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RESEARCH ARTICLE

AN EFFECT OF POSTURAL DRAINAGE ON MANAGEMENT OF PNEUMONIA

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Abstract

Objective: To compare the patients with pneumonia with and without postural drainage and to measure the amount of sputum produced before and after physiotherapy treatment.

Material and Method: This study was carried out at Lilamani Hospital, Kanpur. Total 7 patients were placed into two groups i.e. Group A and Group B. Group A included 4 patients, 3 females and 1 male with the age group is between 25-60. While Group B having 3 patients, 1 female and 2 males with the age group is between 26-62 years. Group A was received chest mobilization techniques, two times a day. While Group B received postural drainage in different positions with chest mobilisation twice a day. The amount of sputum before and after the physiotherapy techniques, the p-value was calculated for both groups by t-test and data was analysed through SPSS.

Results: In this study, amount of sputum was significantly reduced in Group B as comparison to Group A.

Conclusion: Postural drainage techniques with chest mobilisation are much effective. It also helps in reducing the amount of sputum in pneumonia patients.

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Introduction:-

Pneumonia is an inflammatory condition of lung primarily affecting the small air sacs known as alveoli.^{1, 2} Symptoms typically include some combination of productive or dry cough, chest pain, fever and difficulty breathing.³ The severity of condition is variable. Pneumonia is usually caused by infection with viruses or bacteria and less commonly by other micro-organisms. Identifying the responsible pathogen can be difficult. Diagnosis is often based on symptoms and physical examination.⁴ Chest x-rays, blood tests and culture of the sputum may help confirm the diagnosis.⁴ The disease may be classified by where it was acquired, such as community or hospital acquired or healthcare associated pneumonia.⁵ Risk factors for pneumonia include cystic fibrosis, chronic obstructive pulmonary disease, sickle cell disease, asthma, diabetes, heart failure, history of smoking, poor ability to cough and weak immune system.^{6, 7} The duration of illness can last two to four weeks.⁸ the typical management is antibiotics, analgesics, rest and fluid intake with chest physiotherapy.⁹

Different physiotherapy techniques are used to treat the chest complications in pneumonia patients. These include chest mobilization, postural drainage, deep breathing exercises, manual chest physiotherapy such as percussion, vibration and also the strengthening of respiratory muscles.¹⁰ Postural drainage technique in which different positions are assumed to facilitate the drainage of secretions from the bronchial airways. Gravity helps to move the

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secretions to the trachea to be coughed up easily. The goal of postural drainage is to help drain mucous from the affected lobes into the larger airways of the lungs, so it can be coughed up more readily. Maintain the different postural drainage positions with the help of pillows for 10-15 minutes. Chest mobilization techniques such as percussion, vibration and shaking are applied to loose the secretions.

Material and Method:-

In our study, total 7 patients were included from Lilamani Hospital, Kanpur. We randomly divide the patients into two groups i.e. group A and group B. Group A included 4 patients, 3 females and 1 male with the age group is between 25-60. While Group B having 3 patients, 1 female and 2 males with the age group is between 26-62 years. Group A was received chest mobilisation techniques, two times a day and group B was received postural drainage in different positions with chest mobilisation twice a day. The data was analysed through SPSS and p-value was calculated by t-test. Postural drainage positions for different lobes are described below:

Upper Lobe [Right and Left]:

A. Segment: Anterior apical segment

Position of the patient: Sitting with back supported.

B. Segment: Posterior apical segment

Position of the patient: Sitting with head down on a table or rests on pillow.

C. Segment: Anterior segment

Position of the patient: Supine position

D. Segment: Posterior segment [Right]

Position of the patient: Patient lies flat and one-quarter turn from prone on the left side.

E. Segment: Posterior segment [Left]

Position of the patient: Patient lies one-quarter turn from prone and rests on the right side. Head and shoulders are elevated 45° or approximately 18 inches, if pillows are used.

2. Lingula [Left]

Position of the patient: Patient lies one-quarter turn from supine on the right side, supported with pillows and in a 30° head down position.

3. Middle Lobe [Right]

Position of the patient: Patient lies one-quarter turn from supine on the left side, supported with pillows behind the back and in a 30° head down position.

4. Lower Lobe [Right and Left]

A. Segment: Anterior segment

Position of the patient: Patient is on side-lying position, pillows under the knees, in a 45° head down position.

B. Segment: Posterior segment

Position of the patient: Patient lies prone with a pillow under the abdomen in a 45° head down position.

C. Segment: Lateral segment [Right]

Position of the patient: Patient lies on the left side in a 45° head down position.

D. Segment: Lateral segment [Left]

Position of the patient: Patient lies on the right side in a 45° head down position.

E. Segment: Superior segment

Position of the patient: Patient lies prone with a pillow under the abdomen to flatten the back.

Results:-

In our study, the amount of sputum was reduced in group B as comparison of group A ($p < 0.002$). Summary of this study is that group A included 4 patients and group B having 3 patients. In group A 3 females are included and one female in group B. Same as 1 male in group A and 2 males in group B. The age ranges are between 25-60 years in group A while 26-62 years in group B. Patients of group A were stay in hospital for 9 days and group B was 7 days.

Discussion:-

In this study, physiotherapy management of pneumonia patient through postural drainage is the best part. Varekojis SM et al conducted a comparative study on the therapeutic effectiveness and preference of postural drainage and percussion and high frequency chest wall compression in hospitalized patients of cystic fibrosis and showed that postural drainage was effective airway and chest clearance technique.¹¹ In the other study showed that using forced

expiration technique as an adjunct to postural drainage in treatment of cystic fibrosis. It was shown that postural drainage was an effective part of patient management for cystic fibrosis.¹² On the other study showed that effect of chest physiotherapy on removal of mucus in cystic fibrosis patients reported that the postural drainage with percussion was statistically more significant as compared to spontaneous cough technique applied at rest.¹³

Conclusion:-

This study concluded that chest mobilisation techniques with postural drainage was more effective than only the chest mobilisation techniques. These combined techniques were much effective to reduce the sputum in pneumonia patients.

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