Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

RESEARCH ARTICLES

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

THE ROLE OF PLASMA INTERLEUKIN-6 AND C-REACTIVE PROTEIN IN PATIENT WITH ST-ELEVATION MYOCARDIAL INFARCTION UNDERGONE REVASCULARIZATION WITH PRIMARY PCI: AN OBSERVATIONAL COHORT STUDY

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Background:
Inflammation plays important role in acute coronary syndromes (ACS). Interleukin-6 (IL-6) and C-reactive protein (CRP) are widely acknowledged inflammatory biomarkers. This paper aimed to explore the prognostic implications of acute IL-6 and CRP levels, with the clinical outcomes of left and right ventricular dysfunction, as well as the occurrence of acute heart failure (AHF), cardiogenic shock (CS), arrhythmia, and in-hospital mortality in patients with ST-elevation myocardial infarction (STEMI) underwent primary percutaneous coronary intervention (PCI).

Methods:
This paper analyzed 47 patients with STEMI underwent primary PCI in Sardjito Hospital Yogyakarta from May 2023 to July 2023. Blood samples and echocardiography were taken in the first 24-hours after primary PCI. Outcomes were followed during the inpatient stay. Receiver operating characteristic (ROC) curve analysis was used to evaluate the association between the biomarkers and the clinical outcomes. The optimal cut-off points were then identified using the Youden index from the ROC curve and tested using Pearson's Chi-Square.

Results:
Higher IL-6 were found in patients with left ventricular ejection fraction (LVEF) <50% (cut-off ≥25.15 pg/ml; p<0.001), and in patients with tricuspid annular plane systolic excursion (TAPSE) <17 (cut-off ≥77.25 pg/ml; p<0.001). Higher IL-6 were associated with occurrence of AHF (cut-off ≥59.30 pg/ml; p<0.01), CS (cut-off ≥43.65 pg/ml; p<0.05), arrhythmia (cut-off ≥20.80 pg/ml; p<0.10), and in-hospital mortality (cut-off ≥84.6 pg/ml; p<0.01). Meanwhile, higher CRP was not associated with lower LVEF (p=0.145), but significantly associated with lower TAPSE (cut-off ≥18.85 mg/L; p<0.01), as well as the occurrence of AHF (cut-off ≥22.2 mg/L; p<0.1), arrhythmia (cut-off ≥26.25 mg/L; p<0.05), CS (cut-off ≥25.5 mg/L; p<0.01), and in-hospital mortality (cut-off ≥31.35 mg/L; p<0.05).

Conclusion:
Increased inflammatory response is associated with myocardial injury and worse prognosis in ACS. This paper supports that acute short-term inflammation may be important for short-term prognosis as well as risk of further cardiovascular events. Acute elevation of IL-6 and CRP in STEMI patients underwent primary PCI were associated with left and right ventricular dysfunction, as well as adverse clinical events including in-hospital mortality, although CRP significance was more limited. These biomarkers thus might be useful for risk stratification in patients with STEMI.

Keywords: Interleukin-6, CRP, Primary PCI, Inflammation, ST-elevation Myocardial Infarction

Table 1. Bivariate analysis of outcomes on IL-6 and CRP levels

Table 1. Bivariate analysis of outcomes on IL-6 and CRP levels

	Interleukin-6				
	AUC	Cut-off (pg/ml)	Sensitivity (%)	Specificity (%)	p
LVEF <50	0.724	≥25.15	95.5	60.0	<0.001
TAPSE <17	0.723	≥77.25	62.5	90.3	<0.001
Acute heart failure	0.707	≥59.30	83.3	73.2	0.006
Cardiogenic shock	0.714	≥43.65	85.7	57.5	0.035
Arrhythmia	0.651	≥20.80	100.0	31.6	0.051
In-hospital mortality	0.776	≥84.60	66.7	82.9	0.007
	CRP				
	AUC	Cut-off (pg/ml)	Sensitivity (%)	Specificity (%)	p
LVEF <50	0.562	≥12.25	72.7	48.0	0.145
TAPSE <17	0.702	≥18.85	81.3	61.3	0.006
Acute heart failure	0.687	≥22.20	83.3	53.6	0.090
Cardiogenic shock	0.782	≥25.50	100.0	60.0	0.003
Arrhythmia	0.661	≥26.25	77.8	60.5	0.038
In-hospital mortality	0.748	≥31.35	83.3	68.3	0.015

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BLOOD UREA NITROGEN TO CREATININE RATIO IN ACUTE CORONARY SYNDROME PATIENTS AT SAIFUL ANWAR HOSPITAL: A STUDY OF HOSPITAL MORTALITY A RETROSPECTIVE COHORT STUDY

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Background:
Cardiovascular outcomes in individuals with acute coronary syndrome are impacted by kidney failure. Kidney biomarkers frequently tested in patients with acute myocardial infarction include creatinine, urea nitrogen, and the BUN creatinine ratio (BCR). The purpose of this study was to evaluate the usefulness of these markers in the diagnosis and risk assessment of mortality for patients with acute coronary syndrome.

Methods:
Medical records were acquired from the computerized CVCU joint research database, encompassing information throughout Saiful Anwar Hospital Malang. Data comprised character laboratory results, comorbidities, and demographic traits. In-hospital death was the clinical endpoint. The Kaplan-Meier technique was utilized to generate survival curves, and the Cox proportional hazards model was employed to assess the prognostic values of the BUN creatinine ratio (BCR). Statistical tests such as binary logistic regression analysis and multivariate linear regression were used.

Results:
641 patients who qualified overall were included. The area under the curve (AUC) of BCR (0,77) was greater than the AUC of BUN (0.75) and the AUC of Cr (0,745). The BUN/Cr ratio continued to be a significant predictor of in-hospital mortality (hazard ratio, 1.50; 95% CI, 1.08–2.09; $P<0.05$). The Kaplan-Meier curve for tertiles of the BUN/Cr ratio showed that in-hospital death rates were greatest when the ratio was ≥ 34,5.

Conclusion:
BUN creatinine ratio (BCR) might be a useful tool in diagnosing acute coronary syndrome. When assessing the mortality risk of ACS patients, the BUN creatinine ratio (BCR) may also be a crucial instrument.

Keywords: Mortality, Acute Coronary Syndrome, Blood Urea Nitrogen to Creatinine Ratio

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Indonesian J Cardiol 2024:45:suppl_A
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doi: 10.30701/ijc.1719

COMPARATIVE ANALYSIS OF CLINICAL OUTCOMES IN ST-ELEVATION MYOCARDIAL INFARCTION (STEMI) PATIENTS WITH QRBBB VERSUS NON-QRBBB

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Background:
ST-Elevation Myocardial Infarction (STEMI) is a critical cardiovascular event associated with significant morbidity and mortality. The presence of complete Right Bundle Branch Block (qRBBB) in STEMI patients has been a subject of interest due to its potential prognostic implications. This study aims to evaluate clinical outcomes of 68 anterior STEMI patients, comparing those with qRBBB against without qRBBB.

Methods:
A retrospective analysis was conducted on 68 anterior STEMI patients admitted to our institution between January 2023 and March 2023. The patients were categorized into two groups based on the presence (n=24) or absence (n=44) of qRBBB on the electrocardiogram. Demographic information, medical history, and clinical data, including KILLIP Class and the occurrence of acute heart failure, cardiogenic shock and death, were meticulously collected and analyzed. Statistical analyses were performed using SPSS statistics version 25, with the significance level set at $p < 0.05$.

Results:
A total 68 anterior STEMI patients were enrolled in this study. We found 24 (35.3%) patients was STEMI with qRBBB, patients with qRBBB exhibited a significantly higher KILLIP Class ($p = 0.001$), indicative of a more severe myocardial infarction. Furthermore, the incidence of acute heart failure (66.7% vs 27.3%, $p = 0.002$) and cardiogenic shock (41.7% vs 4.5%, $p < 0.001$) was notably higher in qRBBB group compared to the non-qRBBB group. We also found that LVEF was significantly lower in qRBBB group (41.6 ± 10.4 vs 47.1 ± 10.8, $p = 0.049$) compared to non-qRBBB group.

Conclusion:
This research provides detailed insights into the prognostic significance of qRBBB in STEMI patients. These findings suggest that the presence of qRBBB in anterior STEMI patients is associated with increased severity of myocardial infarction and a higher risk of adverse outcomes. The elevated KILLIP Class, lower EF and increased occurrence of acute heart failure and cardiogenic shock in patients with qRBBB emphasize the importance of recognizing qRBBB as a potential marker for adverse outcomes.

Keywords: qRBBB, clinical outcomes, STEMI, ST-Elevation Myocardial Infarction

Clinical profile of qRBBB STEMI: a comparison with anterior STEMI without qRBBB

	qRBBB (n=24)	non-qRBBB(n=44)	P-value
Age	55.3 ± 10.2	56 ± 9.6	0.789
Gender			0.517
Male	22 [91.7]	38 [86.4]	
Female	2 [8.3]	6 [13.56]	
DM	4 [16.7]	9 [20.5]	0.704
HT	13 [54.2]	24 [54.5]	0.976
Smoker	20 [83.3]	35 [79.5]	0.704
Dyslipidemia	18 [75]	21 [47.7]	**0.03**
TIMI Score	6.1 [2-11]	4 [1-10]	
Killip Class			**0.001**
I	7 [29.2]	33 [75]	
II	10 [41.7]	8 [18.2]	
III	4 [16.7]	3 [6.8]	
IV	3 [12.5]	0 [0]	
Onset (h)	24.7 [2.5-96]	24.8 [1.5-157]	0.274
Acute Heart Failure	16 [66.7]	12 [27.3]	**0.002**
Arrhythmia	4 [16.7]	3 [6.8]	0.202
Cardiogenic Shock	10 [41.7]	2 [4.5]	**0.000**
Cerebrovascular Accident	1 [4.2]	0 [0]	0.173
Death	4 [16.7]	2 [4.5]	0.092
LVEF	41.6 ± 10.4	47.1 ± 10.8	**0.049**
Hemoglobin	13.9 ± 1.6	14.2 ± 1.5	0.464
Hematocrit	40.9 ± 7	42.8 ± 4.7	0.182
Blood Glucose	163.3 ± 70.1	170 ± 107.1	0.949
Ureum	50.5 ± 34.7	42.8 ± 31.5	0.111
Creatinine	1.4 ± 0.8	1.3 ± 0.6	0.421
Troponin	22.2 ± 12.6	20.2 ± 17	0.327

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ASSOCIATION OF HAEMATOCRITS AND HAEMOGLOBIN RATIO (HHR) WITH IN-HOSPITAL MORTALITY IN PATIENTS WITH ACUTE PULMONARY EMBOLISM IN CARDIAC INTENSIVE CARE UNIT

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Background:
Acute Pulmonary Embolism (APE) is an acute life-threatening condition associated with short and long term adverse events, including mortality, emphasizing the need for adequate yet simple risk assessment tools to detect and promptly treat patient with higher risk for an adverse event earlier. Hematocrit to hemoglobin ratio (HHR) is an easily acquired examinations within hospitalization.While previous studies have explored the association of HHR with outcomes in various cardiovascular conditions, the specific association between HHR and in-hospital mortality in APE remains underexplored.

Methods:
This retrospective study included patients with APE presenting between January 2022 and November 2023 in CVCU at Kariadi Hospital. Electronic health records of adult patients admitted with confirmed APE diagnosis through transthoracic echocardiography or CT pulmonary angiography were reviewed.Patients included required to at least have basic hematology examinations, including measurements of hematocrit and hemoglobin. We calculated the HHR with cutoff value set at 3.1. Demographic details, clinical data, and in-hospital outcomes were collected and analysed with IBM® SPSS version 26

Results:
Among 20 patients with APE, mean age 45.9 <u>+</u> 17.4 year, in hospital mortality occurred in 9 patients (45%). Among the non-survivor group patients with high HHR (>3.1) was found in 77.8% case (p = 0.02). There was moderate positive correlation between HHR and in-hospital mortality (p = 0.025,r = 0.449). Other finding that may contribute to mortality among non survivor group were systolic blood pressure below 100 mmHG (p = 0.01), heart rate below 110 bpm (p = 0.01), and SpO2 below 90 (p = 0.02).

Conclusion:
Haematocrit and Haemoglobin Ratio (HHR) is associated with in-hospital mortality in adults diagnosed with Acute Pulmonary Embolism.

Keywords: mortality, hemoglobin to heamtocrit ratio, cardiac intensive care, acute pulmonary embolism

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
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Baseline characteristics

	Total (n = 20)	Patients		p
		Survivors (n = 11)	Non-survivors (n = 9)	
Characteristics				
Age (in years)	45.9 ± 17.4	44.4 ± 16.4	47.67 ± 19.4	
Gender				0.58
Male	8	5[45.5]	3[33.3]	0.76
Female	12	6[54.5]	6[66.7]	
Comorbidities				
Diabetes	1	1[9.1]	0	0.35
Hypertension	2	0	2[22.2]	0.09
Chronic Heart Failure	2	1[9.1]	1[11.1]	0.81
Coronary Artery Disease	0			*NS*
Chronic Kidney Disease	1	0	1[11.1]	0.25
Stroke	1	0	1[11.1]	0.25
Chronic Obstructive Pulmonary Disease	1	0	1[11.1]	0.25
Malignant Neoplasm	7	4[36.3]	3[33.3]	0.88
Connective Tissue Disease	0			*NS*
Smoking	0			*NS*
Reduced Mobility (within 4 weeks)	0			*NS*
Recent surgery (within 4 weeks)	0			*NS*
Prior Pulmonary Embolism	0			*NS*
Prior Deep Vein Thrombosis	7	4	3[33.3]	0.88
Family History of VTE	0			*NS*
Hormone Use	0			*NS*
Indwelling vascular catheter	0			*NS*
Clinical Symptoms and Signs at Presentation				
Syncope	0			*NS*
Chest Pain	0			*NS*
Dyspnoea	20			*NS*
SBP < 100 mmHg	4	0	4[44.4]	**0.01**
HR > 100 bpm	14	6[54.5]	8[88.9]	0.09
HR > 110 bpm	4	0	4[44.4]	**0.01**
RR > 30 x/min	12	6[54.5]	6[66.7]	0.58
SpO2 < 90%	15	6[54.5]	9[100]	**0.02**
Echocardiography and Cardiac Biomarker				
RV dysfunction (TTE)	8	4[36.4]	4[44.4]	0.71
Elevated cardiac troponin	3	1[9.1]	2[22.2]	0.41
Laboratory Findings				
Hb/Hb Ratio				
Low (<3.1)	8[72.7]		2[22.2]	**0.02**
High (>3.1)	3[27.3]		7[77.8]	
Leukocyte[x10^3]	11.5 ± 6.6		14.6 ± 4.9	0.23
Ureum	51.3 ± 55.5		74 ± 58	0.45
Creatinine	1.3 ± 1.2		1.4	0.85
D-Dimer	6418 ± 6691		7932 ± 6804	0.56

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

COMPARATIVE EVALUATION OF ACUTE PHYSIOLOGY AND CHRONIC HEALTH EVALUATION II (APACHE-II) AND GLOBAL REGISTRY OF ACUTE CORONARY EVENTS (GRACE) SCORE IN ACUTE CORONARY SYNDROME (ACS) PATIENTS ADMITTED TO CARDIOVASCULAR CARE UNIT RSUD DR. SAIFUL ANWAR MALANG

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Background:
Individualizing ACS patient's risk stratification to identify high-risk patients is central to get most benefit from intensive cardiac care. Global Registry of Acute Coronary Events (GRACE) score is well-known of its best performance to be a strong predictor of in-hospital mortality of ACS patients but intensive care physicians often use general prognostic scores from heterogenous populations of critically ill patients, such as Acute Physiologic and Chronic Health Evaluation (APACHE) II. Prognostic scores need to be validated in a population different from the one on which they developed to be widely adopted thus APACHE-II performance needs to be evaluated in patients with ACS. We evaluate and compare the performance of APACHE-II and GRACE in ACS patients admitted to cardiovascular care unit (CVCU) RSUD dr. Saiful Anwar Malang

Methods:
A single-center, retrospective cohort derived from Registry of patients admitted to CVCU RSUD dr. Saiful Anwar from August 2021 to July 2023 evaluate both APACHE-II and GRACE scores on ACS patient's admission. The area under the receiver operating characteristic curve (AUC) was used to evaluate discriminative ability to predict CVCU survival. Multiple logistic analysis was performed to identify the independent risk for mortality. The correlation between length of stay and number of scores was calculated using Spearman correlation test.

Results:
Of the 1606 admitted patients, 841 had acute coronary syndrome and 727 patients can be scored. Both scores have good discriminative ability with APACHE II having better results (AUC: 0.823; Sensitivity 70.1%; Specificity 80.8%) compared to GRACE (AUC: 0.747; Sensitivity 45.3%, Specificity 88.2%). APACHE-II has the best single risk factor for CVCU mortality (odds ratio, 1.21;95% CI 1.16 to 1.26; P<0.05). In the evaluation of length of stay, APACHE-II score has a less significant impact (r= 0.122; P<0.05) than GRACE (r= 0.227; P<0.05) in predicting length of stay in CVCU.

Conclusion:
In populations of ACS patients admitted to CVCU RSUD dr. Saiful Anwar Malang, APACHE-II score and GRACE were adequately calibrated and had very good discrimination with APACHE-II more prominent. Both scores are amenable to be used in this population to predict mortality risk and length of stay.

Keywords: APACHE, ACS, Mortality, Score, GRACE

APACHE, Acute Physiology and Chronic Health Evaluation; CVCU, Cardiovascular Care Unit; GRACE, Global Registry of Acute Coronary Events

Table 1. Summary of Outcomes

CVCU Mortality						
Scale	Best Cutoff Point	Sensitivity (%)	Specificity (%)	Youden Index	ROC Area	Odds Ratio
APACHE-II	10.5	70.1%	80.8	0.509	**0.823**	**1.210**
GRACE	165.5	45.3%	88.2	0.335	0.747	1.013
CVCU Length of Stay						
Scale	Correlation Coefficient			P Value		
APACHE-II	0.122			0.001		
GRACE	**0.227**			0.001		

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

EFFECT OF MORINGA OLEIFERA'S ROOT EXTRACT ON LEFT VENTRICULAR THICKNESS IN RATTUS NORVEGICUS METABOLIC SYNDROME MODEL

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Background:
Myocardial hypertrophy can be caused by metabolic syndrome. Moringa root has many benefits as anti-inflammatory. This experimental study aims to determine the effect of Moringa root ethanolic extract in myocardial wall thickness in animal model.

Methods:
This research was an experimental study with a sample of 30 rats divided into 5 groups. K1 (negative control), K2 (positive control), K3, K4 and K5 were fed high-fat, high-fructose feed for 25 days. On the 28th day, streptozotocin-NA was induced. Then, Moringa root extract was given to group K3 at a dose of 150 mg/kgBB, K4 at 250 mg/kgBB and K5 at 350 mg/kgBB. After 56 days, termination was carried out and heart tissue was taken to make histopathological preparations with HE staining. Heart thickness is analyzed with One Way ANOVA and Post Hoc LSD (Least Significant Differences).

Results:
Data of aortic thickness showed K1-K5 group was 163.03 ± 5.45 µm, 190.40 ± 15.43 µm, 138.32 ± 10.97 µm, 152.64 ± 86.56 µm, and 143.8473 ± 6.24 µm respectively. Post Hoc LSD showed that there were significant differences between K1-K2, K2-K3, K2-K4, and K2-K5 ($p<0,05$). It mean moringa root ethanolic extract can reduce thickness of left ventricular wall in animal model with metabolic syndrome. However, the results of the Post Hoc LSD analysis also showed no significant differences in moringa root extract dose-based groups used in the study.

Conclusion:
High-fat diet and streptozotocin-NA injection can increase heart wall thickness, and the effect of Moringa root ethanolic extract is also able to reduce hypertrophic conditions in the left ventricle of Wistar rats in a model of metabolic syndrome, which is statistically significant, but not when viewed from the dose used in this research.

Keywords: Left ventricular thickness, STZ-NA., Moringa root extract, Hypercholesterolemia, Metabolic syndrome

Table 1. Histopatology of Left Ventricular Wall Thickness

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

COMPARISON OF MAYO CARDIAC INTENSIVE CARE UNIT ADMISSION RISK SCORE AND PNEUMONIA SEVERITY INDEX SCORE AS PREDICTORS OF MORTALITY IN INTENSIVE CARDIAC CARE UNIT PATIENTS WITH COMORBID COMMUNITY-ACQUIRED PNEUMONIA AT DR. WAHIDIN SUDIROHUSODO HOSPITAL

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Background:
Pneumonia remains one of the most common comorbidities and increases the risk of death in patients with cardiovascular disease. Several prediction scoring systems have been developed to assist clinicians in decision-making regarding management and predicting mortality rates. The Mayo Cardiac Intensive Care Unit Admission Risk Score (M-CARS) and Pneumonia Severity Index (PSI) score can be used to predict mortality in Intensive Cardiac Care Unit (ICCU) patients with comorbid community-acquired pneumonia (CAP). This study aims to compare M-CARS and PSI score for predicting mortality within 30 days in ICCU patients with comorbid CAP.

Methods:
A prospective cohort study that recruited all ICCU patients (January–June 2023) with comorbid CAP and then underwent scoring (M-CARS and PSI score) within the first 24 hours after admission. Patients were then followed up for 30 days to monitor mortality. The accuracy of M-CARS and PSI scores was compared using the receiver operating characteristic (ROC) curve.

Results:
Of the 51 patients, the majority are male (37, 72.5%), with a mean age of 58.1 ± 12.7 years. The majority were hospitalized with acute coronary syndrome (74.5%). The mean M-CARS was 1.5 ± 2, and the PSI score was 95.5 ± 30.4. M-CARS (AUC 0.717; 95% CI: 0.531-0.904; p 0.018) and PSI score (AUC 0.915; 95% CI: 0.836-0.994; p<0.001) had good accuracy. MCARS with a cut-off value of 0.5 had a sensitivity of 71.4% and a specificity of 43% for predicting 30-day mortality, while PSI with a cut-off value of 105 had a sensitivity of 92.9% and a specificity of 78%.

Conclusion:
The M-CARS and PSI score have good accuracy in predicting 30-day mortality in ICCU patients with comorbid CAP. The accuracy of the PSI score is better than M-CARS. However, we still recommend the use of M-CARS due to its simplicity, flexibility, and good accuracy in predicting patient outcomes.

Keywords: Pneumonia Severity Index, Community Aquired Pneumonia, Mayo Cardiac Intensive Care Unit Admission Risk Score, Intensive Cardiac Care Unit

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
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doi: 10.30701/ijc.1719

CORRELATION OF CALCIUM-PHOSPHORUS PRODUCT AND GENSINI SCORE ON CORONARY ARTERY DISEASE AND NONCHRONIC KIDNEY DISEASE SUBJECTS

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Background:
Coronary artery disease is a disease caused by atherosclerotic or calcification plaques in the coronary arteries. The severity of coronary artery disease can be assessed objectively by coronary angiography. Gensini score was used to evaluate the severity of coronary artery disease. Calcium-phosphorus product plays an important role in the calcification process which increases vascular thickness, arterial stiffness and cardiovascular mortality. Calcium-phosphorus product increased cardiovascular risk, especially the risk of myocardial infarction have raised interest in the correlation between calcium-phosphorus product and the severity of coronary artery disease.

Methods:
This study used an analytical observational design with a retrospective study to see the correlation between calcium-phosphorus product and gensini scores in coronary artery disease subjects. The total sample was 40 with a diagnosis of coronary artery disease and nonchronic kidney disease (GFR <60ml/min). Examination of calcium-phosphorus product were performed on all subjects. The data was analyzed using Spearman correlation.

Results:
The total sample was 40 patients (90% males) with mean age of 57.98. There is a very strong correlation between calcium-phosphorus product and gensini score ($r = 0,852$ and $p = 0,00$).

Conclusion:
There is a very strong correlation between calcium-phosphorus product and gensini score, where an increase in the calcium-phosphorus product is also followed by an increase in gensini score, therefore calcium-phosphours product can be used to assess the degree and severity of coronary artery disease lesions.

Keywords: Coronary Artery Disease, Gensini score, Calcium-phosphorus product

Indonesian Journal of Cardiology
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HYPERGLYCEMIA ON ADMISSION AND MORTALITY OUTCOMES IN ACUTE CORONARY SYNDROME: A RETROSPECTIVE STUDY IN INDONESIA'S EASTERN REFERRAL CARDIAC CENTER

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Background:
Admission hyperglycemia is a common condition in patients with acute coronary syndromes (ACS), regardless of whether they have a history of diabetes. Evidence suggests that hyperglycemia during ACS is not just a sign of stress ischemic reaction, but is rather a significant and potentially modifiable risk factor to prevent short- and long-term poor outcomes. Despite the fact that several studies have pointed out this association, hyperglycemia is still not well recognized as a risk factor for outcome predictor and is often left untreated in patients with ACS.

Methods:
We enrolled 817 patients with ACS admitted to Wahidin Sudirohusodo Cardiac Centre Makassar between August 2021 and July 2023. The data was collected retrospectively from hospital digital medical records and stored in the One-ACS registry database. Admission hyperglycemia was defined as blood glucose >200 mg/dL. Mortality outcomes including all-cause death encompassed in-hospital mortality and follow-up 30-day mortality, were then separately analyzed.

Results:
Our study found that 10.5% of all patients (n=86) died during hospitalization, while 18.4% (n=150) died within 30 days of admission. Among all patients, 20.6% (n=168) had hyperglycemia on admission, regardless of their diabetes history. There was no significant relationship between hyperglycemia on admission and in-hospital mortality. However, the study did find evidence that hyperglycemia on admission can predict 30-day mortality (OR 1.531, 95% CI (1.016-2.307), $p<0.05$). The study also found that patients with a history of diabetes were more likely to have hyperglycemia on admission (OR 14.703, 95% CI (9.864-21.917), $p<0.001$).

Conclusion:
This study emphasizes the significance of monitoring blood sugar levels in ACS patients upon admission despite the patient's diabetes history. The findings reveal a noteworthy correlation between admission hyperglycemia and 30-day mortality. This highlights the need for timely intervention in such cases. Insights like these can help in creating effective treatment strategies, reliable predictors and improved outcomes for ACS patients.

Keywords: Acute Coronary Syndrome , Inhospital mortality, Admission Hyperglicemia, 30-Day mortality

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

ACUTE DECOMPENSATED HEART FAILURE AND INFLAMMATION – A CASE CONTROL STUDY: COULD A SIMPLE INFLAMMATORY MARKER PREDICT THE OUTCOME?

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Background:
It is known that heart failure (HF) is linked with inflammation as a pathogenesis as well as the impact of heart failure itself. The application of a simple blood test to predict the outcome in acute decompensated heart failure (ADHF) patients is not well established. Neutrophil-lymphocyte ratio (NLR), monocyte-lymphocyte ratio (MLR), platelet-lymphocyte ratio (PLR) are inexpensive and easy to obtain in hospitalized patients using a routine blood test. We evaluate the implications of NLR, MLR, and PLR as an independent predictor of outcome in ADHF patients.

Methods:
This case-control study included 38 ADHF patients enrolled from January-December 2023. Group were matched based on the survival. Mann-Whitney test and Spearman's rho test were performed to identify if NLR, MLR, and PLR can be used as independent predictors of mortality, length of stay (LOS), and inotropes/vasopressors use.

Results:
The average age of the subjects in this study was 54 years, with the majority of subjects being male (n=33) and mean LOS was 9 days (5 – 26). There was total 15 patients used inotropes or vasopressor, and 6 patients did not survive during hospitalization. The mean of NLR was 6.86 (1.19 - 30), PLR 154 (36.4 – 445.8), and MLR 0.57 (0.14 – 1.83). Higher NLR value was profound in non-survived patients (MD: -6.30; p=0.003) and in patients who required inotropes/vasopressors support (p<0.001). Longer LOS also associated with higher NLR value (R:0.47; p=0.003). Cut-point NLR of 7.3 successfully predicted mortality rate among patient population (Sens: 100%, Spec: 75%; NPV: 100%; AUC: 0.89). Meanwhile, elevated MLR and PLR were not associated those findings.

Conclusion:
This study proves that elevated NLR in ADHF patients is an independent predictor for inotropic or vasopressor use, LOS, and mortality. Increased NLR in ADHF patients can be a simple valuable biomarker of severity, and most of all, a poor outcome.

Keywords: Acute Decompensated Heart Failure, Outcome Predictor, Neutrophil to Lymphocyte ratio

Table 1. Higher NLR value was profound in non-survived patients

Variables	Survived (N=32)	Non-survived (N=6)	P-value
Age (mean years)	54.2	57.0	0.49
Length of stay (mean days)	10.2	16.0	0.18
Inotropes/Vasopressors used (%)	28	100	NA
LV ejection fraction	34.7	37.7	0.90
Neutrophil-lymphocyte ratio (mean)	**5.58**	**13.6**	**0.003**
Monocyte-lymphocyte ratio (mean)	0.54	0.71	0.74
Platelet-lymphocyte ratio (mean)	150.76	172.95	0.29

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

COMPARISON OF RISK STRATIFICATION SCORES IN PREDICTING IN-HOSPITAL MORTALITY IN PATIENT WITH ACUTE PULMONARY EMBOLISM

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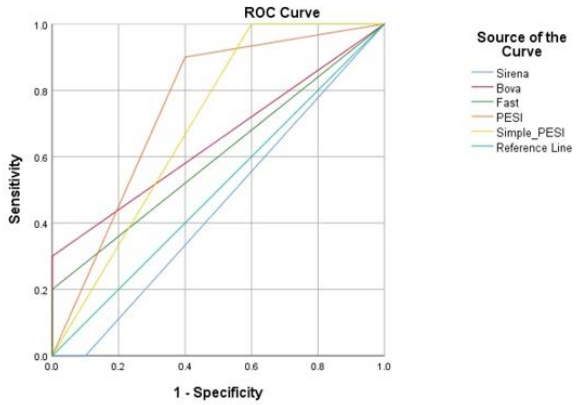
Background:
The majority of individuals who suffer from acute pulmonary embolism (PE) could encounter many complications. There is significant risk of mortality or hemodynamic collapse in about 5–15% of patients with acute PE. In order to identify patients who may be at risk for these consequences, various risk assessment models have been created such as SIRENA score, BOVA score, FAST score, PESI score, and simple PESI core. Several treatment guidelines and expert recommendations strongly suggest these regularly used those risk scores.It is unknown how similarly each of those risk scores will stratify an individual patient's risk. In addition, inconsistent ability to estimate in-hospital mortality limits the utility of many of these risk scores. Our objective was to compare the performance of risk assessment scores in patients with acute pulmonary embolism.

Methods:
This single centre retrospective study included patients with acute pulmonary embolism presenting between January 2022 and October 2023. Included patients were adults who diagnosed acute pulmonary embolism based on transthoracal echocardiography or CT pulmonary angiography and had sufficient information in the medical record to calculate risk scores. We calculated SIRENA score, BOVA score, FAST score, PESI score, and simple PESI score for each patient. In addition, we included low risk and high risk for each score. Data analysis was performed from November to December 2023.

Results:
Among 20 patients with acute pulmonary embolism (mean [SD] age, 47.5 [16.2] years; 8 men [40%]), in-hospital mortality occurred in 45% case (9 patients). In hospital mortality in the low-risk groups ranged from 5% (1 patient) to 35% (7 patients). In the high-risk groups, in hospital mortality ranged from 10% (2 patients) to 40% (8 patients). Sensitivity, specificity, and accuracy of each score: SIRENA 22.2%, 90.9%, 60%; BOVA 55.56%, 90.9%, 70%; FAST 22.2%, 90.9%, 60%; PESI 88.9%, 54,5%, 75%; and simple PESI 77.8%, 36,3%, 55%, respectively. Correlation of each score with in-hospital mortality: SIRENA p=0.35; BOVA p=0.04; FAST p=0.09; PESI p=0.03; and simple PESI p=0.04.

Conclusion:
PESI score is better score in predicting in-hospital mortality in patient with acute pulmonary embolism.

Keywords: mortality, acute pulmonary embolism, risk scores



SIRENA Score	: AUC 0.450 (95%CI 0.192 – 0.708)
BOVA Score	: AUC 0.650 (95%CI 0.403 – 0.897)
FAST Score	: AUC 0.600 (95%CI 0.346 – 0.854)
PESI Score	: AUC 0.750 (95%CI 0.525 – 0.975)
Simple PESI Score	: AUC 0.700 (95%CI 0.462 – 0.938)

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

THE ASSOCIATION BETWEEN ORGAN PERFUSION PRESSURE AND CLINICAL OUTCOMES IN PATIENT WITH ACUTE DECOMPENSATED HEART FAILURE

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Background:
Acute decompensated heart failure (ADHF) is a developing health concern with a poor prognosis, resulting in a high annual fatality rate. In ADHF, the interplay of low arterial and high central venous pressure (CVP) can affect organ function, causing backward congestion and low anterograde perfusion. This can lead to renal, hepatic, and intestinal failure, ultimately worsening the prognosis. The difference between mean arterial pressure (MAP) and CVP, known as organ perfusion pressure (OPP), has been shown to have prognostic value in various clinical situations. Our objective was to investigate OPP as a prognostic risk marker in patients with acute decompensated heart failure.

Methods:
This is single centre, retrospective study, involving patients who were admitted with ADHF between January 2022 to November 2023. Vital sign and transthoracal echocardiography was taken for estimating right atrial pressure on admission. OPP was classified into two categories: <68 (low) and <u>></u>68 (high). The outcome was measured as a composite endpoint consisting of in-hospital mortality, ICCU length of stay (LoS), and 24-h urine output.

Results:
We analysed 184 patients who were enrolled in the study, after exclusion of patients with missing follow-up data. The patient's age was 57.9 <u>+</u> 9.4 years old and 150 patients (81.5%) were male. In-hospital mortality between two groups was statistically significant with p< 0.001. The length of ICCU LoS in low and high OPP were 10.6 <u>+</u> 5.9 days vs 7.9 <u>+</u> 7 days, respectively (p= 0.006). The 24-h urine output is 1.1 <u>+</u> 0.37 L in low group vs 1.64 <u>+</u> 0.56 L in high group with p = 0.03. OPP have strong positive correlation with in-hospital mortality and 24-h urine output (r= 0.625 and r=0.602, respectively) and moderate positive correlation with ICCU LoS (r=0.454). At multivariable models including hemodynamic variables such as OPP, shock index, modified shock index, and right atria pressure, OPP at admission was the best predictor of in-hospital mortality (AUC 0.781, 95%CI 0.684 – 0.878).

Conclusion:
In patient admitted with acute decompensated heart failure, low OPP on admission is associated with increase of in-hospital mortality, longer ICCU LoS, and lower 24 hours urine output.

Keywords: mortality, organ perfusion pressure, acute decompensated heart failure

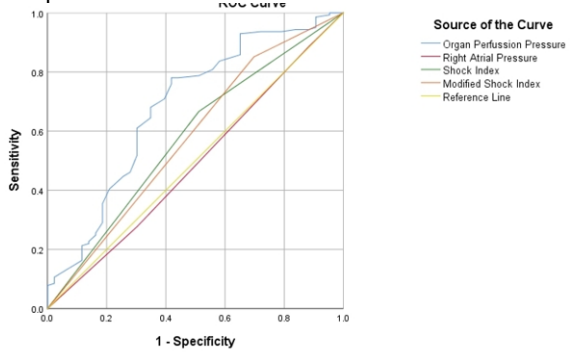
Tabel 2. Correlation test

		OPP		Correlation Coefficient (R)	*P* value
		Low	High		
In hospital mortality	Yes	15 (34.9)	28 (65.1)	0.625	<0.001
	No	10 (7.1)	131 (92.9)		
Total		25 (13.6)	159 (86.4)		

Contingency coefficient correlation test

	ICCU LoS
Organ Perfussion Pressure	r = 0.454 p = 0.006 n = 184

	24 hours urine output
Organ Perfussion Pressure	r = 0.602 p = 0.03 n = 184



Organ perfusion pressure : AUC 0.681 (95%CI 0.684 – 0.878)
Right atrial pressure : AUC 0.490 (95%CI 0.390 – 0.589)
Shock index : AUC 0.578 (95%CI 0.478 – 0.677)
Modified shock index : AUC 0.577 (95%CI 0.475 – 0.679)

Figure 1. ROC curve analysis for in-hospital mortality

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

EXPLORING THE INTRICACIES OF THE NEUTROPHIL AND PLATELET-LYMPHOCYTE RATIO: A PROGNOSTIC ARBITER IN ACUTE DECOMPENSATED HEART FAILURE PATIENT CLINICAL TRAJECTORIES

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Background:
Numerous inflammatory biomarkers are correlated with prognosis in acute decompensated heart failure (ADHF). The neutrophil-lymphocyte ratio (NLR) and platelet-lymphocyte ratio (PLR) are being employed as a novel supplementary inflammatory biomarkers.We sought to investigate the association of NLR and PLR with clinical outcome in ADHF.

Methods:
This retrospective study was in the context of Acute Cardiovascular Care Kariadi Hospital Registry. About 106 individuals with ADHF were recruited from January 2022 to March 2023. NLR was calculated by division of neutrophil to lymphocyte and PLR was calculated by division of platelet to lymphocyte. A value of NLR and PLR which established as a cut-off point were 80 and 4.0, respectively. We analysed 24-hours urine output, length of stay, and in-hospital mortality as clinical outcome in this study.

Results:
About 106 patients, including 86 males with mean age of 58.5 <u>+</u> 8.9 years were evaluated in this study. The 24-hours urine output was 1.7 <u>+</u> 0.7 L in low NLR group and 1.5 <u>+</u> 0.7 L in high NLR group with p = 0.08. The length of hospital stay in low and high NLR group was 10.1 <u>+</u> 6 and 10.3 <u>+</u> 9.9 day, respectively (p = 0.88). In-hospital mortality in low NLR group was 31 patients and 51 patients in high NLR group (p = 0.01). The 24-hours urine output was 1.6 <u>+</u> 0.7 L in low PLR group and 1.2 <u>+</u> 0.9 L in high PLR group with p = 0.06. The length of hospital stay in low and high PLR group was 10.2 <u>+</u> 8.2 and 10.2 <u>+</u> 7.6 day, respectively (p = 0.99). In-hospital mortality in low PLR group was 2 patients and 20 patients in high PLR group (p = 0.02).

Conclusion:
Elevated NLR and PLR are independent predictor for in-hospital mortality in ADHF patients.

Keywords: platelet-lymphocyte ratio, neutrophil-lymphocyte ratio, acute decompensated heart failure

Table 2. Chi square test between NLR – PLR with clinical outcome in ADHF patients

	NLR		*p-value*
	Low	**High**	
24-h urine output	1.7 ± 0.7 L	1.5 ± 0.7 L	0.08
Length of stay	10.1 ± 6 day	10.3 ± 9.9 day	0.88
In-hospital mortality	31	51	**0.01**

	PLR		*p-value*
	Low	**High**	
24-h urine output	1.6 ± 0.7 L	1.2 ± 0.9 L	0.06
Length of stay	10.2 ± 8.2 day	10.2 ± 7.6 day	0.99
In-hospital mortality	2	20	**0.02**

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

CORRELATION BETWEEN CALCIUM AND PHOSPHATE LEVELS WITH TROPONIN-T LEVELS IN PATIENTS WITH CHRONIC KIDNEY DISEASE AND HEART FAILURE REDUCED EJECTION FRACTION AT RSUP PROF. R.D. KANDOU MANADO: A CROSS-SECTIONAL STUDY

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Background:
Elevated troponin levels and calcium-phosphorus products increased the likelihood of cardiovascular event in patients with chronic kidney disease (CKD).Elevated troponin levels have been observed in various conditions unrelated to thrombotic coronary disease, including CKD. However, an increased level of troponin T without a corresponding increase in calcium or phosphate levels, is more likely to indicate an acute coronary syndrome (ACS).This study aims to evaluate the correlation between calcium and phosphate levels with troponin-T levels in patients with CKD and heart failure reduced ejection fraction (HFrEF).

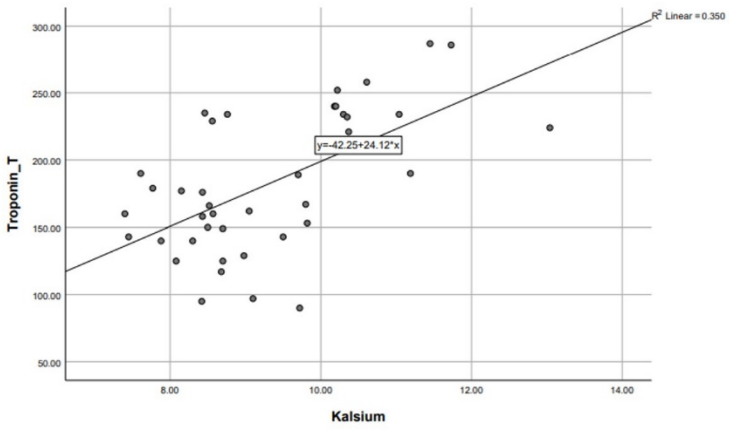
Methods:
Cross-sectional observational study at Prof. R.D. Kandou Hospital Manado was done from January to February 2024. All stage V (eGFR <15) CKD patients with HFrEF (EF <40%) were included in the study. Patients with diabetes mellitus, AIDS, hepatitis, ongoing infetion, malignancy, chest pain, dyspneu, and loss of conciousness we excluded from the study. All laboratory tests were obtained from the same automated blood sample analyzer. We used SPSS version 24 to perform all statistical calculations. Shapiro-Wilk test was used to evalute the data distribution. Pearson and Spearman's rho correlation test were used. The p-value of ≤0.05 was considered significant.

Results:
A total of 40 subjects were included in the study, most were males (70%) with mean age of 45.53 ± 11.48 years. The mean phosphate, calcium, and troponin T values of the patients were 9.29 ± 1.28 mg/dl, 5.08 ± 1.72 mg/dl, and 181.90 ± 52.41 ng/ml. No correlation was found between phosphate level and troponin T level (p=0.967). Positive moderate correlation was found between calcium level and troponin T level (p<0.001, r=0.534).

Conclusion:
No correlation was found between phosphate level and troponin T level. Calcium level was positively correlated with troponin T level in patients with CKD and HFrEFs.

Keywords: Phosphate, Calcium, Troponin T, Chronic kidney disease, Heart failure

Positive moderate correlation between calcium level and troponin T level.



Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

OCCURRENCE AND TIMING OF ACUTE KIDNEY INJURY, AND THE RISK OF MAJOR ADVERSE CARDIAC EVENTS IN PATIENTS WITH ACS: AN OBSERVATIONAL STUDY

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Background:
Acute kidney injury (AKI), is a condition of sudden and often reversible reduction in the kidney function, as measured by increased serum creatinine by 0.3 mg/dL or more within 48 hours. It is a common complication of acute coronary syndrome (ACS), associated with increased risk for adverse outcomes, and is a renowned marker of worse prognosis. We aimed to investigate the risk of Major Adverse Cardiac Events (MACE) in ACS patients in relation to occurrence and timing of AKI, as there still less study about it.

Methods:
This study is a prospective observational study conducted at Nirmala Suri Hospital from October to December 2023. The inclusion criteria are patients with ST elevation myocardial infarction (STEMI), non-ST elevation myocardial infarction (NSTEMI), or unstable angina (UA), ≥18 years of age and <24 hours of initial symptom. Patients were categorized into 3 groups according to the occurrence and timing of AKI development: early-AKI occurrence (<48h), late-AKI occurrence (>48h), and no-AKI occurrence. We observed in-hospital outcomes that were defined as composite major adverse cardiac events. The primary endpoints were all-cause mortality, myocardial infarction, acute heart failure, and stroke. Risk of MACE was analyzed by using multivariate logistic regression method.

Results:
We enrolled 57 patients, 36 (63%) patients were diagnosed with UA, 12 (21%) patients with NSTEMI, and 9 (15%) patients with STEMI. We identified 28 patients (49%) developed AKI (16 before 48h, 28%; 12 after 48h, 21%). The rates of MACE were significantly greater among patients who developed AKI as compared to those who did not develop AKI (early-AKI 12 patients, 21%, late-AKI 7 patients, 12.3%, non-AKI 5 patients, 8.8%; P<0.001). Risk of MACE in ACS patients was associated with occurrence and timing of AKI (OR 3.93, 95%CI, 1.86-8.31). The probability of MACE in early-AKI, late-AKI, non-AKI (P=0.78, P=0.48, P=0.19 respectively; 95%CI).

Conclusion:
The risk of MACE in this study population, was associated with occurrence and timing of AKI. In-hospital all-cause mortality rate was significantly higher in patients who developed AKI before 48 hours as compared to other 2 groups. Multicenter research with bigger sample is needed to further support this result.

Keywords: MACE, NSTEMI, Acute coronary syndrome, STEMI, acute kidney injury

Table 1. Rate of MACE and Percentage of Each Endpoints

Groups	Rate of MACE	Primary endpoints observed			
		In-hospital all-cause mortality	Myocardial infarction	Stroke	Acute heart failure
Early-AKI	21%	8.8%	3.5%	3.5%	5.3%
Late-AKI	12.3%	3.5%	1.7%,	1.7%,	5.3%
No-AKI	8.8%	1.7%	1.7%	0%	5.3%

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

PREDICTOR FACTORS OF PROLONGED USE OF MECHANICAL VENTILATION IN PATIENTS WITH ACUTE RESPIRATORY FAILURE AND ACUTE HEART FAILURE IN THE CVCU ROOM RSUD DR. SAIFUL ANWAR MALANG

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Background:
Acute respiratory failure (ARF) can occur as a complication in hospitalized patients and is brought on by a variety of cardiopulmonary dysfunctions, such as acute heart failure. Long-term use of mechanical ventilation in critically ill patients is linked to a mortality rate of about 30% and much higher resource demand.

Methods:
This cohort retrospective study of all patients intubated in CVCU room RSUD dr. Saiful Anwar Malang in 2015 until 2021. We excluded patients with incomplete medical record data and who died before 14 days of mechanical ventilation. We performed both univariate and multivariate analyses to identify potential predictors of PMV. Receiver operating characteristic curves were compared via comparison of the area under the curve (AUC). The sensitivity and specificity determined for each number of positive variables. Data were analyzed using SPSS 22.0.

Results:
There was a significant difference between the group of patients who experienced prolonged use of mechanical ventilation (PMV) and patients who non-prolonged mechanical ventilation (non PMV). Based on multivariate analysis with logistic regression, the odds ratio (OR) of each variable was obtained for the incidence of prolonged use of mechanical ventilation. The OR values for each are as follows: HR > 100x/minute (Tachycardia) (OR = 2.058; 95% CI 1.091 – 5.996); pH < 7.25 (OR = 2.027; 95% CI 1.090 – 6.330); eGFR < 30 mL/min/1.73 m2 (OR = 2.873; 95% CI 1,278 – 6,460); Shock condition (OR = 2.828; 95% CI 1.133 – 7.062); and Major bleeding (OR = 1.359; 95% CI 1.177 – 2.150). These data indicate likelihood of predictor of prolonged use of mechanical ventilation > 14 days in patients treated at CVCU Saiful Anwar Hospital Malang. The score shows good discrimination with an area under the receiver operating curve (AUC) of 0.83 (95% CI 0.77-0.88) with a sensitivity of 0.87 (95% CI 0.82-0.94) and a specificity of 0.73 (95% CI 0.72 – 0.84).

Conclusion:
Predictor factors of mechanical ventilation prolongation in patients with respiratory failure with acute heart failure who were treated in the CVCU room at RSUD dr. Saiful Anwar Malang, among others: heart rate > 100x/minute, pH < 7.25, eGFR < 30 mL/min/1.73m2, shock condition, and major bleeding; with sensitivity of 87% and specificity of 73%.

Keywords: Acute Respiratory Failure, Acute Heart Failure, Predictor, Prolong Mechanical Ventilation

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

PNEUMONIA-RELATED MORTALITY IN ICCU PATIENTS WITH ACUTE DECOMPENSATED HEART FAILURE: A RETROSPECTIVE OBSERVATIONAL STUDY

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Background:
<p>Numerous precipitating factors can contribute to the occurrence of ADHF, thereby leading to the necessity for hospitalization. Concomitant pneumonia is relatively common in patients with ADHF which is often independently associated with in-hospital mortality. While many HF decompensations are managed at a ward-based level, a proportion of patients may require admission to the Intensive Cardiac Care Unit (ICCU). We aim to associate the mortality of ADHF patients with pneumonia in the ICCU setting.<p> <p>

Methods:
We perform retrospective observational study with a total sample of 110 patients with ADHF recorded diagnosis ICD I50 in the ICCU registry from November 2021 until October 2023. Rehospitalization data was taken up to 3 months after the patient was first discharged from ICCU. The data was categorized into two groups, ADHF cases with pneumonia and the other without pneumonia, followed by subsequent analysis of mortality and rehospitalization incidence.<p> <p>

Results:
In total 110 patients with ADHF, 60% being male, average age 59 years old, ADHF with pneumonia as a concurrent diagnosis makeup 41.8% of reported instances. In total In-hospital Mortality among 25 patients, there is no correlation between mortality with pneumonia in the ICCU setting (P=0.24). While pneumonia as a concurrent diagnosis shows a significant association with length of stay and rehospitalization within one month (P=0.048, P=0.044), otherwise the evidence for rehospitalization within three months signifies distinct results (P=0.62). (Table 1)<p> <p>

Conclusion:
Pneumonia has no significant association with mortality and 3-month rehospitalization rates of ADHF patients in the ICCU setting. Further study with a larger sample size is needed to better represent this case.

Keywords: ICCU, ADHF, Pneumonia, Mortality

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

CHARACTERISTIC OF CLINICAL LIKELIHOOD CHRONIC CORONARY SYNDROME PATIENTS WITH SIGNIFICANT CORONARY LESION IN RSUP DR. MOHAMMAD HOESIN PALEMBANG

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Background:
Chronic coronary syndrome (CCS) is a pathological process characterized by atherosclerotic plaque accumulation in the epicardial arteries, whether obstructive or non-obstructive. Significant Coronary artery disease (CAD) is defined by invasive coronary angiography as >50% stenosis of the left main stem, >70% stenosis in a major coronary vessel, or 30% to 70% stenosis with fractional flow reserve ≤0.8. This study aimed to identify the characteristics of clinical likelihood CCS patients with site of significant coronary lesion based on pre-test probability (PTP)from demographic characteristics; risk factors; laboratory and echocardiography findings.

Methods:
This is a retrospective cohort study. We reviewed 60 medical records of clinical likelihood chronic coronary syndrome patients with positive inducible ischemia area from dobutamine stress echocardiography and significant CAD lesion from coronary angiography.

Results:
The incidence of significant CAD in this population was 56.1%. There was a significant relationship between age > 65 years with the incidence of significant LAD lesion (23.3%, p = 0.019); significant LCx lesion (20%, p = 0.043). There was a significant relationship between PTP score ≥ 16% with significant LAD lesion (55.0%, p = 0.001); significant LCx lesion (45.0%, p = 0.031); and significant RCA lesion (40.0%, p = 0.050).

Conclusion:
Patients with age > 65 years have a higher incidence of significant LAD and LCx lesions. Patients with pre-test probability score ≥ 16% have a higher incidence of significant lesions across coronary branches, predominantly in the LAD.

Keywords: significant coronary artery disease, chronic coronary syndrome, dobutamine stress echocardiography.

Tabel 6. Multivariate Analysis

Variable	P value	Confidance Interval 95%	
		Minimum	Maximum
Age ≥ 65 years			
Significant LAD	0.019	0.641	1.109
Significant LCx	0.043	0.307	0.602
PTP ≥ 16%			
Significant LAD	0.001	0.201	0.776
Significant LCx	0.031	0.033	0.666
Significant RCA	0.050	9.889	0.635

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

RISK FACTORS OF CHRONIC CORONARY SYNDROME: POPULATION-BASED STUDY IN TAMAN SARI PUBLIC HEALTH CENTER, JAKARTA, INDONESIA

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Background and aims:
Heart disease has become the biggest cause of death in Indonesia. 45% of deaths are caused by heart disease. Data from basic health research in 2018 has put Jakarta as the fifth biggest prevalence of heart disease. Coronary artery disease has become a catastrophic disease that contributes to the largest expenditure on national health insurance. Currently, there is still a lack of data on risk factors for chronic coronary syndrome in Indonesia, especially population-based research. The purpose of this study was to assess risk factors of chronic coronary syndrome in a population-based study in Taman Sari Public Health Center Jakarta.

Methods: We conducted a retrospective descriptive study. Data was obtained from medical record between January – June 2023. We analyzed baseline characteristics such as age, sex, education, work, body mass index, systolic and diastolic blood pressure, glucose level, and traditional risk factors such as hypertension, diabetes, dyslipidemia, smoker, and obesity. We analyzed some of the potential habitual factors such as lack of fruit, vegetable and salt intake and also physical activity. Normality test done by Shapiro Wilk test. Statistics analysis was done in SPSS 21.

Results: A total of 443 patients are enrolled in this study. The majority of the patients were male 65.9% (292), with a median age was 65 years old (23 – 87). Most of the patients had low educational levels in elementary and junior high school 84.2 % (373), 9.5% (42) had high school levels, 4.3% (19) had diploma levels and 2% (9) were not attending school. The majority of patients 21,9% (97) didn't have a job. There were 141 patients (31.8%) who had obesity, 8.4% (37) had hypertension, 7.2% (32) had diabetes, 0.2% (1) had dyslipidemia and 9.9% (44) were smokers. Our analysis found 3.4% (15) of patients had a lack of fruit and vegetable intake and 1.4% (6) had a lack of physical activity and 0.7% (3) had excessive salt consumption.

Conclusions: Knowing the risk factors for chronic coronary syndrome plays an important role in prevention, early detection, and prevention of complications.

Keywords: Chronic coronary syndrome, hypertension, diabetes, dyslipidemia

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

UTILIZING APACHE IV AND GRACE SCORES AS PREDICTORS OF MORTALITY COMPARED WITH SAPS-3 SCORES FOR ACUTE CORONARY SYNDROME PATIENTS IN THE CARDIAC VASCULAR CARE UNIT

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Background:
Acute coronary syndromes (ACS) frequent cause of hospitalization in the cardiovascular care unit. Positive predictive data are being developed and shown to be effective for patients with ACS; GRACE has shown the most accurate outcomes. In contrast, prognostic scores derived from diverse cohorts of critically ill patients are predominantly employed by intensive care clinicians. Prominent examples of such scores include APACHE IV and SAPS 3. The objective of this research endeavor was to assess and contrast the efficacy of these three scores across an unselected sample of ACS cases.

Methods:
The study included all ACS patients admitted from August 2021 to November 2023. Hospital mortality prediction was assessed using score calibration and discrimination.

Results:
There were 843 patients in total included. SAPS 3 could not be calibrated appropriately, whereas APACHE IV and GRACE could. Across all scores, discrimination was exceptional (area under the curve values of 0.811 for APACHE IV, 0.740 for GRACE, and 0.732 for SAPS 3).

Conclusion:
GRACE and APACHE IV were calibrated thoroughly in this cohort of intensive care unit-admitted ACS patients; however, SAPS 3 lacked such calibration. All three scores exhibited exceptional discrimination. GRACE and APACHE IV may be utilized to predict the risk of mortality in patients with ACS.

Keywords: Global Registry of Acute Coronary Events, Simplified Acute Physiology Score 3, intensive cardiovascular care unit, Acute Physiology and Chronic Health Evaluation Score

Table 3. AUC of GRACE Score, APACHE IV and SAPS 3 Patient Mortality (n=843)

Score	Area	Asymptotic Sig.	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
GRACE	0.740	0.000	0.690	0.790
APACHE IV	0.811	0.000	0.765	0.858
SAPS 3	0.732	0.000	0.673	0.792

AUC	Interpretation
>50% - 60%	Unsatisfactory
>60% - 70%	Satisfactory
>70% - 80%	Good
>80% - 90%	Very good
>90% - 100%	Excellent

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

AVOCADO FRUIT EXTRACT (PERSEA AMERICANA), REDUCING THE RISK OF CORONARY HEART DISEASE IN RATTUS NORVERGICUS WITH METABOLIC SYNDROME: STUDY WITH BIOCHEMICAL PARAMETERS

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Background:
Metabolic syndrome is a pathological condition characterized by obesity, hypertension, insulin resistance, and hyperlipidemia. These metabolic abnormalities cause mild inflammation, which can increase the risk of coronary heart disease, diabetes mellitus, and mortality. It is characterized by increased levels of fasting blood glucose, low-density lipoprotein (LDL), total cholesterol, uric acid, and decreased high-density lipoprotein (HDL) levels. Persea americana is intended to improve metabolic syndrome conditions. This study aimed to determine the effect of Persea americana extract on fasting blood glucose, HDL, LDL, total cholesterol, and uric acid levels in Wistar rats with metabolic syndrome models.

Methods:
This study was created in an experimental laboratory with a pretest and posttest control group design. 30 rats were divided into 5 groups: K1−negative control group; K2−positive control group; K3, K4, and K5 as the metabolic syndrome group was given Persea americana extract with doses of 150, 300, and 450 mg/kg BW, respectively. HDL and LDL levels were measured for all groups on days 8, 36, and 64. A one-way ANOVA test was used to analyze the data, followed by a post-hoc Tukey HSD test, a paired T-test, and a Pearson correlation test.

Results:
Based on statistical analysis, there were significant differences in the levels of fasting blood sugar, HDL, LDL, total cholesterol, and uric acid before and after treatment ($p<0.05$) in all groups. The Pearson correlation test shows that the dose of Persea americana has a very strong relationship, with a positive relationship for HDL levels and a negative relationship for fasting blood glucose, LDL, total cholesterol, and uric acid levels.

Conclusion:
Induced Persea americana extract with doses of 150, 300, and 450 mg/kgBB has the potential to reduce coronary heart disease risk based on research on experimental animals (Rattus norvegicus) by reducing levels of LDL, Cholesterol, and increasing HDL concentrations in the blood.

Keywords:

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

A COMBINATION OF HS TROPONIN T AND IL-6 AS AN EMERGING BIOMARKERS TO PREDICT IN-HOSPITAL MORTALITY IN PATIENTS WITH ST- ELEVATION MYOCARDIAL INFARCTION : AN OBSERVATIONAL COHORT STUDY

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Background:
Coronary heart disease accounting for 16% of world mortality. Atherosclerosis and inflammation of coronary vessels is the causes for acute coronary syndrome (ACS). Biochemical parameters are an alternative to a clinical scoring such as GRACE score in acute coronary syndrome to predict mortality. This paper aimed to explore the utilization biomarker such as IL-6 and hs (high sensitivity) Troponin T to predict mortality in patients with ST-elevation myocardial infarction (STEMI) underwent primary percutaneous coronary intervention (PCI).

Methods:
A total of 47 patients with STEMI underwent primary PCI in Sardjito Hospital Yogyakarta from May 2023 to July 2023 were included in this study. Interleukin-6 and hs Troponin T were obtained from blood sample in 24-hours after revascularization. The outcomes of this study was in hospital mortality. Receiver operating characteristic (ROC) curve analysis was used to evaluate the association between the biomarkers and the clinical outcomes. The subjects divided into 2 groups, namely low hs troponin T- low IL-6 and high hs troponin T - high IL6 to analyzed their association with mortality using Fisher exact.

Results:
Higher IL-6 and hs troponin T were associated with in-hospital mortality (cut-off ≥54.80 pg/ml; p 0.033 ; cut-off ≥2097 pg/ml; p 0.004 respectively). Patients with high hs troponin and high IL6 had higher mortality risk compare to patients with low hs troponin T and low IL 6 (OR=11.67, 95% CI 1.735- 78.436; p 0.014).

Conclusion:
Higher level of Hs troponin T and IL6 indicating myocardial injury and worse prognosis in patient with ACS such as in hospital mortality. This combination of biomarker can be considered as a predictor of mortality in addition to clinical data using the GRACE score.

Keywords: ST-elevation Myocardial Infarction, Hs Troponin T, Mortality, Interleukin-6

Table 1. Analysis Biomarker IL-6 and Hs Troponin T to Mortality

Table 1. Analysis Biomarker IL-6 and Hs Troponin T to Mortality

Parameters	Alive	Death	P	OR
	N (%)	N (%)		
IL-6				
< 54,8	27 (96,4%)	1 (3,6%)	0,033**	
≥54,8	14 (73,7%)	5 (26,3%)		
Hs-Troponin T				
<2907,00	33 (97,1%)	1 (2,9%)	0,004**	
≥2907,00	8 (61,5%)	5 (38,5%)		
Combination of IL6 and Hs Troponin to Mortality				
Low IL-6 and Low Hs Troponin T	35 (94,6%)	2 (5,4%)	0,014**	11,667 (95% CI 1,735 – 78,436
High IL-6 and High Hs Troponin T	6 (60,0%)	4 (40,0%)		

** statistically significant

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

ACUTE HYPERGLICEMIA IN NON DIABETES PATIENT: A TROUBLEMAKER OR INNOCENT BYSTANDER IN ACUTE CORONARY SYNDROME ? AN OBSERVATIONAL COHORT STUDY

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Background:
Hyperglycemia often occurs in patients with acute coronary syndrome (ACS), especially in patients with older age, diabetes, and acute heart failure. The surge of catecholamines and induction of glycolysis result in hyperglycemia. Such event has detrimental effects through decreased collateral circulation and increased infarct size. In addition, hyperglycemia in patients with acute coronary syndrome also lead to a state of prothrombosis. This paper aim to compare risk mortalitity in patient with ACS presenting acute hyperglycemia with or without diabetes melitus (DM).

Methods:
A total of 1085 patients with ACS from January 2023 to December 2023 in Sardjito Hospital Yogyakarta were included in this study. Blood glucose and hemoglobin glycosylated (HbA1C) were obtained from blood sample in the first 24-hours after admision. The outcomes was in hospital mortality. Hyperglycemic was defined as blood glucose >200 mg/dL. Meanwhile, high HbA1c was determined when HbA1c was >6.5%. The relationship between hyperglycemia and mortality in patients with acute coronary syndrome was analyzed using chi square. We also further analyzed the relationship of Hba1c to mortality specifically for ACS patients who were hyperglycemic at admission using chi square analysis.

Results:
Hyperglycemia at admission significantly increased the risk of in hospital mortality despite the diabetes status (OR=2.35, 95% CI 1,704 – 3,252;p<0.001). Low HbA1c was also found to affect the mortality of ACS patients who experienced hyperglycemia (OR=3.512, 95% CI 1.690-7.297; p<0.001).

Conclusion:
Acute hyperglycemia increases mortality in patients with acute coronary syndrome. This paper supports that acute hyperglycemia without diabetes melitus has a higher mortality risk in acute coronary syndrome patients. This paper also support the importance of high blood sugar regulation in the management of acute coronary syndrome patients regardless of diabetes history.

Keywords: Acute coronary syndrome , Mortality, Hyperglycemia, Diabetes Melitus

Table 1. Risk of Mortalitity in Patient ACS Presenting Acute Hyperglycemia

Table 1. Risk of Mortalitity in Patient ACS Presenting Acute Hyperglycemia

Baseline characteristic	Alive	Death	P	OR
	N (%)	N (%)	<0,001	2,35 (1,704 – 3,252)
Blood sugar <200 mg/dL	687 (85,1%)	120 (14,9%)		
Blood sugar >200 mg/dL	197 (70,9%)	81 (29,1%)		
Hyperglycemia and diabetic status				
Blood sugar >200 mg/dL; HbA1c >6,5%	152 (78,8%)	41 (21,2%)	<0,001	3.512 (1.690 – 7.297)
Blood sugar >200 mg/dL; HbA1c <6,5%	19 (51,4%)	18 (48,5%)		

Indonesian Journal of Cardiology
Indonesian J Cardiol 2024:45:suppl_A
pISSN: 2830-3105 / eISSN: 2964-7304
doi: 10.30701/ijc.1719

A MULTICENTER STUDY ON CARDIOVASCULAR EMERGENCY IN INDONESIAN PRIMARY HEALTH CARE CENTERS (PUSKESMAS)

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Background:
The mortality of cardiovascular disease has become a global burden, as well as in Indonesia. Early diagnosis and prompt treatment is crucial in reducing the burden. As frontline, primary healthcare plays a pivotal role in ensuring the optimal cardiovascular emergency care services. Thus, this study aims to assess Indonesian primary health care (Puskesmas) in managing cardiovascular emergencies.

Methods:
An observational multi center study was conducted across 40 Puskesmas in Indonesia. Prospective data regarding the diagnosis, management, and patient's outcome of cardiovascular emergency patients were collected from October to December 2023.

Results:
There were 215 acute cardiovascular patients. The most prevalent diagnosis was hypertensive crisis (n=137; 64%). In this group, electrocardiograms (ECG) were conducted in only 26% of cases, and none underwent Chest X-Ray. This group mostly used oral amlodipine (59%) and captopril (55%) as antihypertensive. The second most common diagnosis was acute coronary syndrome (n=42; 20%), with ECG performed in only 71% of cases. Among 13 patients with ST-segment elevation myocardial infarction (STEMI), 69% only received aspirin, and 46% were given dual antiplatelet therapy. 23% of STEMI cases were referred without initial treatment. Arrhythmia occurred in 26 patients, with none receiving electrical treatment, but three patients received vagal maneuvers. The most commonly used antiarrhythmic are bisoprolol, propranolol, and atropine. The Arrhythmia group showed the highest percentage of uncoordinated referrals (31%). There are 23 cases of acute heart failure, with only 39% of which received oxygen and 26% of which were positioned semi-sitting. Furosemide was used in only 21% of cases. Cardiac arrest occurred in two patients, with one experiencing ventricular fibrillation (VF). Both patients underwent cardiopulmonary resuscitation (CPR) and received epinephrine but unfortunately did not survive.

Conclusion:
This study has demonstrated a considerably high incidence of cardiovascular emergency in puskesmas, with hypertensive crisis being the most prevalent. Nevertheless, there is a disparity between the current primary management and the recommended guidelines, posing a potential risk of a higher cardiovascular disease burden in Indonesia. Consequently, the imperative need for strategic, data-driven policy-making arises from these findings.

Keywords: cardiovascular emergency, puskesmas, primary health care