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A comparative study of COPD patients with medical therapy and adjuvant physiotherapy.

Medicine

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KEYWORDS

INTRODUCTION

The management of patients with chronic obstructive pulmonary disease (COPD) mainly involves management of symptoms and avoiding worsening or exacerbations. Lifestyle modifications such as exercise and cessation of smoking are also advised to patients with the habit. Among the pharmacological agents used, long term medications include bronchodilators and inhaled glucocorticosteroids. These help to alleviate symptoms and exacerbations.

Recent pulmonary rehabilitation in the form of exercise and physiotherapy have made their way into treatment guidelines for management of COPD.

However implementation of the same is influenced by many factors. Patients with poor economic background, difficult or no access to physiotherapy or rehabilitation centres may restrict themselves to only pharmacotherapy in spite of being advised about the benefits of an adjunctive therapy. Also, patients with more severe forms of the disease may be more willing to seek newer measures of treatment in a bid to seek faster relief.

Aripova TN et al have substantiated the use of high-frequency intrapulmonary ventilation for rehabilitation among COPD patients based at a health resort and spa facility.[1] They found that an interventional therapy of inhalation, exercise for the working out of skeletal muscles, massage, high-frequency intrapulmonary ventilation helped in relieving symptoms of the disease and promoted recovery compared to a control group which did not receive any of the above.

In a randomized clinical trial involving patients admitted due to pneumonia or COPD, it was found that the experimental group which received an intervention with physical therapy was found to have better outcomes.[3]

Similarly, studies have been conducted on COPD patients with respiratory failure to determine the effect of combination of physiotherapy and intermittent ventilation. It was found that clinical symptoms after the treatment were significantly improved than in the control group.[4]

Chronic obstructive pulmonary disease (COPD) is a disease with high prevalence and frequently treated by physicians in primary care. Data regarding usefulness of physiotherapy is essential to develop means for improvement of management of COPD. Hence this study was carried out to throw light on the efficacy of adjuvant therapy in management of COPD.

OBJECTIVES:

1. To determine the benefits of use of physiotherapy in addition to pharmacotherapy among patients with COPD.
2. To compare the clinical outcomes and prognosis among these patients compared to those receiving pharmacotherapy alone.

MATERIALS & METHODS

A randomized controlled trial was performed on a total of 80 patients in a tertiary care setting in Mangaluru in which the effects of physiotherapy among patients with COPD were compared to a control group receiving only pharmacotherapy over a period of four months.

Patients with COPD getting admitted at Father Muller Medical College Hospital were included as study subjects. Diagnosis of COPD was done clinically based on the Gold's criteria.[5] Patients already receiving any other form of pulmonary rehabilitation, or with other major comorbidities which could be likely contributors to breathing difficulties (such as bronchial asthma, skeletal abnormalities like scoliosis/kyphosis, malignancies) were excluded from the study. They were counseled regarding the likely benefits of physiotherapy and were further divided into an experimental group or a control group based on randomization after obtaining written informed consent. Thus a total of 40 patients were managed with pharmacotherapy alone (Group A) and the remaining 40 were on both pharmacotherapy as well as physiotherapy (Group B). Participants of group A received pharmacotherapy with bronchodilators, nebulisation and aminophyllines. Group B received physiotherapy which included measures for improvement of muscle strength, exercise capacity and breathing technique which was conducted once a week for 4 months. A structured questionnaire was used for preliminary data collection.

The COPD Assessment Test (CAT) which is an 8-item questionnaire was used to measure the health status of the subjects prior to initiation of treatment and at the end of four months after completion of treatment.[6] Scores ranged from 0-40 with greater scores indicating greater severity of morbidity.

Data collected was tabulated and analyzed using SPSS software Version 15.0. Baseline characteristics were assessed using Chi Square and Fisher's Exact test for categorical data and unpaired t-test for continuous variables. Significance was determined at $p<0.05$.

RESULTS

Mean age of the study subjects was 53 years. 43 (53.75%) of the study subjects were males and 37 were females as shown in Table 1.

Table 1: Age and sex-wise distribution of subjects

Age range	Male	Female	Total (%)
<50 years	10	8	18
>50 years	33	29	62
Total (%)	43 (53.75%)	37 (46.25%)	80(100%)

Table 2: Comparison of CAT scores before and after completion of therapy in Group A

CAT score	Baseline (n)	At the end of 4 months (n)
5	0	0
<10	0	12
10-20	3	18
>20	19	10
>30	18	0
Total	40	40

Table 3: Comparison of CAT scores before and after completion of therapy in Group B

CAT score	Baseline (n)	At the end of 4 months (n)
5	0	3
<10	0	11
10-20	14	13

>20	12	13
>30	14	0
Total	80	80

The pre-treatment CAT scores in Group A and in Group B were found to be comparable as shown in Tables 2 and 3.

Table 4: Correlation of CAT scores before and after treatment in Group A

		Before treatment	After treatment	Total
CAT score	<20	14	27	41
	>20	26	13	39
Total		40	40	80

The chi-square statistic is 8.4553. The p-value is .00364. This result is significant at $p < .05$.

Table 5: Correlation of CAT scores before and after treatment in Group B

		Before treatment	After treatment	Total
CAT score	<20	3	30	33
	>20	37	10	47
Total		40	40	80

The chi-square statistic is 37.6015. The p-value is 0.00000 This result is highly significant at $p < .05$.

Even though, the post treatment CAT scores showed an improvement in both Group A and in B on correlation, it was found that the statistical significance was much greater in group B which was receiving both physiotherapy as well as pharmacotherapy, signifying better outcomes in group B as shown in Tables 4 and 5.

DISCUSSION

The CAT questionnaire is a useful questionnaire which assesses a wide range of effects of COPD on the health of patients. Studies have revealed that it is responsive to variations in disease pattern and severity, changes due to treatment like physiotherapy and rehabilitation and detects changes and trends in CAT score in 2-3 month's time.[7,8]

In the findings of present study there was improvement in symptoms in both the groups but greater improvement was found in those receiving physiotherapy along with pharmacotherapy.

This intra group analysis showed that reduction of symptoms was more significant in group B as compared to group A. The age and gender distribution showed no statistical difference in the groups, which represents the homogeneity of the participants.

These findings further substantiate the findings of Aripova TN et al, Martín-Salvador A et al and Qu Y et al, who had similar findings in different independent set ups.[1,3,4]

CONCLUSION

Thus, from the above study it was concluded that physiotherapy provides significant reduction in symptoms in patients with COPD and may be employed in general practice for better relief among COPD patients.

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