito Hospital,
Yogyakarta, Indonesia

*correspondence: a_bhartopo@ugm.ac.id

ABSTRACT

Background: Data on the relationship between pathological Q waves with the incidence of major adverse cardiac event (MACE) in patients with STEMI is still limited, these data limitations hamper decision-making prompt treatment to reduce morbidity and mortality of patients in the future.

Aim: This study aimed to determine the relationship of the pathological Q wave to the incidence of MACE in patients with STEMI treated with fibrinolytic and PCI in Dr. Sardjito Hospital.

Method: The design of this study was observational case-control approach (case-control). The subjects were a total of 97 patients with acute myocardial infarction who ever treated with fibrinolysis and PCI in Dr. Sardjito Hospital. Treatment with anticoagulants, antiplatelet agents, and other treatments are used as standard therapy as indicated. The overall data obtained from medical records archive. Subjects were then divided into two groups, patients with MACE events and which are not. In each of these groups then identified ECG on admission before the therapy, the presence or absence of pathological Q-waves. Subjects were excluded if having ECG with QRS-confounders.

Results: There were 23 patients (46.6%) who had MACE with the details of 16 patients from Q-positive group and 7 patients from Q-negative group ($p = 0.032$). The incidence of MACE at most in the form of chronic heart failure (17.6% in Q-positive and 6.5% in Q-negative) and the occurrence of re-infarction within 3 months post-treatment (11.8% in Q-positive and 4.3% in Q-negative). Risk factors that influence significantly to the occurrence of MACE is the wave of the Q-pathologic ECG features at onset of ACS in progress (OR 2.547, 95% CI: 1.038 to 6.913, $p = 0.034$) and ejection fraction <50% on echocardiography at onset of ACS in progress (OR 2.600, 95% CI: 1.091 to 8.859, $p = 0.048$).

Conclusion: Pathological Q-waves showed an independent prognostic marker of the incidence of MACE in patients with STEMI

Keywords: pathological Q wave; MACE; fibrinolytic; PCI