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EFFECTIVENESS OF AUTOGENIC DRAINAGE VERSUS POSTURAL DRAINAGE ON OXYGEN SATURATION IN PATIENTS WITH CHRONIC BRONCHITIS WITH 15 MINUTES POST THERAPY

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ABSTRACT

Background: Patients with COPD will have more amount of secretions. To clear the secretions by using of different bronchial hygiene techniques like postural drainage and autogenic drainage technique, manual hyperventilation technique ,active cycle breathing technique .Hence in this study to compare the short-term effects of postural drainage with clapping (PD) and autogenic drainage (AD) on level of oxygen saturation in blood, and amount of sputum recovery.

Methodology: The study was done on 60 patients with COPD. Dividing Patients into two group and patients were treated with PD or AD in separate Groups. The effectiveness of the treatment was measured up to 6 days. Pulse oximetry was monitored and sputum was collected immediately after treatment and 15 minutes following each treatment.

Results: The results of the study shown that there was significant difference in the amount of sputum recovered with AD (14.0 ± 3.5 g) vs PD (24.4 ± 3.0 g) and significant differences in Oxygen saturation; during PD fell from $93.3 \pm 0.7\%$ to $91.2 \pm 0.8\%$ ($p < 0.01$) and required 15 min following treatment to return to baseline. Oxygen saturation did not fall during AD and increased to gradually following complete treatment days (baseline, $93.3 \pm 0.8\%$; $p < 0.01$).

Conclusion: Hence this study concludes that Autogenic drainage is more effective in improving spo₂ in COPD & does not cause a sudden fall in spo₂ as occurs in Postural drainage immediately after therapy. And it can be better tolerated by patients with COPD while producing fewer benefits in sputum clearance. In concern to mean amount of secretion removal Postural is found to be more effective.

Keywords: autogenic drainage, postural drainage, oxygen saturation, chronic bronchitis

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a major cause of chronic morbidity and mortality throughout the world. Many people suffer from this disease for years and die prematurely from it or its complications; during 1997 it has been the fourth leading cause of chronic morbidity and mortality according to a study published by the World Bank/World Health Organization¹. It affects about 4-10% of the global population. WHO estimates that COPD causes 4.7 million deaths annually? About 119,000 adults ages 25 and older died from COPD in 2000. While the COPD death rate for females more than doubled between 1980 and 2000, and the number of deaths for females surpassed the number for males in 2000, the overall age-adjusted death rate for COPD remained higher for males in 2000. The age-adjusted COPD death rate was about 46 percent higher in males than females and 63 percent higher in whites than blacks.² A clinical diagnosis of COPD is considered in any patient who has dyspnea, chronic cough or sputum production, and/or a history of exposure to risk factors for the disease. The diagnosis is confirmed by spirometry.³ Many reviews of airway clearance techniques have been performed over the last 20 years. Some of the more recent include a meta-analysis by Thomas et al. Cochrane reviews by Main et al. and Van der Schans et al., and review papers by Hess, Pryor and Lapin. Andreas Pflieger et al (1992) suggested that airway clearance techniques are used to aid in mucus clearance in a variety of diseases such as COPD and new techniques like Positive expiratory pressure technique and autogenic drainage can be used to rely heavily on basic airway clearance.⁴ The study done by Eaton T et al (2007) who had suggested that Autogenic drainage was well accepted and tolerated airway clearance device and the patient's preference was more for Autogenic drainage compared to active cycle of breathing and postural drainage. The need of study is to clear secretions in COPD patients with the help of two different techniques as postural drainage and autogenic drainage.

One is given by the therapist and is better for those who are not self sufficient to implement and follow the more energy demanding self chest clearance techniques; and give marked relief and help in secretion removal. Another is one to be implemented by the patient him self and give self dependence for long term.

Both are proved to be effective in secretion removal in various studies done before.

This study is designed to compare the effectiveness of each other over the level of oxygen saturation in

blood and amount of secretion removal. Autogenic drainage is a self drainage technique which utilizes controlled expiratory airflow to mobilize secretions consisting of 3 phases⁵:

1. Unsticking the peripheral secretions by breathing at low lung volumes (slow deep air movement).
2. Collecting the mucus from central airways by breathing at low to mid lung volumes (slow mid-range air movement).
3. Evacuating the mucus from the central airways by breathing at mid to high lung volumes (shallow air movement).

Postural drainage therapy (PDT) is a component of bronchial hygiene therapy. It consists of postural drainage, positioning, and turning and is sometimes accompanied by chest percussion and/or vibration with a principle of draining the secretions with the help of gravity.

METHODOLOGY

It is a comparative study design with a sample of 60 out patients are included in study with a regular 6 day pre and post therapy monitoring. Thirty patients with COPD above 35 years are included both genders having with good respiratory muscle control, capable of self administrating Autogenic drainage & follow instructions, with retained secretions, clinically diagnosed chronic bronchitis subjects up to gold grade. Subjects are excluded are Angina, Rib fracture, Osteoporosis, Indication for ventilator support, Hemodynamic instability, Hernia, Pneumothorax, Empyema thoracis, Tuberculosis, Lung carcinoma, Bronchopulmonary fistula, Pregnancy, Oesophageal surgery, Hypertension, Risk of pulmonary embolism High risk of bronchospasm, Recent spinal surgery e.t.c

Subjects are divided in 2 groups A & B 30 patients in each group by randomized sampling. Group A will be receiving Autogenic drainage, Group B will be receiving Postural drainage consisting 7 fundamental positions with 3 min. duration for each.

60 patients with COPD above age 35 yrs are taken. Each subject is evaluated for study. Duration of study is 6 days for each patient Data collection is started at the day 0 and till the sixth day of treatment for regular 6 days.

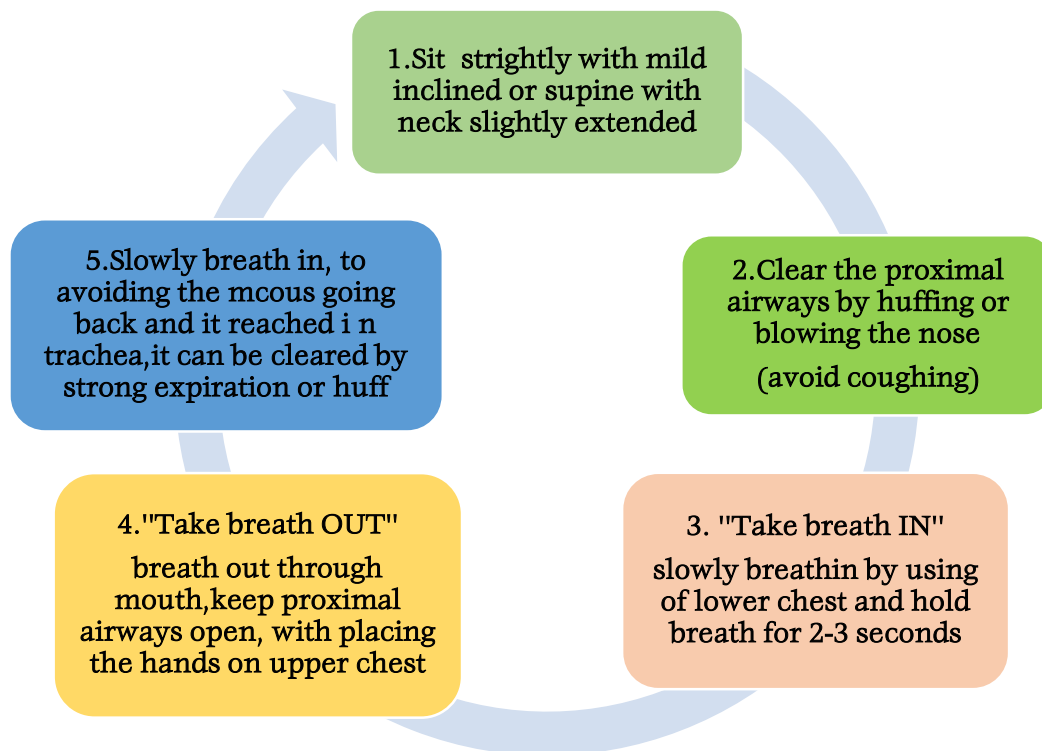
All the patients are referred by consultant physican from the referred hospital and diagnosed as COPD and who satisfy the inclusion criteria.

Picture 1: Pulse oximetry



Subjects are divided in 2 groups A and B 30 patients of COPD in each group receive intervention for continuous 6 days

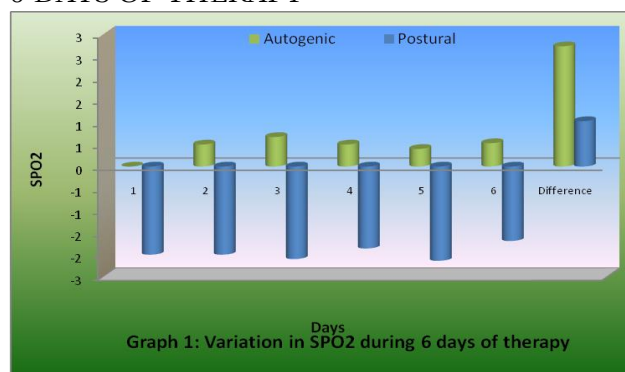
STEPS TO THE PATIENT FOR AUTOGENIC DRAINAGE



RESULTS

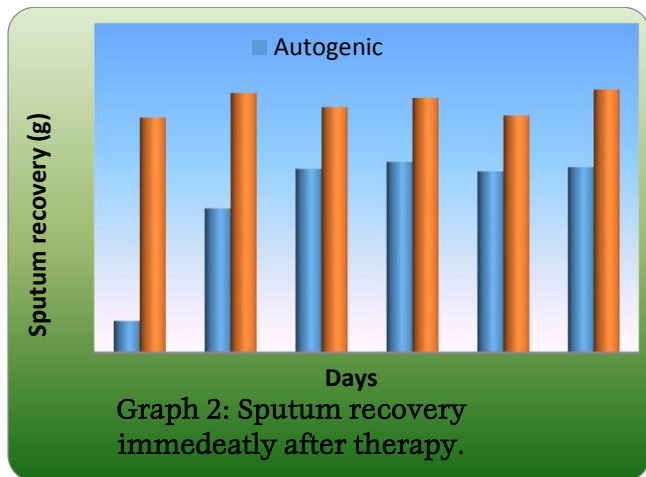
Statistics were performed by using SPSS 11. Results were calculated by using 0.05 level of significance. Using statistical formula for the mean, for a given no of subjects, mean of diff. variables and other variables are were calculated

GRAPH 1: SHOWS VARIATION IN SPO2 DURING 6 DAYS OF THERAPY

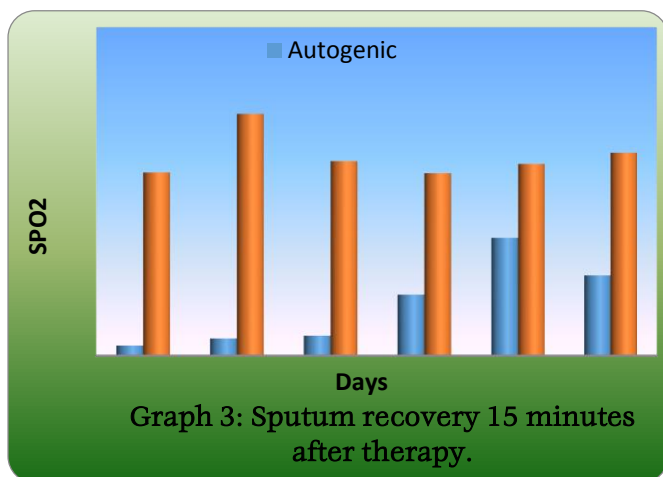


(Mean spo2 increase was found greater in a.d group)

GRAPH 2: SHOWS RECOVERY IMMEDIATELY AFTER THERAPY



GRAPH 3: SHOWS SPUTUM RECOVERY 15 MINUTES AFTER THERAPY



DISCUSSION

This study was designed to compare the effectiveness of two airway clearance techniques in COPD. It was a comparative study, Thirty patients with COPD are taken .subjects are divided 2 groups A & B. 30 patients of COPD in each group are distributed by convenient sampling . Each subject is included by pulmonary function test Group A will be receiving –Autogenic drainage and Group B will be receiving- Postural drainage. Statistical t-test is used for analyzing a pre & post test result.

According to Clarke et al, in COPD airway resistance created due to mucous hyper secretion can be improved by airway clearance techniques⁶. According to ‘Savci et al’ Autogenic drainage is effective and safe in clearing secretion and improving spo2⁶⁻⁷.

‘Millar et al’ Autogenic drainage was found to be an effective method of home physiotherapy. Comparison between AD and PD showed a

significant difference between spo2 value increment and secretion removal.⁸

Autogenic drainage (AD) is an airway clearance technique. It is characterized by breathing control, where the individual adjusts the rate, depth and location of respiration within the thoracic cavity in order to clear the chest of secretions independently. The technique was first conceived in Belgium by Jean Chevaillier in 1967. Postural drainage therapy (PDT) is a component of bronchial hygiene therapy. It consists of postural drainage, positioning, and turning and is sometimes accompanied by chest percussion and/or vibration.

Subjects were found to have no significant change in respiratory rate during both the treatments. However both the treatments showed that there is small but significant difference (decrease) in respiratory rate 30 min. after the treatment ,reflect that both the treatments ,does not cause increase in respiratory rate and therefore may be safe in COPD

CONCLUSION

The Autogenic drainage is more effective in improving spo2 in COPD & does not cause a sudden fall in spo2 as occurs in Postural drainage immediately after therapy. In concern to mean amount of secretion removal Postural is found to be more effective.

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