MEDICO RESEARCH CHRONICLES
ISSN NO. 2394-3971
DOI No. 10.26838/MEDRECH.2020.7.6.463
Contents available at www.medrech.com

ROLE OF PULMONARY REHABILIBTATION IN CASES OF HEALED PULMONARY TUBERCULOSIS

Ankit Mehrotra[1], Gajendra Vikram Singh[2], Komal Lohchab[3], Santosh Kumar*[4], Aravind[5], Bhanu Pratap Pandey[5], Achal Singh[5], Rajeev Kumar Chauhan[5]

1 Assistant Professor, Department of TBCD, Varun Arjun Medical College, Shahjahanpur.
2. Associate Professor, Department of TBCD, S. N. Medical College, Agra
3. Assistant Professor, Department of TBCD, S. N. Medical College, Agra
4. Professor and Head, Department of TBCD, S. N. Medical College, Agra
5. Junior Resident , Department of TBCD, S. N. Medical College, Agra

ARTICLE INFO

Article History
Received: November 2020
Accepted: December 2020
Keywords: PR Pulmonary Rehabilitation, 6MWT 6 Minute Walk Test

Corresponding author*
Dr. Santosh Kumar

ABSTRACT

ORIGINAL RESEARCH ARTICLE

Introduction: Pulmonary rehabilitation is a comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often decreased life activities Pulmonary rehabilitation reduces hospitalization among patient who have a repeated exacerbation. This study is used to assess the role of pulmonary rehabilitation in healed pulmonary tuberculosis patients.

Materials and Method: This is a hospital based randomized case control study, conducted in 132 clinically healed tuberculosis patients in Sarojini Naidu medical college, Agra to assess the role of pulmonary rehabilitation in healed tuberculosis patient The role of pulmonary rehabilitation in healed pulmonary tuberculosis patients is assessed by 6minute walk test and Modified Borg Scale [RPE scale]

Result: The change in decline in [PRE 6MWT] observed between the case and control group was significant [p<0.5]. The change in decline in [POST 6MWT] observed between the case and control group was significant [p<0.5].

Conclusion: In conclusion, pulmonary rehabilitation is a new hope for patient with healed pulmonary tuberculosis. It is a treatment that reduces dyspnea and increases activities of daily living, exercise tolerance, exercise capacity and better quality of life.

INTRODUCTION

American Thoracic Society (ATS) and European Respiratory Society adopted the following definition of Pulmonary rehabilitation, it is an evidence-based, multidisciplinary, and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often decreased life activities. Integrated into the individualized treatment of the patient,

pulmonary rehabilitation is designed to reduce symptoms, optimize functional status, and reduce health care costs through stabilizing or reversing systemic manifestations of the disease. Pulmonary rehabilitation may be initiated at any stage of the disease, during periods of clinical stability, or directly after an exacerbation.[1] The goals of pulmonary rehabilitation include minimizing symptoms burden, maximizing exercise performance, promoting autonomy, increasing participation in everyday activities, enhancing the quality of life, and effecting long-term health-enhancing behavior change Pulmonary rehabilitation improves dyspnea, health status, and exercise tolerance in stable patients of healed tuberculosis. Pulmonary rehabilitation reduces hospitalization among patients who have repeated exacerbation. It reduces symptoms of anxiety and depression. This study is used to assess the role of pulmonary rehabilitation in healed pulmonary tuberculosis patients.

MATERIALS AND METHODS

This is a hospital-based randomized case-control study, conducted in 132 clinically healed pulmonary tuberculosis patients attending the department of tuberculosis and chest diseases, Sarojini Naidu Medical College, Agra, Uttar Pradesh, India to assess the role of pulmonary rehabilitation in healed tuberculosis patients between January 2020 to June 2020

INCLUSION CRITERIA

- Stable follow up healed pulmonary tuberculosis patients
- Patients above 18 years of age
- Patients who can give informed consent

EXCLUSION CRITERIA

- Patients who are not able to give informed consent
- Other medical illness[thyroid disorders, diabetes, hypertension, asthma]

The study group was randomly divided into cases and control. Thus, there were 66 patients in either case and control group, 2patient in the case group and 10 patients in the control group did not come for follow up. Thus finally there were 64 patients in the case group and 56patients in the control group. Pulmonary rehabilitation was given to cases of healed tuberculosis. The pulmonary rehabilitation components consist of health education about the disease, breathing retraining techniques, exercise for bronchial hygiene, and exercise like brisk walking. The role of pulmonary rehabilitation in healed pulmonary tuberculosis patients is assessed by a 6minute walk test and Modified Borg Scale [RPE scale].

Table 1: Distribution of Cases and Control in Study

Groups	No. of healed pulmonary tuberculosis patients
CASES	64
CONTROL	56
TOTAL	120

Table 2: Distribution based on age

	NO	MEAN	T VALUE	P VALUE
CASES	64	47.41	1.6558	0.1034
CONTROL	56	42.04		

Table 3: Distribution based on Sex

	NO	MALES	FEMALES	P VALUE
CASES	64	38	26	0.8
CONTROL	56	42	14	

Table 4: Modified Borg Scale Rating [Pre 6 MWT]

GROUP	The difference in mean [Borg scale Pre 6MWT]	t value	P-value
CASES [n=64]	-2.00	-11.51	0
CONTROL [n=56]	-o.39		

Table 5: 6 Minute Walk Test

GROUP	The difference in mean [6MWT]	t value	P-value
CASES [n=64]	109.62	10.93	0.01
CONTROL [n=56]	55.90		

Table 6: Modified Borg Scale Rating [Post 6 MWT]

GROUP	The difference in mean [Borg scale Post 6MWT]	t value	P-value
CASES [n=64]	-2.35	-17.698	0
CONTROL [n=56]	-0.50		

RESULT

There were a total of 64 patients in the case group and 56 patients in the control group. In the case group, the mean age of the patients was 47.41 years and in the control group, the mean age of patients was 42.04 years. Hence the two groups were comparable concerning age as suggested by the p-value which was 0.1034, the difference was not significant [TABLE 1 AND 2]

In the case group,38patients [59.38%] were male while 26 patients [40.62%] were female. In the control group,42 patients [75%] were male and 14patient [25%] were female. Hence the two groups were comparable concerning sex as suggested by the p-value which was 0.8 the difference was not significant [TABLE 3]

In the case group, the mean value of [PRE 6MWT] Modified Borg scale before rehabilitation was found to be 5.25 while after a rehabilitation period of 10 weeks it was found to be 3.25. In the control group, the mean value of PRE 6MWT distance [m] at the start of the study was found to be 5.39 while after 10 weeks, it was found to be 5. The [PRE 6MWT] distance[m] was noticed to be decreased in both the group, however, the change in the case group was double the time of the control group. The change in decline in [PRE 6MWT] observed between the case and control group was significant [p=0] [TABLE 4]

In the case group, the mean value of 6MWT distance before rehabilitation was found to be 369.63 m while after a rehabilitation period of 10 weeks it was found to be 479.25m, In the control group, the mean value of 6MWT distance [m] at the start of the study was found to be 360m while after 10 weeks, it was found to be 416m The 6MWT distance[m] was noticed to be increased in

both the group, however, the change in the case group was 29.66% double the time of control group. The change in mean 6MWT distance observed between the case and control group was significant [p=0.01] [Table 5]

In the case group, the mean value of [POST 6MWT] Modified Borg scale before rehabilitation was found to be 5.91 while after a rehabilitation period of 10 weeks it was found to be 3.56. In the control group, the mean value of POST 6MWT distance [m] at the start of the study was found to be 6.25 while after 10 weeks, it was found to be 5.75. The [PRE 6MWT] distance[m] was noticed to be decreased in both the group, however, the change in the case group was more than the control group. The change in decline in [POST 6MWT] observed between the case and control group was significant [p=0]. [TABLE 6]

DISCUSSION

Pulmonary rehabilitation plays an important role in management of healed tuberculosis It has been used in alleviating symptoms. In a study conducted by Vishal Banal [3]et al about role of pulmonary rehabilitation in haled tuberculosis patients concluded that pulmonary rehabilitation decreases the exacerbation episodes and reduction in functional exercise capacity.

In a study conducted by Esther Cecilia[5] et al on pulmonary rehabilitation among tuberculosis patient concluded that pulmonary rehabilitation improves patient functionality in tuberculosis patient.

In a study done by Osamu Nishiyama [4]et al the effect of pulmonary rehabilitation in IPF were evaluated. After rehabilitation program 6 MWD, dyspnea rating with the baseline dyspnea index and health related quality of life score on the St George Questionnaire were evaluated at baseline and after the program. It was concluded that Pulmonary rehabilitation improves both exercise capacity and health-related quality of life in patients with IPF.

In our study significant improvement was found to be provided by pulmonary rehabilitation over standard medical treatment in terms of exercise tolerance, similar result was found by Francesca Gibellino [6]et al in her study on the role of COPD where she found significant improvement in exercise tolerance, almost similar result was reported by Osamu Nishiyama et al in his study on the role of PR in patients of IPF where he found significant improvement in exercise tolerance. Similarly, B.M.O. Neill[7] found significant improvement in exercise tolerance provided by PR in chronic lung diseases.

In our study on healed tuberculosis patient, when the 6MWT distance was compared between the case and control group pre and post rehabilitation, significant improvement was found by PR in the case group over control group. The percentage of change in the 6MWT distance in the case group was almost double of that observed in the control group. Similar result was found by Mara Popescu Hugen [8]et al and Renta Claudia Zanchet [9].

CONCLUSION

In conclusion, pulmonary rehabilitation is a new hope for patient with healed tuberculosis. It is a treatment that reduces dyspnea and increases activities of daily living, exercise tolerance, exercise capacity and better quality of life. As per the result of the pilot study and considering the sample size of the patient enrolled in the study, pulmonary rehabilitation seems to be better adjunct therapy in patients of healed tuberculosis along with standard medical treatment for overall management of these patients having poor quality of life and exercise tolerance.

REFERENCES

1.Spruit et al. An official American Thoracic Society /European Thoracic Society statement: key concepts and advances in

pulmonary rehabilitation. Am J Respire Crit Care Med .2014 Jun 15;189(12):1570

2 RNTCP guidelines for tuberculosis, 2020.Available from:www.tbindia.gov..org

3.Vishal Banal. Pulmonary Rehabilitation in Chronic Respiratory Diseases. Indian J Chest Disease Allied Science 2014; 56:147-148

4. Osamu Nishiyama et al. Effects of pulmonary rehabilitation in patients with idiopathic pulmonary fibrosis. Respirology (2008) 13,394-399

5.Esther Cecilia Wilches et al. Pulmonary rehabilitation in multi drug resistant tuberculosis: a case report. Colomb Med .2009;40:436-41

6.Francesca Gibellino et al. The effects of Pulmonary rehabilitation on lung function with COPD. October 2014, Vol 146, No.4-meeting abstracts

7.B.M.O Neil et al Effect of once weekly pulmonary rehabilitation on exercise tolerance in patient with chronic lung disease. Irish Journal of Medical Science; oct-dec 2001, volume 170, issue 4,231-232

8.Mara Popescu Hagen et al. A Pulmonary rehabilitation in COPD patients: Observational study, oct 2014, vol 146, no.4-meeting abstracts

9.Renta Claudia Zanchet et al, Efficacy of pulmonary rehabilitation in patient with COPD.J. bras.pneumol.vol.31 no.2

10.Nizar Rifaat et al.Pulmomary rehabilitation in idiopathic pulmonary fibrosis Egyptian Journal of Chest Disease and Tuberculosis volume 63,Issue 4,October 2014,1013-1017