

## **Incidence of Insomnia in Patient Heart Failure Using Severity Insomnia Scale in Dustira Military Hospital from May until July 2019**

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### **ABSTRACT**

**Background:** Insomnia is often complained by patients with chronic disease, commonest seen in heart failure patient. Insomnia encompassed as difficulty entering sleep or maintaining sleep, prolonged insomnia in patients with heart failure will lead to a decrease in quality of life, inadequate of treatment, and increased cardiac risk events.

**Aim:** This study aimed to find out the characteristics, degrees of insomnia and correlation between insomnia and functional class of heart failure to be considered as one of aggravating factors to heart failure patient.

**Result:** This study used analytic descriptive method by consecutive sampling with conducting interviews in 83 patients diagnosed with heart failure by sign and symptoms, chest x-ray, echocardiography and never experienced sign and symptom of insomnia. In this study, 83 patients interviewed, which shown 46.9% suffered from insomnia has NYHA III, 48.1% had CAD as the most etiology for heart failure 34.9% had an age above 65 years, whom 56.6% were male, 50.6% suffered from moderate to severe insomnia, 36.1% suffered from sub-threshold Insomnia, and 13.3% did not have signs and symptoms of insomnia. Statistic was using Pearson's test and obtained r count 0,798 which is greater than r table; only 9.5% from 63 of moderate to severe insomnia received insomnia therapy.

**Conclusion:** There is correlation between functional class of HF and degree of insomnia, and yet insomnia show as aggravating factors in further QoL of HF.

**Keywords:** heart failure; insomnia; sleep; severity insomnia scale; CAD; NYHA

## **Patterns of Readmissions and Length of Stay for Patients Hospitalized With Heart Failure in Kendal: A Single-Center Preliminary Study**

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### **ABSTRACT**

**Background:** Heart failure (HF) is one of the most common causes of hospitalizations and readmissions. Readmissions may indicate poor patient management and avoidable healthcare expenditure, especially in the era of universal health coverage (UHC).

**Aim:** To examine patterns for hospitalization length of stay (LOS), 30-day, 3-month, and 6-month readmission rates of patients with HF from January 1, 2017, to December 31, 2018.

**Method:** A retrospective cohort study included 352 from 398 patients admitted with a primary diagnosis of heart failure (ICD 10: I50.0) to our hospital during the study period. The study examined patterns in LOS, 30-day, 3-month, and 6-month readmissions using bivariate analysis and patient-level multivariable logistic regression analysis. Data analysis was completed in August 2019. Statistical analysis was performed using SPSS v.19.0 (IBM Corp., NY, USA). Statistics was considered significant if *p-value* < 0.05.

**Results:** Between 2017 and 2018, among 352 patients included in this study, the mean age was 60.0±11.0 years. Mean length of stay during index hospitalization was 5.0±1.9 days and mean hospital charges were IDR 3,026,553±1,600,258. Women comprised the majority of the cohort 178 (50.6%). The mortality rate during the index admission 11.6%. Among the study population, 17 (4.9%) were rehospitalized within 30-day for heart failure after their index hospitalization. For 3- and 6-month readmission rates were 10.3% and 14.5% respectively. Interestingly, the multivariable analysis found that age group 31-40 years was associated with 8.4 times higher risk of HF-specific 30-day readmission (RR= 8.4; 95%CI= 1.4-50.4; p= 0.019).

**Conclusions:** Patient characteristics, length of stay, mortality rate, 30-day, 3-month, 6-month readmission rates from hospitalized patients with heart failure were potential to estimate the risk of hospital readmission, although it was only age group 31-40 years that showed a significant association. This data may also be used as hospital data to evaluate inpatient care for heart failure.

**Keywords:** heart failure; readmission rates; length of stay; logistic regression; rehospitalization

## **Relation of Ventricular Late Potentials Using Signal Averaged Electrocardiography (SAECG) and Left Ventricular Ejection Fraction in Acute ST Elevation Myocardial Infarction**

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### **ABSTRACT**

**Introduction:** Late potentials are detected by signal – averaging of the surface QRS complex in many patients with sustained ventricular tachycardia in the setting of a healed myocardial infarction and the presence of a left ventricular aneurysm. Recent prospective studies reveal that impaired left ventricular function is an independent prognostic marker for the occurrence of sudden and nonsudden cardiac death. In this study we assessed the relation between the presence of ventricular late potentials and left ventricular function in the setting of acute ST Elevation Myocardial Infarction.

**Method:** Fifty seven (age  $58 \pm 20$ ) patients with acute ST elevation myocardial infarction of any location were enrolled in this cross sectional study. All patients were given standard initial therapy before underwent revascularization. Signal averaged parameters was done at the emergency room to obtain the ventricular late potentials before revascularization were QRS duration, root mean square of terminal 40 ms (RMS40), and duration of last amplitude signal of the last 40 $\mu$ V (LAS40). Left ventricular ejection fraction was obtained from standard echocardiographic examination during hospitalization. Patients with history of coronary disease, bundle branch block, history of heart failure, history of cardiomyopathy, history of congenital heart disease, brugada syndrome, and atrial fibrillation / flutter were excluded from this study.

**Result:** Each parameter of signal averaged were divided into two group, positive and negative. Each group was analyzed with left ventricular ejection fraction. QRS duration was statistically not significant with systolic LVEF ( $42\% \pm 13\%$  VS  $42\% \pm 9.9\%$ ,  $p= 0.9$ ; 95% CI = -0.9 – 5.8). RMS40 parameter was also statistically not significant with systolic LVEF ( $40\% \pm 12\%$  vs  $43\% \pm 10\%$ ,  $p=0.39$ ; 95% CI = -8.8 – 3.5). LAS40 parameter was also statistically not significant with systolic LVEF ( $43\% \pm 9.1\%$  vs  $41\% \pm 12\%$ ;  $p=0.5$ ; 95% CI = -4.4 – 8.7)

**Conclusion :** Our Study showed that there is no relationship between parameter of ventricular late potentials (QRS duration, RMS40, LAS40) with left ventricular ejection fraction in the setting of acute myocardial infarction.

**Keywords:** ventricular late potentials; acute myocardial infarction; left ventricular ejection fraction

## **Association of Estimated Glomerular Filtration Rate with Right Ventricular Function in Patients with Heart Failure Preserved Ejection Fraction**

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### **ABSTRACT**

**Background:** Patients with heart failure preserved ejection fraction (HFpEF) are prone to have right ventricular systolic dysfunction and associated with poor prognostic outcome. Chronic kidney disease will increase the right ventricular pressure and decrease the function of right ventricle. However study about the association of renal function with right ventricular function is still limited.

**Aim:** The objective of this study was to investigate the relationship between estimated Glomerular Filtration Rate (GFR) with right ventricular dysfunction in patients with HFpEF

**Method:** Cross sectional study was conducted in patients with HFpEF in Sardjito Hospital Yogyakarta. Estimated GFR was measured by the simplified Modification of Diet in Renal Disease (MDRD) formula. Tricuspid annular plane systolic excursion (TAPSE) and right ventricular systolic pressure (RVSP) were assessed by echocardiography.

**Result:** A total of 206 HFpEF patients were included in the study. Most of the patients were male (126 patients, 61.2%) with the mean age of  $55.8 \pm 1$  years. Mean of estimated GFR was  $69.87 \pm 1.91$  mL/min/1.73m<sup>2</sup> with 34.5% of those had estimated GFR < 60 mL/min/1.73m<sup>2</sup>. There was significant association between estimated GFR with RVSP ( $r$  0.18,  $p$  <0.05) but not with TAPSE ( $r$  -0.006,  $p$  >0.05).

**Conclusion:** Increasing of estimated GFR were associated with the increasing of RVSP, but not with TAPSE. Further study with other quantification of right ventricular systolic function that reflect global RV function is needed.

**Keywords:** estimated glomerular filtration rate; right ventricular function; heart failure preserved ejection fraction

## **Role of Sildenafil in Improving Right Heart Failure of Atrial Septal Defect Patient: a Hope of Conservative Strategy**

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### **ABSTRACT**

**Background:** Right heart failure is one of common complication of atrial septal defect (ASD) patients, comprising 68% of ASD patients. However, there is still a little understanding on the management to improve heart failure when closure is unable. Therefore, in this study we evaluate the role of sildenafil to improve clinical outcome. A biomolecular marker and clinical parameters were evaluated after sildenafil administration.

**Objective:** We aimed to study the application of sildenafil in conservative management by measuring NTProBNP and 6-minutes walking test (6-MWT) in ASD patients with heart failure.

**Methods:** A total of 45 ASD patients with heart failure were included in this prospective cohort study. We compared several parameters before and after six-months treatment, including: NTProBNP, and 6-MWT.

**Results:** We found that after sildenafil treatment, patients showed a significant clinical improvement of 6-MWT (343 m versus 394 m,  $p=0.00$ ). Interestingly, a marker of heart failure, NTProBNP, did not differ after sildenafil therapy ( $p=0.085$ ). In addition, the 6-MWT improvement did not correlate with NTProBNP change, indicating NTProBNP is not a reliable marker of clinical improvement.

**Conclusion:** Sildenafil may improve clinical outcome of ASD patient with heart failure, and there is significant clinical improvement of 6-MWT. However, NTProBNP did not improve in these patient, so that NTProBNP did not reflect clinical improvement. Our results impact mostly on ASD patient that sildenafil may become a hope to improve their clinical outcome and NTProBNP may not be recommended as a routine assessment in evaluating the clinical improvement.

**Keywords:** right heart failure; atrial septal defect; congenital heart disease; six-minute walk test; NTproBNP

## **Application of Augmented Reality to Visualize Heart Anatomy: Survey among Nursing Student at Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada**

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### **ABSTRACT**

**Introduction:** Mannequin and cadavers can represent the anatomy of an organ clearly, but their number are limited and the cost is high. Augmented reality has the potential to offer an interactive and fun learning through gamification of learning process using mobile phone platform. Mobile application which utilize smartphone can be used at any time with no to minimal cost.

**Objective:** The aim of the study was to evaluate the feasibility of augmented reality technology for anatomy educational model and user perception among nursing student.

**Design:** An augmented reality application was made from a 3D model of normal heart anatomy using Unity. Subjects were third year nursing program at Faculty of Medicine, UGM, were enrolled from block 3.1 Cardiovascular. Subjects were subjected to pre-test and post-test consisting of ten basic cardiac anatomy question and AR Heart program. The students then underwent one week of program trial followed by post-test and user experience survey using User Experience Questionnaire (UEQ) short version. Pre-test and post-test data will be analysed in IBM SPSS, while user experience survey will be analysed using short UEQ Data Analysis Tool.

**Results:** Thirty one participant completed the one week trial. Post-test score was significantly higher than pre-test (7.48 vs 9.41,  $p=0.000$ ). Pragmatic Quality, consisting of dependability, perspicuity, and efficiency receive positive evaluation (mean= 1.932, 95% CI= 1.617 – 2.246). Hedonic Quality consisting of stimulation and novelty receive positive evaluation (mean= 2.386, 95% CI= 2.144 – 2.6269).

**Conclusion:** The finding of this study suggests that AR technology can benefit visualization of heart's structure and enhance student spatial understanding. AR technology has a lot potential to be developed further as a media to supplement conventional education.

**Keywords:** augmented reality; heart anatomy; mobile application; UEQ

## **Correlation between Levels of Soluble Suppression of Tumorigenicity-2 (sST2) with Left Ventricular Ejection Fraction in Chronic Heart Failure Patients with Reduced Ejection Fraction**

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### **ABSTRACT**

**Background:** Chronic heart failure is related to the remodeling process. The remodeling process involves a mechanical mechanism which leads to changes in left ventricular geometry. This process results in increased left ventricular wall stress. Soluble suppression of tumorigenicity 2 (sST2) is a biomarker which levels increase in serum when the heart experiences mechanical stress. The aim of this study was to determine the association between a single measurement of sST2 concentration and left ventricular systolic function.

**Method:** A cross-sectional study was conducted in Sardjito General Hospital from January to July 2019. Patients diagnosed with chronic heart failure and fulfill the inclusion criteria were included in this study. The baseline data, laboratory investigations, and echocardiography were taken simultaneously for the patients. Soluble ST2 level was quantified by quantitative sandwich enzyme immunoassay technique using R&D systems ELISA kit. Left ventricular systolic function was assessed with ejection fraction (EF) by Simpson's method. Correlation analysis was used to estimate the association between sST2 concentration and EF.

**Result:** Forty-two CHF patients with reduced EF were included in this study. The mean level of sST2 in this study was  $12,821.10 \pm 11,615$  pg/ml. Measurement of the left ventricular ejection fraction obtained a mean ejection fraction of  $31.38 \pm 6.347\%$ . Correlation test using Spearman showed that there was no correlation between increased sST2 levels and decreased LVEF in chronic heart failure patients ( $r = -0.100$ ,  $p = 0.528$ ).

**Conclusion:** In our study, increased sST2 levels were not correlated with decreased LVEF in chronic heart failure patients with reduced ejection fraction.

**Keywords:** chronic heart failure; sST2; LVEF.