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Physiotherapy Management for Pneumonia Patients at Dr. Lung Hospital. Ario Wirawan Salatiga

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Abstrak
Peneumonia is an inflammation (inflammation) in the lungs (alveoli) that can be caused due to microorganisms and non-microorganisms. The presence of tightness, chest pain, decreased thoracic expansion, and pectoralis major muscle spasms and upper trapezius is a physiotherapy problem that we can provide interventions such as Infra-Red (IR), Breathing Exercise, and Thoracic Expansion Exercise. To determine the benefits of physiotherapy management with IR (Infra-Red) modalities, Breathing Exercise, and Thoracic Expansion Exercise on Pneumonia against stiffness, pain, chest, and decreased thoracic expansion. The development with appropriate therapy was the change of pain with VAS scale from 4,3 to 1,1, then after three therapeutics there is an increase in thoracic expansion of 1 cm, and the decrease of spasm in the auxiliary muscles. IR (Infra-Red), Breathing Exercise, and Thoracic Expansion Exercise can reduce pain, spasm, increase thoracic expansion.

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1. INTRODUCTION

The lungs are a respiratory organ that functions as a place to exchange oxygen from the air to replace carbon dioxide in the blood. This organ works every day, so if there is even the slightest damage to any part it will affect the body's function. Diseases of the lungs can affect the airway starting from the trachea (throat) then branching into the bronchi, then becoming smaller (alveoli) and leading to the entire lung field. In general, pneumonia can be defined as inflammation (inflammation)

Pneumonia is an acute infectious process that affects lung tissue or alveoli. Pneumonia is an inflammatory disease of the lungs which is characterized by consolidation due to exudate entering the alveoli area (Nur Basuki. 2009). in the lungs (alveoli) which can be caused by microorganisms or non-microorganisms.

The main complaint that often occurs in pneumonia patients is shortness of breath, increased body temperature, and coughing. In patients with pneumonia, cough complaints usually appear suddenly and do not decrease after taking cough medicine which is usually available on the market. Initially the cough is unproductive, but later it develops into a productive cough with yellowish, greenish purulent mucus, and often has a foul smell. Patients usually complain of high fever and chills. There are complaints of chest pain, shortness of breath, increased respiratory frequency, weakness and headaches (Jeremy, 2007).

Physiotherapy is very useful for patients with a variety of medical respiratory conditions with the goals of shortness of breath management and symptom control, mobility and function improvement or treatment, as well as effective airway clearance and coughing. Strategies and techniques include: rehabilitation, exercise testing (including for ambulatory oxygen assessment), exercise prescription, airway clearance, and positioning and breathing techniques. Physiotherapy can treat postural and/or musculoskeletal disorders and pain, as

well as provide assistance in improving breathing, especially during coughing and forced expiration (Bott et al., 2009).

Physiotherapy modalities in pneumonia conditions which aim to reduce shortness of breath, chest pain, muscle spasms to help with breathing, as well as 3 improvements in thoracic mobility, namely by using Infra-Red (IR), Breathing Exercise and Thoracic Expansion Exercise modalities.

2. CASE DESCRIPTION

Pneumonia is the main killer of children under five years of age (toddlers) in the world, more than other diseases such as AIDS, Malaria and Measles. However, there has not been much attention to this disease. In the world, of the 9 million deaths of children under five, more than 2million toddlers die every year due to pneumonia or the same 4

Toddlers die every minute. Of the five deaths of toddlers, one was caused by pneumonia (Siti, F, S. 2009).

In Indonesia, based on the results of Basic Health Research, it shows; national prevalence of ISPA: 25.5% (16 provinces above the national figure), pneumonia morbidity rate in infants: 2.2%, toddlers: 3%, mortality rate in infants 23.8%, and toddlers 15.5% (Stanley, L,. et al 2007).

Based on the physiotherapy point of view, pneumonia patients cause various levels of disturbance, namely in the form of difficulty expelling sputum, changes in breathing patterns, changes in body posture, disruption of daily activities due to the complaints mentioned above and weight loss, growth and development of children can hamper if physiotherapy is not immediately carried out. Physiotherapy modalities can reduce or even overcome disorders, especially those related to movement and function, using chest therapy in the form of postural drainage, percussion and vibration, which will reduce or eliminate sputum and respiratory muscle spasms, clear the airway, make it comfortable, soothe the respiratory tract and ultimately cough and cold. can be stopped (Helmi, 2005).

3. RESEARCH METHOD

Physiotherapy management for Mr. S with pneumonia underwent 3 treatments, namely on January 4, 5 and 6 2017. The physiotherapy modalities used included the following:

1. Infrared

Infrared rays (infrared) are a type of superficial heating that uses a wavelength conversion mechanism. Infrared rays used for treatment have a wavelength of 7700 - 150,000 Angstroms.

Infrared rays can come from sunlight and are obtained artificially through infrared lamps (infrared lamps). The expected heat effects through heat therapy using infrared rays are: (1) improving blood circulation, (2) increasing body metabolism, (3) increasing sweat production which can help form metabolite elimination, (4) increasing the viscoelastic effect on collagen tissue, (5) increasing blood circulation, and (6) helping the resolution of inflammatory infiltration, edema, and exudation (Prodyanatasari, 2015).

Infrared in pneumonia patients is aimed more at reducing spasm of the muscles that help with breathing during inspiration (pectoralis major and m. scaleni) and expiration so that it is hoped that it can make the breathing process easier.

2. Breathing Exercises

Breathing Exercise is a breathing method to improve the performance of the lung organs. Good and regular breathing can stabilize blood pressure and improve respiration

(Hermansyah et al., 2015).

The procedure for carrying out breathing exercises is to instruct the patient to breathe deeply through the nose, shoulders relaxed, upper chest calm, stomach slightly raised. Then instruct patient 4 to exhale slowly through the mouth. Do this exercise three or four times then rest (Kisner & Colby, 2007).

3. Thoracic Expansion

Exercise Thoracic cage mobilization is one of the many techniques and is very important in conventional chest physiotherapy to increase chest wall mobility and improve respiratory function. Both passive and active chest mobilization can help improve chest wall mobilization, flexibility, and chest capacity. The concept of this technique is to increase the length of the intercostal muscles and help carry out effective muscle contractions (Leelarungrayub, 2012).

Chest mobilization exercises are exercises that combine active movements of the trunk or extremities with breathing. Used to maintain or increase mobility of the chest wall, trunk, and shoulders affecting ventilation or posture (Kisner & Colby, 2007).

4. RESULTS AND DISCUSSION

Results: After physiotherapy was carried out 3 times with modalities such as infra-red, breathing exercise and thoracic expansion exercise, positive changes were obtained. The evaluation results from T1 to T3 were obtained as follows:

1. Hard to breathe.
   Evaluation of shortness of breath is carried out using the Brog Scale measuring instrument

THERAPY	RESULTS
T0-T1	3 = moderate tightness
T2	3 = moderate tightness
T3	3 = moderate tightness

Table 1: evaluation of shortness of breath

2. Chest pain
   Evaluation of chest pain is carried out using a VAS (Visual Analog Scale) measuring instrument.

	T1	T2	T3
SILENT PAIN	1	1	0
PAINFUL PRESS	3	2	2
PAINFUL MOVE	4	3.9	3,2

Table 2: pain evaluation

3. Thorax Expansion
   Evaluation of thoracic expansion is carried out using a midline measuring instrument on the axilla, 4th intercostal area and ciphoid process.

MEASUREMENT	T1	T2	T3
	INS EX	INS EX	INS EX
AXILA	7977	7977	8078
ICS	7675	7675	7677
PROC.SYP	7574	7574	7675

Evaluation of the difference in thoracic expansion

4. Muscle Spasm Helps Breathing
   Evaluate accessory respiratory muscle spasm using palpation.

Treatment therapy	**Results**
Therapy 0	Palpable spasm in the pectoralis major and upper trapezius muscles
Therapy 1	Palpable spasm in the pectoralis major and upper trapezius muscles
Therapy 2	Palpable decrease in spasm in the pectoralis major and upper muscles trapezius
Therapy 3	Palpable decrease in spasm in the pectoralis major and upper muscles trapezius

1. Shortness of Breath Based on table 1, evaluation of shortness of breath seen at T0 to T3, the degree of shortness of breath is constant 3 (moderate) and has not decreased. These results are not in line with the research results of Prodyanantasari (2015)

   After carrying out infrared therapy and breathing exercises on COPD sufferers, the degree of shortness of breath decreased. This is possibly due to the lack of frequency of breathing exercise. In this study, the intervention was carried out for 8 days, whereas in this case it was only carried out for 3 days.

   According to Juhariyah et al. (2012) pulmonary rehabilitation has the effect of reducing shortness of breath, increasing muscle strength and muscle endurance. Pulmonary rehabilitation should be carried out for 30 minutes of exercise and a frequency of 3 days per week for 6-8 weeks. Apart from that, another cause could be due to the psychological condition of the patient who is starting to get bored of being hospitalized with routine health procedures.

   These results are in line with the opinion of Pyor & Webber (2001) that the severity of shortness of breath depends on the patient's emotions, physical and psychology.
2. Chest Pain Pleuritic chest pain is usually posterior or lateral in location. It is sharp and looks like being stabbed. The pain increases when coughing or breathing deeply and decreases when holding your breath. Pain originates from the chest wall, muscles, ribs, parietal pleura, large airways, diaphragm, mediastinum and intercostal nerves. Pleuritic chest pain is usually caused by lung infections such as bacterial pneumonia, especially those caused by gram-negative cocci and Klebsiella (Anwar, 2004).

   Coughing causes continuous muscle contractions which cause the respiratory muscles, especially the diaphragm muscle, to not relax. On the first day, chest pain

decreased from 4.3 cm to 3.9 cm. This is because breathing exercise can improve the ability of the respiratory muscles, especially the diaphragm. When the diaphragm is strong or effective, the process of inspiration and expiration can be carried out without involving accessory muscles, so that the accessory muscles relax. On the second day of pain, the chest is constant at 3.9 cm, this is probably because on that day the physiotherapy process was carried out after the patient had an EKG checked in the laboratory.

So, the patient still feels tired. Meanwhile, on the third day, the chest pain decreased again to 3.2 cm. This is due to strengthening of the diaphragm and relaxation of accessory muscles.

3. Thoracic Expansion In the results of the evaluation of the thoracic cage based on graph 4.3, an average increase of 1 cm was obtained. The results of the increase in thoracic expansion are in accordance with the results of research by Prodyanantasari (2015) that after infrared therapy and breathing exercises were carried out on COPD sufferers, there was an increase in thoracic expansion.

   Increasing chest flexibility allows the lungs to expand optimally, as a result the inspiratory and expiratory phases occur optimally. Apart from that, movements in the upper limbs can have a stretching effect on the muscles that support breathing. This has an impact on increasing thoracic expansion.

4. Infrared (IR) Respiratory Muscle Spasms can be used to treat musculoskeletal disorders and heal wounds. IR provides a long-lasting vasodilation effect to improve blood circulation by causing muscle relaxation thereby preventing muscle spasms and is also beneficial for ischemic disorders (Tanaka & Gale, 2013).

   The heat energy will first enter the skin tissue in the form of a light beam (in the form of radiation or conduction). Then it will dissipate in deeper tissue areas in the form of heat. The heat is then transported to other tissues by convection, that is, it is transported to tissues throughout the body through body fluids (Haryanto, 2003).

   Based on table 4, evaluation of muscle spasms that help with breathing, the author can conclude that infrared therapy combined with breathing exercise and thoracic expansion exercise can reduce muscle spasms. Although the breathing exercise and thoracic expansion exercise modalities do not have a direct impact on reducing muscle spasms.

5. CLOSING

a. Conclusion

Based on the explanation on the previous page, it can be concluded that the patient with the name Mr. S is 57 years old with a diagnosis of pneumonia. Problems found include shortness of breath, chest pain, decreased thoracic expansion, and muscle spasm that aids breathing. After undergoing therapy 3x with 9 physiotherapy modalities in the form of infrared, breathing exercise and thoracic expansion exercise, there was a decrease in chest pain, an increase in thoracic expansion and a decrease in muscle spasms.

b. Suggestion

1. Patients are expected to carry out independent exercises such as breathing exercises and thoracic expansion exercises. And avoid things that can trigger disturbances.
2. Families are expected to help and provide support to patients by creating a clean and non-smoking home environment around the patient.
3. The public should know about pneumonia cases and be able to pass on their

knowledge to other communities.

4. For Physiotherapy, to achieve even better results, if possible, you can add other modalities related to the patient's problems.

5.

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