THE EFFECT OF PHASE 1 CARDIAC REHABILITATION TOWARD RESPIRATORY STATUS TO PATIENT WITH ACUTE MYOCARDIAL INFARCTION

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ABSTRACT

Acute Myocardial Infarction (AMI) is the death of heart muscle cells caused by a prolonged lack of blood supply. The purpose of this study was to analyze the effect of phase 1 cardiac rehabilitation on respiratory status in patients with acute myocardial infarction. This study used a pre-experimental pretest posttest design. The variable used in this study was the Respiratory Status of AMI Patients. The number of samples used was 35 respondents who analyzed the data using the T-test statistical test. The results showed a significant p value of 0.883. p value> 0.05. In conclusion, there is no effect of Phase 1 Cardiac Rehabilitation on Respiratory Status in patients with acute myocardial infarction at ICCU Kediri Baptis Hospital.

Keywords: Cardiac Rehabilitation Phase 1, Respiratory Status, Acute Myocardial Infarction

INTRODUCTION

Acute Myocardial Infarction (AMI) is the death of heart muscle cells caused by a prolonged lack of blood supply (AHA, 2011). The lack of oxygen can eventually cause permanent damage to the heart muscle tissue (Udjianti, 2011). AMI is a disease that attacks the heart organ which causes cell death in the heart muscle due to a long myocardial ischemic process in the heart (Idris, 2017). Chest pain such as being crushed by heavy objects is a sign and symptom in AMI patients in addition to chest pain. Other signs shown are shortness of breath, cold sweat, nausea and vomiting accompanied by a feeling of fullness in the stomach. Chest pain can cause limited or cut off blood flow to a part of the heart. Lack of blood flow if it lasts more than a few minutes will cause death in the heart tissue (Nugroho et al, 2016). According to Joob & Wiwanitkit (2013), the typical signs and symptoms of AMI are chest pain, pain is usually retrosternal and can also be pain in the epigastrium (Amsterdam et al., 2014). Other symptoms that follow are dyspnea, diaphoresis, syncope, nausea, or abdominal pain (Amsterdam et al., 2014; Asgar Pour, et al., 2015). This condition disturbs the patient's hemodynamics, one of which is the frequency of breathing and oxygen saturation. If not treated immediately, AMI can cause death (Joob & Wiwanitkit, 2013).

Myocardial infarction is still the leading cause of death worldwide, accounting for 12.6% of total deaths each year (Beltrame, et al., 2012). The period after an acute attack of myocardial infarction presents its own challenges, especially in preventing similar events and maintaining the patient's physical function. Secondary prevention is an essential part of managing coronary heart disease patients; and cardiac rehabilitation as a secondary preventive program integrated with comprehensive care has been proven to be beneficial and effective in patients with myocardial infarction (Contractor, 2011 and Bittner, 2012).

Based on the results of the Household Health Survey (SKRT) in 2012, the percentage of AMI sufferers under the age of 40 was 2-8% of all patients and about 10% of patients under 46 years of age. The highest Case Fatality Rate (CFR) occurred in AMI (13.49%) and then followed by heart failure (13.42%) and other heart diseases (13.37%). This phenomenon is supported by the results of Basic Health Research in 2013 which showed that AMI is one of the diseases that many doctors diagnose compared to other heart disorders (Sitorus, Ketaren & Yanti, 2016).

AMI is the main cause of morbidity and mortality in developed countries as well as a very important health problem in developing countries (Kirthi, 2019). One of the non-communicable diseases that causes pathological changes in the walls of the coronary arteries is AMI, which causes myocardial ischemia (Tumade et al., 2014). The process of AMI comes from the formation of plaque called atherosclerosis which makes the lumen narrow, and causes disruption of blood supply so that disturbances in heart function decrease (Asikin et al., 2016).

AMI sufferers need cardiac rehabilitation which aims to restore optimal conditions physically, medically, psychologically, socially, emotionally, sexually, and vocational (Roveny, 2017). Cardiac rehabilitation is also useful for training the mobility and work of the heart and restoring conditions to meet the needs of daily life (Badriyah, Kadarsih, & Permatasari, 2015). Cardiac rehabilitation of critical patients can increase muscle strength, reduce oxidative stress and inflammation, during activity or exercise will maximize 60% -75% oxygen intake and increase the production of antioxidants. Early mobilization of critical patients using a ventilator has the benefit of increasing muscle strength and breathing significantly within three and six weeks, besides that it can also improve the patient's functional outcomes (Muhamat & Adhinugraha, 2016). Based on the background, the purpose of this study was to analyze the effect of Phase 1 cardiac rehabilitation on respiratory status in patients with acute myocardial infarction.

MATERIALS AND METHODS

This study used a quasy experimental design with the aim of analyzing the effect of Phase 1 cardiac rehabilitation on respiratory status in patients with acute myocardial infarction. This research was conducted from 15 April 2020 to 16 September 2020. The research variable was Respiratory Status. The population was all AMI patients in the ICCU Room of the Kediri Baptis Hospital, with a sample size of 35 respondents who were taken by quota sampling, namely taking sampling based on unrestricted characteristics. Data were collected with the phase 1 cardiac rehabilitation treatment, the patient was given a phase 1 cardiac rehabilitation module. Analyze the data in the study using the T-Test statistical test. This research has passed ethics with letter number 076/30 / III / EC / KEPK-3 / STIKES RSBK / 2020.

RESULT

Table 1. Measurement of Hemodynamic Status of Breath Frequency in AMI Patients in the ICCU Room at Kediri Baptis Hospital April - September 2020 (N = 35)

		N	Correlation	Sig.
Pair 1	Difference in Breath Before Intervention & Difference in Breath After Intervention	35	-.037	.833

Based on Table 1, the results show that the T-Test results obtained a significant p value of 0.883. p value> 0.05 indicates that there is no effect of Phase 1 Cardiac Rehabilitation on Respiratory Status in Acute Myocardial Infarction patients at ICCU Kediri Baptis Hospital.

DISCUSSION

Cardiac rehabilitation should begin immediately after the acute phase of the disease or a period of invasive treatment. Cardiac rehabilitation includes a clinical evaluation component, pharmacotherapy optimization, physical exercise, psychosocial rehabilitation,

evaluation and reduction of risk factors, lifestyle modification, and patient and family education (Contractor, 2011 and Mampuya, 2012). This comprehensive goal will be achieved by involving a multidisciplinary team consisting of doctors, physiotherapists, psychologists, sociologists, and dietitians (Piotrowicz R, 2008 and Achttien, 2013).

Cardiac rehabilitation is expected to optimize pharmacotherapy, prevent sequelae from immobilization, improve physical capacity, evaluate mental status, reduce anxiety, inform CHD risk and strategies to reduce risk factors, evaluate clinical status, and determine an appropriate rehabilitation schedule (Piotrowicz R, 2008 and Achttien , 2013). In hospitalized patients, the goal of cardiac rehabilitation after myocardial infarction is to mobilize the patient as soon as the clinical condition stabilizes. Stable criteria are if there are no new or recurring episodes of chest pain for 8 hours, no increase in creatinine kinase and / or tropinin levels, no new signs of decompensated heart failure, and no significant electrocardiogram changes with abnormal rhythms in the last 8 hours. After being declared stable, the patient can be positioned to sit on the edge of the bed for the first day and then be mobilized gradually (Contractor, 2011).

Acute Myocardial Infarction sufferers need cardiac rehabilitation which aims to restore optimal conditions physically, medically, psychologically, socially, emotionally, sexually, and vocally. Cardiac rehabilitation is also useful for training the mobility and work of the heart and restoring conditions to meet the needs of daily life. If no cardiac rehabilitation is done, the heart muscles periodically experience a decrease in activity, expand ischemia / infarction and trigger repeated attacks, this can lead to death. The physical exercise program is based on the patient's level of awareness and individual needs. What is important to note is that the exercise program should be monitored based on target pulse frequency, perceive exertion (energy targets) and prediction of METs (estimates of metabolic expenditure on physical activity by evaluating basal oxygen demand at rest). If there are symptoms of heart, orthopedic or neuromuscular disorders, it is necessary to review the exercise program (Badriyah, Kadarsih, & Permatasari, 2015). The goals of cardiac rehabilitation are to improve heart function, reduce the risk of sudden death and recurrent infarction, increase work capacity, prevent the progression of the underlying atheroscleric processes, reduce mortality and morbidity. According to Tarwoto and Wartonah (2015), in normal circumstances, a person's respiration is regular, gentle and has a frequency that varies depending on age and activity. Someone who does sports activities will make respiration faster. This is because the body needs more oxygen for metabolism. The body requires more oxygen for body metabolism and carbon dioxide production so that it compensates for the increase in the amount of respiration. Mobilization has different benefits in each system. In the respiratory system, mobilization functions to increase the frequency and depth of breathing, increase alveolar ventilation, reduce breathing work and increase diaphragmatic expansion. So that the provision of mobilization is expected to increase oxygen transport throughout the patient's body (Rifai, 2015).

Cardiac Rehabilitation exercises that are carried out regularly can cause lung function to improve due to the increased use of oxygen in the blood. Regular and regular physical exercise can increase muscle strength, especially the respiratory muscles, which produce sufficient intensity during inspiration so that there is an increase in the function of the respiratory muscles. Pulmonary physiology has a great relationship with physical exercise activities. In patients with pulmonary physiological disorders such as asthma or chronic obstructive pulmonary disease, and other pulmonary disorders will greatly affect physical exercise, but if physical exercise is carried out regularly and regularly it can improve the quality of lung function, especially sports which have a significant role in increases lung capacity.

Based on the results of the T-Test, it was found that a significant p value was 0.883. p value> 0.05 indicates that there is no effect of Phase 1 Cardiac Rehabilitation on Respiratory

Status in patients with Acute Myocardial Infarction. The results of this study are in line with research conducted by Muhammat & Adhinugraha (2016), proving there is no effect of cardiac rehabilitation (early mobilization) on changes in respiration. RR values before and immediately after exercise. The results of this study are also supported by the results of research conducted by Rifai et al. 2015, which states that based on research that has been conducted on 90 stable AMI respondents who carried out cardiac rehabilitation (early mobilization), changes in respiration remain stable or normal even though there are differences between pre-test and post. test affects changes in vital signs. These results prove that cardiac rehabilitation (early mobilization) does not affect respiratory changes in patients with acute myocardial infraction. This is in accordance with the theory that cardiac rehabilitation has benefits on the cardivascular system to increase cardiac output, improve myocardial contractions, strengthen heart muscle, lower blood pressure, improve venous return. In the respiratory system increases the frequency and depth of breathing, increases alveolar ventilation, decreases the work of breathing, increases diaphragm development, in the metabolic system it can increase the basal metabolic rate, increase the use of glucose and fatty acids, increase the breakdown of triglycerides, increase gastric mobility, increase body heat production. The muscoloskeletal system improves muscle tone, increases self-mobilization, improves muscle tolerance, reduces weakness, increases tolerance to stress, feels better and reduces disease (Rifai, 2015).

CONCLUSION

Phase 1 cardiac rehabilitation has no effect on respiratory status. This is based on the theory that increasing the frequency and depth of breathing makes AMI patients still in a stable condition.

SUGGESTION

AMI patients must continue to carry out phase 2 to phase 4 cardiac rehabilitation after the patient returns home to maintain a stable heart condition.For nurses and other medical personnel, collaboration in the management of phase 1 cardiac rehabilitation is a good thing to provide help in the patient's critical condition.

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