Abstract: P777

1 Minute heart rate recovery (HRR-1) as predictor of functional capacity post cardiac rehabilitation program in young adult patients after cardiac surgery

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Topic(s):
Rehabilitation: Outcomes

Citation:

Background: HRR-1 (1 minute heart rate recovery) and functional capacity from treadmill test (TMT) are important indicators for evaluation in cardiac rehabilitation program. HRR-1 is a marker of parasympathetic function that can be used as predictor of mortality in cardiovascular disease. However, the effect of HRR-1 on functional capacity is still unknown.

Purpose: The aim of this study to analyze whether HRR-1 is an independent predictor of functional capacity from TMT in young adult post cardiac surgery patients who completed phase II cardiac rehabilitation.

Method: This is a single center, retrospective cohort study of 281 young adult patients (18-40 years old) who completed cardiac rehabilitation (CR) phase II after cardiac surgery in a referral cardiovascular center at Indonesia from January 2017 until June 2019. TMT after CR were done to evaluate CR program result. Outcome in this study was functional capacity after CR, measured from TMT and categorized into 2 groups with cut-off 6 METs. Independent variable was 1 minute heart rate recovery (HRR-1) on TMT, categorized to normal (>12 bpm) and abnormal HRR-1 (=12 bpm). Bivariate analysis using chi square and multivariate analysis using logistic regression were performed to analyze association between independent and dependent variable, and to control other co founding factors.

Result: There were 281 subjects in this study who completed cardiac rehabilitation program post cardiac surgery, which consisted of heart valve surgery (62.3%) and congenital heart disease surgery (37.7%). Majority (87.12%) of the population had METs = 6. HRR abnormality from TMT was found on 83 patients (29.64%). Bivariate analysis with chi square showed relative risk (RR) of normal HRR-1 for METs = 6 meters was 3.50, 95% CI 1.67-7.33, p=0.001. Multivariate logistic regression analysis result showed that normal HRR-1, along with man gender, sinus rhythm, TMT duration, and maximum systolic blood pressure are independent predictors for METs = 6. After controlling other co founding factors, the odd of achieving METs = 6 in TMT is 4.7 times bigger in normal HRR-1 group compared to abnormal HRR-1 group. (95% CI 1.49 – 14.79, p = 0.008)

Conclusion: Normal HRR-1 is an independent predictor of optimal functional capacity, measured by TMT after cardiac rehabilitation (CR) program in young adult post cardiac surgery patients. Cardiac rehabilitation after cardiac surgery is essential to achieve better functional capacity in young adults patients.