

PHYSIOTHERAPY INTERVENTION IN PNEUMONY PATIENTS IN DUNGUS LUNG HOSPITALS

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Abstract

Pneumonia is caused by an infection that occurs in the air sacs caused by viruses, bacteria to fungi, attacking one or both lungs, which results in the alveoli being filled with fluid or pus, making it difficult for the patient to breathe. Pneumonia is the most common cause of death in the world with nearly 3.5 million deaths per year (Wunderink RG, Watervet GW., 2014). According to the incidence of infection with pneumonia, pneumonia is divided into two. Community pneumonia if the patient is infected from the community and nosocomial pneumonia if the patient is infected in the hospital. The goal to be achieved is to find out the benefits of providing physiotherapy interventions in the form of Chest Physiotherapy in reducing patient complaints in Pneumonia conditions at Dungus Lung Hospital. The results obtained after 3 times of therapy showed that shortness of breath decreased from a value of 5 (severe shortness of breath) to a value of 4 (somewhat severe).

Key Words: Pneumonia, Physiotherapy, Chest Physiotherapy

1. INTRODUCTION

Lower respiratory tract infections are still a major problem in the health sector. WHO reports lower respiratory tract infections as the most common cause of death in the world with nearly 3.5 million deaths per year. (Wunderink RG, Watervet GW., 2014)

Pneumonia is defined as inflammation of the lung parenchyma, distal to the terminal bronchioles, which include the respiratory bronchioles and alveoli, and causes consolidation of lung tissue and local gas exchange. Pneumonia is divided into two, community and nosocomial pneumonia. (PDPI.2003).

This infectious process enters the lower respiratory tract after passing through host defenses, humoral and cellular defenses, then causes inflammation of the lung membranes so that plasma fluid and red blood cells from the capillaries enter causing the ventilation-perfusion ratio and oxygen saturation to decrease.

The lungs will be filled with inflammatory cells and fluid which is the body's reaction to kill pathogens, but with excessive phlegm it causes shortness of breath, chest pain and coughing. In pneumonia patients, the main problems are shortness of breath, chest pain and cough due to excessive accumulation of secretions in the lungs.

Various modalities that can be given by physiotherapy to overcome problems that arise due to pneumonia, one of which is Breathing Control is useful for maintaining and improving general fitness, patients are able to overcome shortness of breath, breathe regularly and rhythmically, Thoracic Cage Mobilization Exercises, this technique helps in flexibility of the chest wall, improves respiratory muscle function and from this result relieves tightness and reduces the work of respiratory accessory muscles, inhalation aims to clear mucociliary pathogens, so that phlegm is easier to expel and helps to clear the airway, coughing exercises are effective for clearing excess secretions in the lungs and minimize energy when coughing (My Health Alberta 2019), stretching exercises aim to reduce spasm of the respiratory accessory muscles so that patients are more relaxed and reduce pain when coughing.

Based on the above background, it can be concluded that the purpose of this study was to determine the effect of physiotherapy management with Breathing Control to re-educate calm and rhythmic breathing patterns. (Abidin A, Yunus F, 2009), Thoracic Cage Mobilization Exercises to improve chest wall mobility and ventilation (Jennifer and Prasad, 2008).

2. METHOD

The method in this study uses a descriptive design with individual samples. The program is carried out directly to patients with pneumonia at the Dungus Lung Hospital. The analysis was carried out by providing a physiotherapy program in the form of Chest Physiotherapy for 3 times (7-9 April 2021).

Chest Physiotherapy

Breathing Control aims to re-educate calm and rhythmic breathing patterns so that patients will save energy to breathe and get used to doing regular breathing (Abidin A, Yunus F, 2009).

Thoracic Cage Mobilization Exercise aims to increase chest wall mobility and ventilation (Jennifer and Prasad, 2008). The mechanism of this technique increases the length of the intercostal muscles so that the muscles are able to contract effectively.

Inhalation aims to increase mucociliary clearance of pathogens, stimulate innate resistance to microbial infections that can thin sputum and reduce shortness of breath.

Effective Cough Exercises aim to help breathing and clear excess secretions in the airways (My Healt Alberta 2019), because excess secretions inhibit the ability of the lungs to oxidize effectively (Stewart 2019).

Stretching exercise aims to reduce respiratory muscle spasm.

3. RESULTS AND DISCUSSION

A 66-year-old male patient came to Dungus Pulmonary Hospital on April 5, 2021 with complaints of fever, cough, chest pain when breathing since the previous week, more shortness of breath when lying down and less when sitting down, difficult to expel phlegm. Since 1 year ago the patient suffered from hypertension. From the results of the examination of vital signs blood pressure:

180/100mmHg, pulse: 100x/minute, RR: 30 beats per minute, oxygen saturation 84% in room air, temperature 37.8 degrees Celsius.

The patient looks thin, breathes using the accessory muscles of respiration, there is spasm and hypertrophy of the accessory muscles of respiration, the shoulders are slightly elevated and protracted, the breathing pattern is fast and shallow. On percussion examination, the left lung was dimmed in the anterior upper lobe. On auscultation, the main breath sounds were vesicular, and additional breath sounds were crackles and wheezing in the left lung in the anterior upper lobe. X-ray results obtained Pneumonia. Patients are diagnosed with pneumonia and given education about the disease including causes, risk factors, course of the disease, complications, treatment, activities that can and should not be done. Patients are advised to avoid smoke as well as cigarette smoke, gather with large crowds, always wear a mask, eat a balanced diet, exercise regularly. All patient activities were assisted by the family due to severe shortness of breath,

from the examination according to the Borg Scale, it was obtained a score of 5 (severe shortness of breath), thoracic expansion of 1 cm at 3 measurement points. Meanwhile, according to the examination of the degree of shortness of breath using the MMRC, the patient had grade 4 shortness of breath (shortness occurred during light activity).

From the results of the examination, it was found that problems including trachipnea, respiratory rhythm (irregular), depth of respiration (short breaths unable to take long breaths), function of accessory respiratory muscle (there is tension in the accessory muscles of respiration), additional respiratory function (patient say coughing and shortness of breath), body structure lung (inflammation of the alveoli), activities and participation transferring oneself (patient is unable to move because of tightness).

From these problems, physiotherapy interventions in the form of Breathing Control (diaphragmatic breathing, purselip breathing, relaxation and positioning techniques) have the benefit of reducing the work of the respiratory muscles, reducing shortness of breath, helping breathing into a better pattern through decreasing the respiratory rate and improving ventilation in the basal part of the lungs. (Brutton, 2014). Method: The patient sits in an upright position with his back, hands folded over the stomach, instructed to inhale through the nose by expanding the stomach. Then exhale through the mouth and deflate the stomach and relax the chest, shoulders and arms. This exercise is done for 10 minutes or according to patient tolerance. Thoracic Cage Mobilization Exercises by increasing chest movement,

Contracting the respiratory muscles helps increase muscle strength and endurance where the respiratory muscles are impaired, which is expected to produce a greater effort to control breathing patterns and reduce shortness of breath (Gigilioti F, 2003). These movements include trunk extension flexion, lateral flexion, and trunk rotation. This exercise is done every day for 10 minutes or according to patient tolerance. Inhalation, with the occurrence of infection in the respiratory tract resulting in reduced volume of surface fluid in the airways. This prevents effective ciliary movement and causes mucus dehydration, which together irritates the mucociliary tract and injures the airways (Ratjen F, 2006). Increasing aerosol sodium chloride concentration results in increased mucociliary clearance. With inhalation showed an increase in lung function and reduce the rate of exacerbations. Inhalation is given 3 times a day using drugs

that are mucolytic or expectorant. Effective Coughing Exercises, coughing is a technique for cleaning the airways to remove mucus from the airways because mucus is full of germs so removing it from the body is very important. Administered daily within 5 minutes. Stretching exercise on respiratory accessory muscles can increase chest mobility, chest wall expansion and improve diaphragm function which results in an increase in lung inspiratory capacity (Alverti et al., 2004), performed every day for 5 minutes.

After 3 days of physiotherapy intervention, the patient felt a decrease in shortness of breath. From the first day of examination, according to the Borg Scale, the score was 5 (severe shortness of breath). And on the 3rd day according to the Borg Scale examination, the number 4 (a bit heavy).

3.1 Evaluation of Depression Reduction

From the Borg Scale examination, the results showed that the patient had severe shortness of breath. The therapist gives Chest Physiotherapy. The results of the examination obtained at T1 obtained a scale of 5 (severe shortness of breath). At T3 the results of shortness of breath were reduced to a scale of 4 (somewhat severe).

3.2 Evaluation of Thoracic Expansion (Anthropometry)

Anthropometric measurements were carried out at 3 points. At T1, point 1 (Axila) at the time of expiration and inspiration, there is a difference of 1 cm in both T1 and T3. At point 2 (Th 8) at the time of expiration and inspiration, there is a difference of 1 cm on both T1 and T3. At point 3, (Xipoides) there is a difference of 1 cm in both T1 and T3.

4. CONCLUSION

The implementation of physiotherapy intervention on Mr. M patient aged 66 years with a diagnosis of pneumonia at Dungus Pulmonary Hospital was carried out for 3 treatments. Physiotherapy actions in the form of Breathing Control, Thoracic Cage Mobilization Exercises, Inhalation, Effective Coughing Exercises, Stretching Exercises resulted in a decrease in shortness of breath.

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