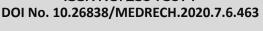
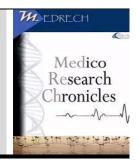


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ROLE OF PULMONARY REHABILIBTATION IN CASES OF HEALED PULMONARY **TUBERCULOSIS**

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ABSTRACT

ORIGINAL RESEARCH ARTICLE

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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.

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INTRODUCTION

American Thoracic Society (ATS) and European Respiratory Society adopted the following definition **Pulmonary** evidence-based. rehabilitation. it is an

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 pulmonary tuberculosis healed 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

- pulmonary • Stable follow up healed 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	t value	P-value
	mean	[Borg scale	Pre		
	6MW	T]			
CASES [n=64]	-2.00			-11.51	0
CONTROL [n=56]	-0.39				

Table 5: 6 Minute Walk Test

GROUP	The	difference	in	t value	P-value
	mean	[6MWT]			
CASES [n=64]	109.6	2		10.93	0.01
CONTROL [n=56]	55.90				

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

GROUP	The difference in	t value	P-value	
	mean [Borg scale Post			
	6MWT]			
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 important role in management of healed tuberculosis It has been used in alleviating symptoms. In a study conducted by Vishal Banal ³et al about role of pulmonary rehabilitation in haled tuberculosis patients pulmonary rehabilitation concluded that decreases the exacerbation episodes reduction in functional exercise capacity.

In a study conducted by Esther Cecilia⁵ 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 ⁴et 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

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 ⁶et 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. Neill⁷ 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 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 ⁸et 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.

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