Cardiac Amyloidosis and Aortic Stenosis: Indexed Left Ventricular Mass as a Potential Diagnostic Parameter

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Background

Several reports have been published regarding the existence of cardiac amyloidosis in Asian population including Indonesia.[1,2] Cardiac amyloidosis is an underdiagnosed disease which can co-exists with aortic stenosis. Both diseases may cause worse cardiac remodelling and function. This study aimed to elaborate the use of Indexed left ventricular mass (LVMi), as a parameter of cardiac remodelling, to distinguish patient with cardiac amyloidosis.

Methods

A total of 116 patients (44.8% male; age 86.73 ± 5.1 years) with severe AS (mean gradient 43.2 ± 14.5 mmHg; AVA 0.66 ± 0.15 cm^2) were analysed in tertiary cardiac centre. All patients underwent 3,3-diphosphono-1,2-propanodicarboxylic acid (DPD) scintigraphy, and cardiac computed tomography (CT). Left ventricular (LV) function and remodelling as well as aortic stenosis severity were analysed using a semi-automatic CT analysis software (Syngo.via, Version VA20, Siemens Healthcare).

Result

Cardiac Amyloid was identified in 16 of 116 patients (62.5% men). Patients with dual pathology had a higher indexed LV mass (101.5±32.8 vs 71.8±21.6 g/m^2; *p<0.001*), higher mass volume ratio (M/V, 1.2±0.4 vs 0.9±0.3, *p<0.001*) and lower Myocardial Contraction Fraction (MCF,0.5±0.2 vs 0.7±0.2, *p<0.001*). There were no significant different in left ventricular ejection fraction or aortic valve area between patients with AS-amyloid and isolated AS (0.42±0.16 vs 0.42±0.18, *p>0.05*). Indexed LV mass had a moderate predictive accuracy for amyloid (AUC: 0.784 (95%CI 0.66 to 0.91).

Conclusion

A total of 13% patients with cardiac amyloidosis were associated with worse cardiac remodelling. Indexed LV Mass value alone help to differentiate cardiac remodelling caused by the deposition of amyloidosis.

Keywords : Amyloidosis, LVMi, Aortic Stenosis

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Factor Associated with Hypertension among Adolescent in Rural District Kintamani, Bali Province

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ABSTRACT

Hypertension is a major clinical and public health issue and one of the major risk factors of metabolic syndrome among adolescents. Previous studies indicated that the process of atherosclerosis starts at an early age and is already linked to obesity and other components of the metabolic syndrome in childhood Increasing obesity prevalence among children and adolescents is one of the most important public health issue. A cross-sectional study with a total sampling of 134 adolescents (aged 13-15 years) was conducted. Adolescents found to have chronic diseases and underwent hypertension treatment were excluded from the study. Data were analyzed using univariate and bivariate analysis (Independent sample T-test and chi square test). The prevalence of hypertension among adolescent is 26.1%. The mean of systolic blood pressure is 110 mmHg (SD=13.3 mmHg) and diastolic blood pressure 69 mmHg (SD=10.1 mmHg). There is a significant difference of hypertension among adolescent based on central obesity (CO) (p=0.013) and nutritonal status (p<0.001). The mean difference waist circumferemce (WC) between hypertension and normotension was -4.12 (95%CI: (-)6.94 — (-)1.30046), WHR -0.0235 (95%CI: (-)0.4364 — (-)0.00334), and WHtR was -0.0274 (95%CI: (-)0.04585 — (-)0.00903). There were no significant association between gender and psychological stress to hypertension among adolescent. Central obesity, nutirional status, higher WC, higher WHR, and higher WHtR are associated to increasing risk of hypertension among adolescent. Findings from this study indicate the need of multi-faceted interventions aiming at reducing sedentary lifestyle from early age.

Keywords: Adolescent, Hypertension, Risk Factor, Rural Area.

Incidence, Outcomes, and Predictors of Acute Heart Failure Following ST-Segment Elevation Myocardial Infarction (STEMI) Patients Underwent Primary Percutaneous Coronary Intervention

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Background

Despite aggressive therapy in the era of early reperfusion, patient with ST-segment elevation myocardial infarction (STEMI) may still develop complications. Acute heart failure (AHF) is recognized as an ominous complication following MI, and its occurrence reported as one of the most reliable clinical predictors of short-term mortality. Thus, its prevention and optimal treatment in STEMI patients is of critical importance.

Objective

This study aimed to evaluate the incidence, in-hospital outcome, and predictor of AHF in STEMI patients underwent primary percutaneous coronary intervention (PPCI).

Methods

We used retrospective data from RAICOM study (Registry of Acute and Intensive Cardiovascular on Outcome) conducted at the Intensive Cardiovascular Care Unit (ICVCU) National Cardiovascular Center Harapan Kita. Contributions of clinical and imaging data were analyzed with bivariate and multivariate analysis.

Results

Out of 918 admissions for STEMI in a year, 612 patients underwent PPCI. The incidence of AHF after PPCI was 9.80% and significantly lower compared to STEMI patients who were medically managed (p=0.034). No difference in length of stay and in-hospital mortality of revascularized patient as compared to medically managed patient. Among suggested predictors, reduced left ventricular ejection fraction (LVEF < 40%), longer duration from symptom onset to hospital admission, anterior ST-segment-elevation, and involvement of left anterior descending (LAD) as culprit artery were independently associated with the development of AHF in ICVCU (p<0.05). After multivariate analysis, anterior ST-segment-elevation (odds ratio [OR] 0.49, 95% confidence interval [CI] 1.95-12.14, p=0.001) and reduced LVEF (OR 2.22, 95% CI 1.15-4.30, p= 0.018) had significant overall effect on the incidence of AHF after revascularized STEMI.

Conclusion

This study revealed that STEMI patients still suffered from AHF after primary revascularization. Anterior ST-segment-elevation and reduced LVEF on admission were associated with high-risk features on presentation of AHF after STEMI.

Keywords: *Acute Heart Failure, STEMI, Percutaneous Coronary Intervention*

Raising Citizens' Awareness of Hypertension and Screening in Remote Area: A Study in Puskesmas Tolofuo, Halmahera Barat

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Background: Hypertension can cause many complications of cardiovascular diseases. Unfortunately, people in the remote area were not familiar with this matter.

Aim: This study aimed to know the prevalence of hypertension in Puskesmas Tolofuo working area.

Method: We measured the blood pressure of all citizens in Puskesmas Tolofuo working area twice; first by home visit, followed by further examination in the village hall. If both examinations showed systole above 140 mmHg, and/or diastole above 90 mmHg, the patient was diagnosed with hypertension and deeper interview was conducted to obtain information about the patient's medical history, sex, age, BMI, alcohol consumption, and active and passive smoking.

Result: From 1477 residents over 15 years old, 189 people had systole above 140mmHg, and/or diastole above 90mmHg on the first screening. Only 114 attended the second examination, where 90 (6.09%) were diagnosed with hypertension. Forty-five (50%) were stage 1, 34 (37.78%) were stage 2, and 11 (12.22%) were urgency hypertension. Based on the type, most of them is a mix of systole-diastole (n=51, 56.67%), followed by isolated systolic hypertension (n=23, 25.56%), and isolated diastolic hypertension (n=16, 17.78%). Of those 90 patients, 23 (25.55%) had been previously diagnosed with hypertension and 9 (10%) among them are on routine medication. The average age is 52.34 years old, and most of them are women (n=61, 67.78%). Based on multivariate analysis, the risk factors that significantly increase MAP (Mean Arterial Pressure) are age (adj. OR=0.449, $p<0.001$), higher BMI (adj. OR=0.603, $p=0.059$), and alcohol consumption (adj. OR=6.156, $p=0.092$). Sex, active smoking, and passive smoking have no significant association with MAP.

Conclusion: In Puskesmas Tolofuo, the prevalence of hypertension is low, but often unrecognized and untreated due to lack of knowledge, screening, and economically not feasible. Factors that significantly lead to higher MAP are age, higher BMI, and alcohol consumption.

Keywords: hypertension screening, remote area, Puskesmas Tolofuo

Right Ventricle, not Left Ventricle, Proven as Predictor for Mortality in Heart Failure Patient: Study from Sardjito General Hospital Heart Failure Registry

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Background: The mortality in chronic heart failure (CHF) patients is still remains unacceptably high, especially in the developed countries.As we know, Left ventricular (LV) function is commonly used to predict mortality in CHF patient. However, right ventricular (RV) function has an important entity in heart failure. This study aims to describe the role of RV functioncompared with LV function in predicting mortality in CHF patients.

Method: A prospective cohort study was conducted in Sardjito General Hospital from 1 January 2016 to 31 December 2017. The day of the last follow-up was 1 June 2019. The baseline data and echocardiography were taken for the patients. RV function was assessed with tricuspid annular plane systolic excursion (TAPSE). LV function was assessed with ejection fraction (EF). The primary outcome was mortality. Logistic regression analysis was used to estimate hazard ratios for all-cause mortality in CHF patients related to TAPSEand EF values.

Result: Two hundred and forty-two all-cause CHF patients were included in this cohort study. The median follow-up time (interquartile range) was491 (20–1249) days.Based on the TAPSE values, patients with TAPSE < 16 mm had significantly higher mortality (HR = 2.265; 95% CI = 1.020-5.031; p = 0.045) compared to those with TAPSE ≥ 16 mm. Meanwhile, the hazard ratio and 95% CI for patients ofthree groups EF(HFrEF, HFmrEF, HFpEF) was not statistically significant.

Conclusion: From our study, RV function was more likely to predict mortality in CHF patient than LV function.

Keywords: Chronic Heart Failure, TAPSE, EF, Mortality.