

EFFECTIVENESS OF CHEST PHYSIOTHERAPY IN THE MANAGEMENT OF BRONCHIECTASIS

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Abstract

Bronchiectasis is a chronic disease in which clearance of sputum is disturbed because bronchi dilated permanently.¹ So for the clearance of sputum we have to use physiotherapy techniques such as postural drainage percussion and vibration (PDPV), active cycle of breathing technique (ACBT), autogenic drainage, positive expiratory pressure, high frequency chest wall oscillation.²

Objective: To determine the role of Chest Physical therapy intervention in the management of Bronchiectasis. To compare the prognosis of bronchiectasis with and without chest physiotherapy.

Methodology: Data was collected from Gulab Devi Chest Hospital, Lahore. A Randomized Control Trial (RCT) study method was used and 60 patients are studied. In this study, they were divided into 03 groups 1- Antibiotics Therapy 2-Chest Physical therapy 3-Antibiotics and Chest Physical therapy. Each group consists

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ted of 20 patients. Patients are assessed on detailed questionnaire prepared for this purpose and on available medical record of Peek expiratory flow rate (PEFR), and Modified Borg's Dyspnea scale, Sputum Quantity, Breath Sounds and SpO₂ is used for scoring. Then these patients undergone through intensive chest physiotherapy in the department and regular follow up visits to department and a final assessment was made at the end of four weeks by using same questionnaire and resulting improvement was shown in results after completion.

Results: ANOVA and Post hoc test was used to analyze the study hypothesis. It was observed that combined effect of Antibiotic therapy and Chest Physical Therapy had significant effect on airway clearance, reduced recurrence and improvement in dyspnea, breath sounds, PEFr, reduction in sputum quantity and improvement in SpO₂. (P-value < 0.05).

Conclusion and Recommendation: These findings suggest that the combination of Chest Physical Therapy along with Antibiotics Therapy is more effective than Chest Physical Therapy or Antibiotics Therapy alone in the Rehabilitation of patients with Bronchiectasis. It is strongly recommended that Chest Physical Therapy should be available in all hospitals.

Key words: Bronchiectasis, Chest Physical Therapy (CPT), Modified Borg's Dyspnea scale, postural drainage percussion vibration (PDPV).

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Introduction

Bronchiectasis is the permanent and abnormal distort-

ion of one or more bronchi and airways, secondary to infection process. In present it has significant changes to its prevalence, etiology, presentation and management due to the emergence of broad spectrum antibiotics and implementation of bronchial hygiene therapy techniques.¹

Bronchiectasis can be grouped in chronic obstructive pulmonary disease in which airways are inflamed and collapsible, causing obstruction. Symptoms are manifested by shortness of breath, difficulty in sputum clearance, diminished cough response and often hemoptysis. In severe cases respiratory failure may occur.²

Bronchiectasis may be presented as a focal process involving a lobe, segment or subsegment of the lung or diffuse process involving both lungs. Diffuse presentation mostly occurred in association with other systemic illness e.g. sinopulmonary disease, cystic fibrosis or both.³

Diagnosis is best made on clinical history of cough, sputum production and radiographic changes on CT scan, bronchial wall thickening and luminal dilatation.⁴ Bronchiectasis causes decline in lung function thus reducing quality of life, worsens the prognosis and therefore increases mortality.^{5,6}

Antibiotics and chest physiotherapy are the mainstay modalities in the management of bronchiectasis.⁷ By the use of broad spectrum antibiotics according to the culture and sensitivity and implementation of bronchial hygiene therapy techniques, respiratory resistance training and breathing exercises have significantly improve the lung function test, quality of life, decrease hospital visits, decrease disease cost, reduce exacerbation, reduce recurrence of infection and therefore decrease mortality.⁸ Bronchiectasis is a major cause of morbidity in developing countries like Pakistan. It is related with reduced quality of life, decline in pulmonary function, increased hospitalization and even death.⁹

Recent evidenced revealed that bronchiectasis is more common in women and elderly populations, causing an increased burden on health care. In a recent survey of 5.6 million patients in US, a prevalence of 52 per 100,000 adults, with a prevalence of 272 per 100,000 for elderly aged > 75 years.¹⁰ Hospitalized patients in US were surveyed from 1993 to 2009 revealed that 63% were women and 70% were elderly patients age > 65 years. There was age related bronchiectasis hospitalized patient annual increase of 2.4% in man and 3.0% in women.¹¹ In the United Kingdom, about 1,000 deaths occurred a year but this rate increased 3% from 2001 to 2007 and was considered due to

increase age, advance spread of bronchiectasis in elderly.¹² These findings may be due to increase use of HRCT (High resolution computed tomography) scan to evaluate the condition. Due to the increased recognition and presence of this disease in the United States, a multicenter consortium was developed to facilitate research in this disease.¹³ King P, Hold S, worths Freezer N, Holmes P conducted a study and concluded that bronchiectasis should be treated with proper regimens which may lead to decline in respiratory function despite treatment.¹⁴ Study of Dogreu D, Nik-Ain A, Kiper N, Gocmen, Ozceliku, Yalcin E, Asian concluded that early diagnosis and treatment will increase the quality of life and survival of patients with bronchiectasis which has irreversible and progressive complications if untreated.¹⁵

The study concluded that bronchiectasis may lead to respiratory failure and most of affected patients are being managed with episodal drug treatment and physiotherapy.¹⁶

Mutalithas K, Watkin G institute for lung health department respiratory medicine leicester, UK, did a research regarding improvement in health status among bronchiectasis patients after physiotherapy by using a new method called broncho pulmonary hygiene physical therapy. The data was collected by using cough questionnaire regarding cough. The total numbers of patients were 53 and during pre test the major symptom was cough. After pre tests the patients was subjected to chest physiotherapy and postural drainage therapy. After this the same questionnaire was administered to the patients and it was found that cough and other symptoms decreased among 35 patients and moderately reduced among 15 patients. So it was concluded that postural drainage and chest physiotherapy can lead to improvement in cough and other symptoms among bronchiectasis patients.^{17,18} Another study showed the reduction in sputum after postural drainage.¹⁹⁻²¹

The researchers reported that this therapy is not difficult if one has a proper understanding of the basic concept and principle behind the manoeuvre and concluded that chest physiotherapy is essential to improve and maintain the well being of the patients with airway obstruction and proper knowledge regarding this therapy is essential to make it simple and more effective.²²

Literature review concluded that chest physiotherapy in bronchiectasis patients having significant benefits.²³

Hypothesis

Chest physiotherapy along with antibiotics is an effective method in the management of bronchiectasis.

Material and Methods

Study Group

Patients with diagnosed bronchiectasis.

Study Design

RCT (Randomized Control Study).

Setting

Department of **Physiotherapy and Cardiopulmonary Rehabilitation Gulab Devi Chest Hospital, Lahore.**

Duration of Study

This was a time based study and all patients coming within 3 months after the approval of synopsis will be included in this study.

Study Group

Group I: In this group patients was treated with Antibiotics.

Group II: In this group patients was treated with chest physiotherapy.

Group III: In this group patients was treated with antibiotics along with chest physiotherapy.

Sample Size

This was a time based study and all patients coming within three months will be included in this study.

Sampling Technique

Random sampling was used.

Sample Selection Criteria

Inclusion Criteria

- i. Patients with bronchiectasis in Gulab Devi chest Hospital, Lahore.
- ii. Patients who are present during data collection.
- iii. Patients who are willing to participate in this study.

- iv. Patients who are 12 years of age and above.
- v. Patients who can understand/communicate Urdu, Punjabi or English.

of sputum. The assessment will be done at baseline and at week 1 and 2. At the end of the 2nd week of the study, the patients will be reassessed.

Exclusion Criteria

- i. Patients who are not willing to participate in this study.
- ii. Patients with frank hemoptysis.
- iii. Patients with pulmonary tuberculosis.
- iv. Patients with cystic fibrosis bronchiectasis.

Ethical Issues

The research is intended to obtain prior permission and ethical clearance for the present study from the

- Patients family.
- Nursing superintendent.
- Staff nurse /ward in charge concerned.
- Hospital.

The safety, confidentiality, self respect and liberty of the patient will be given importance during the present study.

The present study does not include any invasive scientific investigation on patients, other human beings.

Methodology

The Physiotherapy management will include:

- Aerosol Therapy (Humidification and Nebulization).
- Postural Drainage with Percussion and vibration PDPV.
- Autogenic Drainage.
- Breathing Exercises.
- Diaphragmatic Breathing.
- Sustained maximal inspiration.
- Segmental Breathing Exercises.

Statistical Analysis

Using SPSS v 16 the data was managed and analyzed. The continuous variables was expressed as mean \pm SD. Where the categorical variable was expressed in the form of frequency table and percentages. The histogram was used to see the normality of quantitative data. ANOVA and LSD was used to find effective treatment. Chi square test was applied to determine any association between variables. Appropriate graphs was used to display the data. A p value less than 0.05 will be taken as significant.

Follow-up

The patient's overall assessment of disease will be assessed by using Brog's modified dyspnea scale, breath sounds, SpO₂ PEFr, temperature and quantity

Results

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Post temperature	Between Groups	.700	2	.350	4.245	.019
	Within Groups	4.700	57	.082		
	Total	5.400	59			
Post dyspnea	Between Groups	104.433	2	52.217	26.223	.000
	Within Groups	113.500	57	1.991		
	Total	217.933	59			
Post breath sonud	Between Groups	8.033	2	4.017	43.198	.000

	Within Groups	5.300	57	.093		
	Total	13.333	59			
Post oxygen saturation	Between Groups	179.433	2	89.717	22.754	.000
	Within Groups	224.750	57	3.943		
	Total	404.183	59			
Post sputum	Between Groups	9.633	2	4.817	107.667	.000
	Within Groups	2.550	57	.045		
	Total	12.183	59			
Post ESR	Between Groups	4.800	2	2.400	15.458	.000
	Within Groups	8.850	57	.155		
	Total	13.650	59			
Post CBC	Between Groups	2.533	2	1.267	8.805	.000
	Within Groups	8.200	57	.144		
	Total	10.733	59			
Post PEFR	Between Groups	7.433	2	3.717	31.385	.000
	Within Groups	6.750	57	.118		
	Total	14.183	59			

Post Hoc Tests

Multiple Comparisons

LSD

Dependent Variable	(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Post temperature	Antibiotics	chest physiotherapy	.200*	.091	.032	.02	.38
		both	.250*	.091	.008	.07	.43
	Chest physiotherapy	Antibiotics	-.200*	.091	.032	-.38	-.02
		Both	.050	.091	.584	-.13	.23
	Both	Antibiotics	-.250*	.091	.008	-.43	-.07
		Chest physiotherapy	-.050	.091	.584	-.23	.13
Post dyspnea	Antibiotics	Chest physiotherapy	.950*	.446	.038	.06	1.84
		both	3.150*	.446	.000	2.26	4.04
	Chest physiotherapy	Antibiotics	-.950*	.446	.038	-1.84	-.06
		Both	2.200*	.446	.000	1.31	3.09
	Both	Antibiotics	-3.150*	.446	.000	-4.04	-2.26
		Chest physiotherapy	-2.200*	.446	.000	-3.09	-1.31
Post breath sonud	Antibiotics	Chest physiotherapy	.800*	.096	.000	.61	.99
		Both	.750*	.096	.000	.56	.94

	Chest physiotherapy	Antibiotics	-.800*	.096	.000	-.99	-.61
		Both	-.050	.096	.606	-.24	.14
	Both	Antibiotics	-.750*	.096	.000	-.94	-.56
		Chest physiotherapy	.050	.096	.606	-.14	.24
Post oxygen saturation	Antibiotics	Chest physiotherapy	-.650	.628	.305	-1.91	.61
		Both	-3.950*	.628	.000	-5.21	-2.69
	Chest physiotherapy	Antibiotics	.650	.628	.305	-.61	1.91
		Both	-3.300*	.628	.000	-4.56	-2.04
Both	Antibiotics	3.950*	.628	.000	2.69	5.21	
	Chest physiotherapy	3.300*	.628	.000	2.04	4.56	
Post sputum	Antibiotics	Chest physiotherapy	-.850*	.067	.000	-.98	-.72
		Both	-.850*	.067	.000	-.98	-.72
	Chest physiotherapy	Antibiotics	.850*	.067	.000	.72	.98
		Both	.000	.067	1.000	-.13	.13
Both	Antibiotics	.850*	.067	.000	.72	.98	
	Chest physiotherapy	.000	.067	1.000	-.13	.13	
post ESR	Antibiotics	Chest physiotherapy	-.600*	.125	.000	-.85	-.35
		Both	.000	.125	1.000	-.25	.25
	Chest physiotherapy	Antibiotics	.600*	.125	.000	.35	.85
		both	.600*	.125	.000	.35	.85
Both	Antibiotics	.000	.125	1.000	-.25	.25	
	Chest physiotherapy	-.600*	.125	.000	-.85	-.35	
Dependent Variable	(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Post CBC	Antibiotics	Chest physiotherapy	.300*	.120	.015	.06	.54
		Both	-.200	.120	.101	-.44	.04
	chest physiotherapy	Antibiotics	-.300*	.120	.015	-.54	-.06
		Both	-.500*	.120	.000	-.74	-.26
Both	Antibiotics	.200	.120	.101	-.04	.44	
	Chest physiotherapy	.500*	.120	.000	.26	.74	
Post PEFR	Antibiotics	Chest physiotherapy	.550*	.109	.000	.33	.77
		Both	.850*	.109	.000	.63	1.07
	Chest physiotherapy	Antibiotics	-.550*	.109	.000	-.77	-.33
		Both	.300*	.109	.008	.08	.52
Both	Antibiotics	-.850*	.109	.000	-1.07	-.63	
	Chest physiotherapy	-.300*	.109	.008	-.52	-.08	

*. The mean difference is significant at the 0.05 level.

Table 1: Distribution of post treatment cases according to Dyspnea Scale.

Crosstab

Count	Treatment			Total
	Antibiotics	Chest Physiotherapy	Both	
1	2	2	9	13
2	1	0	6	7
3	1	1	4	6
4	0	9	1	10
5	9	8	0	17
6	1	0	0	1
7	6	0	0	6
Total	20	20	20	60

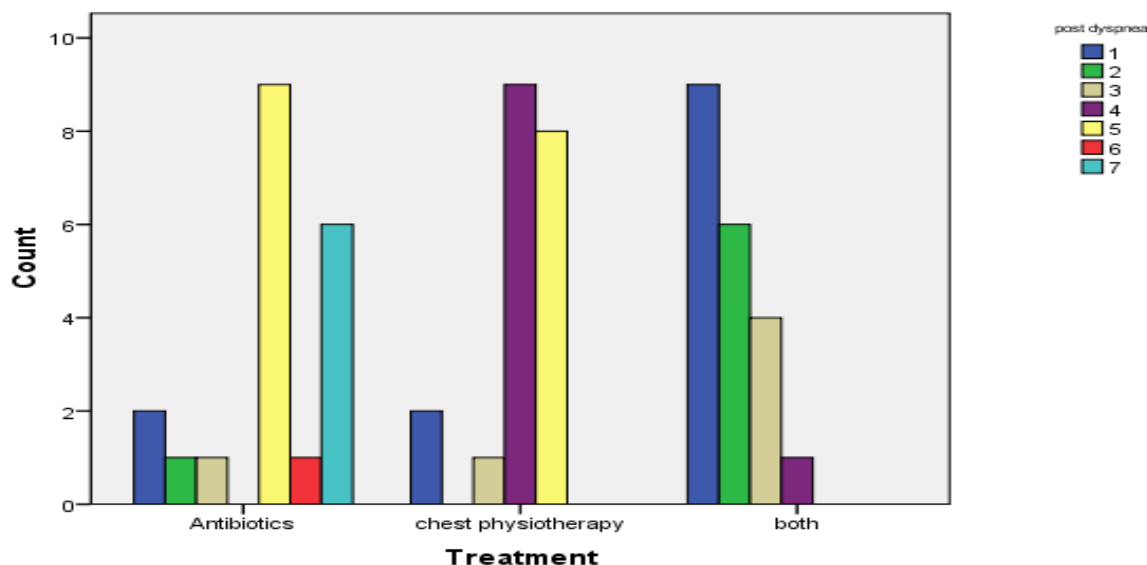
Table 1 describes that dyspnea score decreases in those patients who are treated by chest physiotherapy and chest physiotherapy along with antibiotics therapy as compared to those who are treated with only antibiotics therapy alone.

Chi-Square Tests

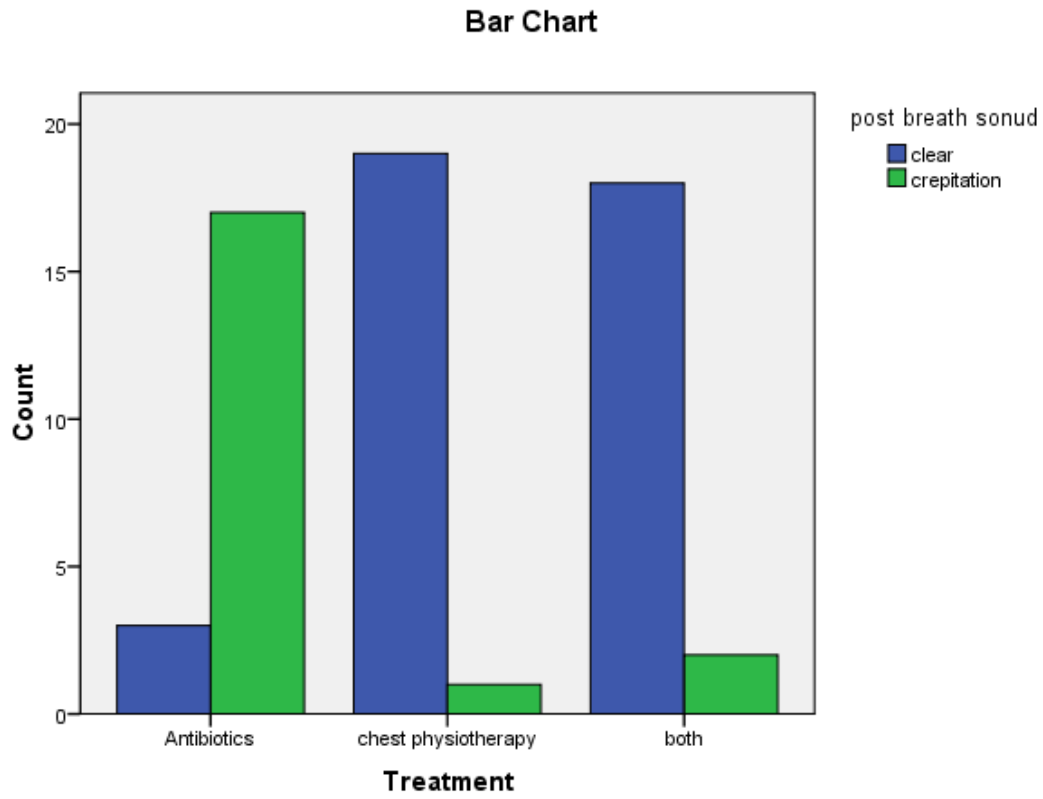
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	56.584 ^a	12	.000
Likelihood Ratio	64.078	12	.000
Linear-by-Linear Association	26.863	1	.000
N of Valid Cases	60		

a. 18 cells (85.7%) have expected count less than 5. The minimum expected count is .33.

Bar Chart



Graph 1: Distribution of post treatment cases according to dyspnea scale.



Graph 2: Distribution of causes according to post treatment breath sounds.

Graph 2 describes patients having antibiotic therapy after treatment persist crepitation in most of cases, patients having chest physiotherapy, most cases improve airway clearance thus improves breath sounds, while patients with combination therapy, (antibiotics therapy and chest physiotherapy) clear secretion and attain improve breath sounds in most of cases.

Graph 4 describes that group I taking antibiotic therapy, group II chest physiotherapy and group III combination therapy (antibiotic therapy and chest physiotherapy). Graph shows that those patients in group III taking combination therapy improve dyspnea scale while group I on antibiotic therapy, there is no marked improve in dyspnea.

Table 2 describes seventeen patients out of twenty patients with antibiotics have crepitation while those patients with both antibiotics along with chest physiotherapy only two patients out of twenty patients have crepitation while eighteen patients out of twenty patients have clear breath sounds after treatments.

Table 3 describes those patients with treatment with antibiotics two out of twenty patients have SpO₂ 98%, three out of twenty patients with chest physiotherapy have SpO₂ 98%, while maximal number of patients with combined treatment antibiotics and chest physiotherapy, thirteen out of twenty patients achieve SpO₂ 98%.

Graph 4 describes those patients with antibiotic therapy reduces the sputum quantity, while those patients with combination therapy (antibiotic therapy and chest physiotherapy) clear sputum quantity.

Table 2: Distribution of cases according to post treatment breath sounds

Count		Crosstab			Total
		Treatment			
		Antibiotics	Chest Physiotherapy	Both	
Post breath sonud	Clear	3	19	18	40
	Crepitation	17	1	2	20
Total		20	20	20	60

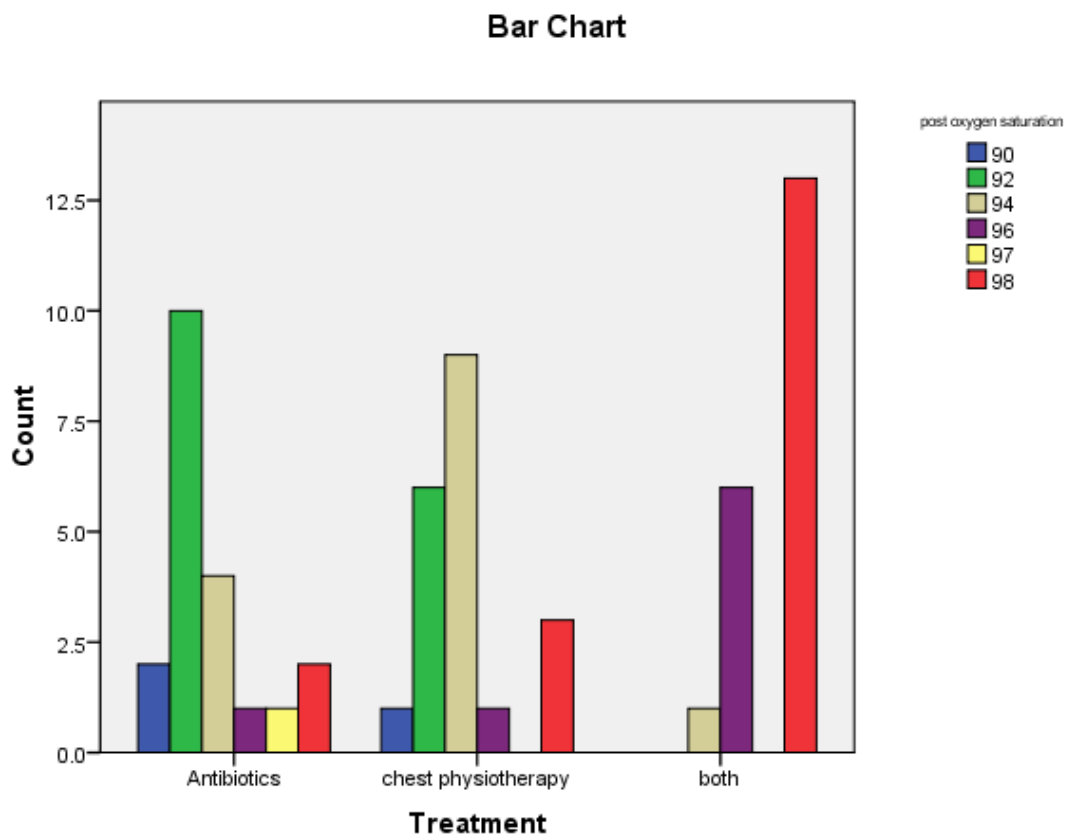
Table 3: Distribution of causes according to post oxygen saturation.

Count		Crosstab			Total
		Treatment			
		Antibiotics	Chest Physiotherapy	Both	
Post oxygen saturation	90	2	1	0	3
	92	10	6	0	16
	94	4	9	1	14
	96	1	1	6	8
	97	1	0	0	1
	98	2	3	13	18
Total		20	20	20	60

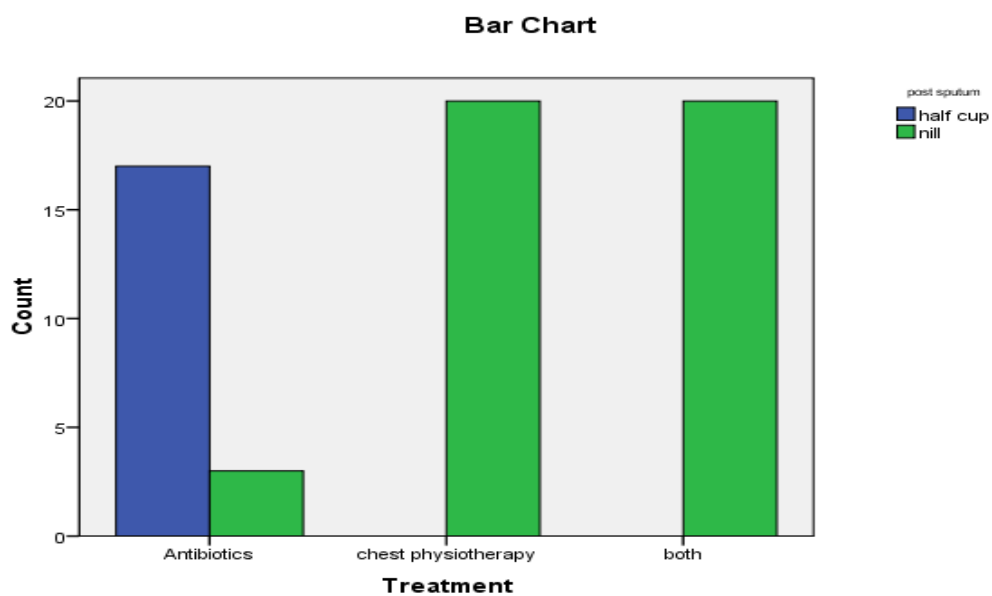
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.083 ^a	10	.000
Likelihood Ratio	43.821	10	.000
Linear-by-Linear Association	22.775	1	.000
N of Valid Cases	60		

a. 12 cells (66.7%) have expected count less than 5. The minimum expected count is .33.



Graph 3: Distribution of cases according to post oxygen saturation.



Graph 4: Distribution of cases according to post treatment sputum.

Table 4 describes that those patients with antibiotics therapy, sputum load persist despite antibiotics therapy and only three out of twenty, sputum load decrease but those patients taking chest physiotherapy and those patients taking both antibiotics along with chest physiotherapy sputum load declines in all twenty patients.

Table 5 describes that group I (Antibiotics Therapy) only three out of twenty patients improved PEFR while seventeen out of twenty patients, PEFR remain decrease, group II (Chest Physiotherapy) fourteen out of twenty patients improve PEFR and group III (Antibiotics Therapy and Chest Physiotherapy), there is marked improvement in PEFR and all the patient on combination therapy improved PEFR.

Graph 5 describes that there is no marked improvement in PEFR in group I(antibiotic therapy), moderate improvement in group II (Chest Physiotherapy) while there is marked improvement in PEFR in group III (Antibiotics therapy and Chest Physiotherapy).

This Randomized control Trial (RCT) is based on 6 month time period and 60 patients are studied. A Performa (see annexure) is used for each patient, which is filled out based on history and clinical findings. All possible patients were taken and divided into 3 groups.

Group A (Antibiotics Therapy).

Group B (Chest physical therapy).

Group C (Antibiotics and Chest Physical Therapy).

Modified Brog’s Dyspnea Scale, PEFR, sputum quantity and SpO₂ are used for assessment.

After management program, the condition of patients are reassessed of all three groups.

The combination of Antibiotics and Chest physical therapy is more effective than Antibiotics or Chest physical therapy alone in the management and rehabilitation of patients with bronchiectasis. On the basis of P value (p < 0.05) So null hypothesis was rejected.

Table 4 Distribution of cases according to post treatment sputum.

Count		Crosstab			Total
		Treatment			
		Antibiotics	Chest Physiotherapy	Both	
Post sputum	Half cup	17	0	0	17
	Null	3	20	20	43
Total		20	20	20	60

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	47.442 ^a	2	.000
Likelihood Ratio	54.621	2	.000
Linear-by-Linear Association	34.988	1	.000
N of Valid Cases	60		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.67.

Table 5: Distribution of post treatment cases according to PEFR

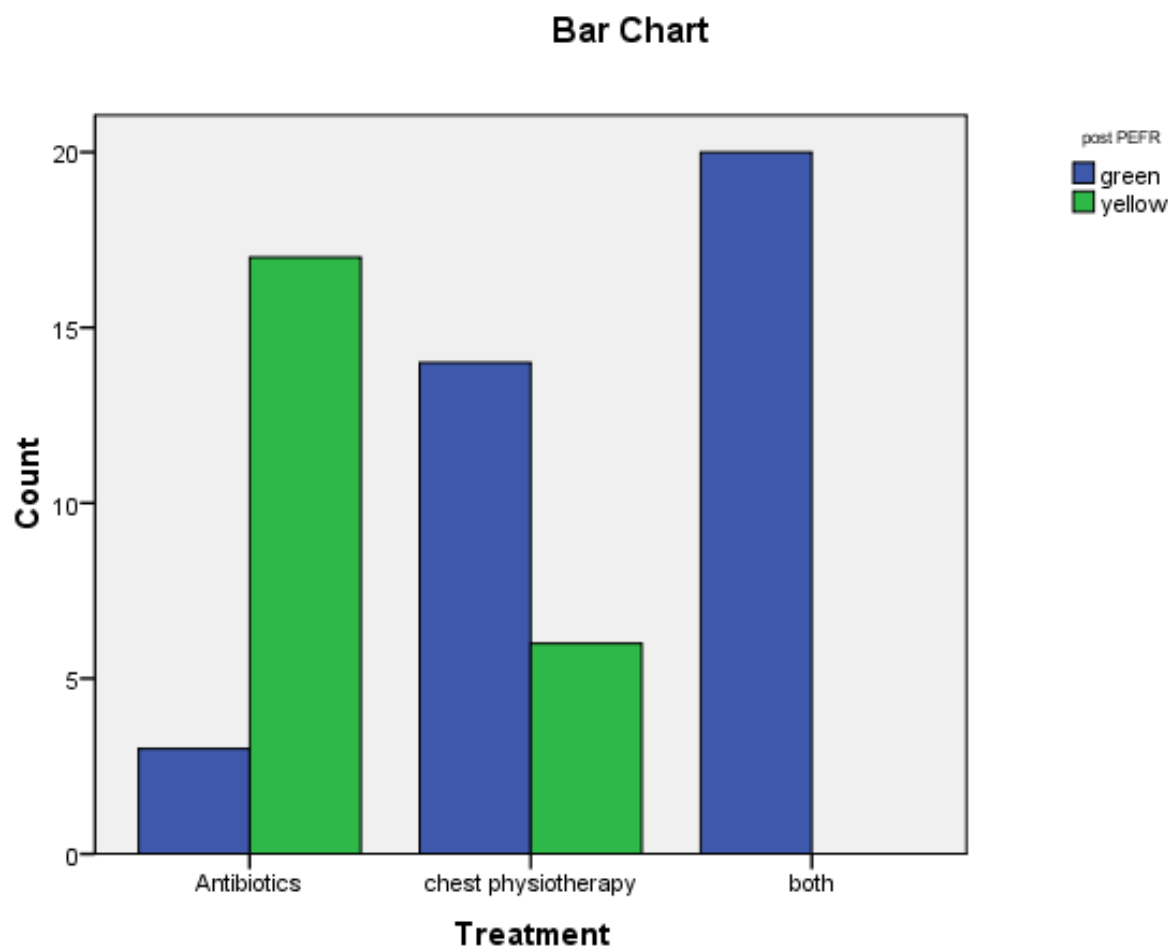
Count		Crosstab			Total
		Treatment			
		Antibiotics	Chest Physiotherapy	Both	
post PEFR	green	3	14	20	37
	yellow	17	6	0	23
Total		20	20	20	60

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.445 ^a	2	.000
Likelihood Ratio	38.538	2	.000
Linear-by-Linear Association	30.055	1	.000
N of Valid Cases	60		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.67.

Research hypothesis was accepted and concluded that The combination of Chest Physical Therapy and Antibiotics Therapy is more effective than Chest Phy-



Graph 5: Distribution of cases according to post PEFR

sical Therapy or Antibiotics Therapy alone in the management of patients with Bronchiectasis. P- value > 0.05 (insignificant).

Table 1 describes thirty two are male among which nine receive antibiotics therapy, eleven receive chest physiotherapy and twelve receive both antibiotics and chest physiotherapy. Twenty eight out of sixty patients are female among which eleven receive antibiotics therapy, nine receive chest physiotherapy and eight receive both antibiotics and chest physiotherapy.

P-value = 0.000 (Significant)

Table 1 describes that dyspnea score decreases in those patients who are treated by chest physiotherapy and chest physiotherapy along with antibiotics therapy as compared to those who are treated with only antibiotics therapy alone.

Table 2 describes seventeen patients out of twenty patients with antibiotics have crepitation while those patients with both antibiotics along with chest physiotherapy only two patients out of twenty patients have crepitation while eighteen patients out of twenty patients have clear breath sounds after treatments.

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Discussion

The purpose of this study was to compare the effectiveness of Chest Physiotherapy (CPT), antibiotic therapy and Chest physiotherapy along with antibiotic therapy (Antibiotic and CPT) massive sputum production, recurrent infection, low grade fever and dyspnea along with hypoxia reduction in saturation are the most problems to deal with, requiring prolonged chest physiotherapy and rehabilitation program. It is proved that the combination therapy, Chest Physiotherapy with antibiotics therapy (CPT and antibiotic therapy) is more effective than Chest Physiotherapy (CPT) or antibiotics therapy alone in the management of patients with bronchiectasis.

In order to compare the effectiveness of antibiotic therapy alone or in with combination with chest physiotherapy (CPT) in rehabilitation of patients with bronchiectasis. RCT (Randomized Control Trial) study design is used. Findings of this study are participants of all the three groups showed large improvements in rehabilitation of patients with bronchiectasis by improvement in dyspnea, SpO₂ breath sounds and PEFR along with airways clearance and reduction in sputum quantity. Modified Borg's dyspnea scale is used for dyspnea scoring. This study is the first to assess objectively the effects of chest physiotherapy on Bronchiectasis using RCT study. Moreover, this RCT study compare the efficacy of Chest Physiotherapy (CPT), Antibiotics Therapy and CPT and Antibiotics Therapy combined to highlight any eventual difference among the three methods in their effect on dyspnea, breath sounds, oxygen saturation, sputum quantity and PEFR. Antibiotics therapy is given according to the culture and sensitivity. Our results demonstrate improvement in dyspnea, breath sounds, oxygen saturation, airways clearance and PEFR. Improvement in dyspnea is mai-

nly due to airway clearance, and breathing which is used in CPT.

In accordance with the clinical literature S. Rajasekharan, R. Bhanusree, V. Vallingyagi V. Gopal and S. Nirmaladevi (1997) conducted a study at Thanjavur Medical College and Govt. Raja Mirasudar Hospital Thanjavur India to diagnosis and assess the bronchiectasis patients. Fifty patients with clinical features suggestive of bronchiectasis were selected for this study. All these patients had productive cough for more than six months and audible persistent coarse crepitations on pulmonary auscultation and diagnosed as the commonest organism producing secondary infection was H. influenzae, S pneumoniae and Beta haemolytic streptococci. The study concluded that bronchiectasis may lead to respiratory failure and most of affected patients are being managed with episodal drug treatment and physiotherapy.¹⁶

Mutalithas K, Watkin G, (2008 June) institute for lung health department respiratory medicine leicester, UK, did a research regarding improvement in health status among bronchiectasis patients after physiotherapy by using a new method called broncho pulmonary hygiene physical therapy. The data was collected by using cough questionnaire regarding cough. The total number of patients were 53 and during pre test the major symptom was cough. After pre tests the patients was subjected to chest physiotherapy and postural drainage therapy. After this the same questionnaire was administered to the patients and it was found that cough and other symptoms decreased among 35 patients and moderately reduced among 15 patients. So it was concluded that postural drainage and chest physiotherapy can lead to improvement in cough and other symptoms among bronchiectasis patients.¹⁷

Eaton T, Yong P, Zeng I, Kolbe J (2007), Respiratory services Auckland, New Zealand conducted a study on the effectiveness of postural drainage in bronchiectasis patients. The data was collected from 36 patients (mean age 62 years, range 33 – 83) with stable bronchiectasis. Total sputum weight before and after postural drainage were evaluated and the researches concluded that postural drainage have superior efficacy in the management of bronchiectasis and knowledge regarding postural drainage could be improved by proper guidelines.¹⁸

Patterson JE, Bradley JM, Elborn JS, (2004) school of rehabilitation sciences, UK, conducted a study on airway clearance in bronchiectasis. The data was collected from 20 patients with stable productive bronchiectasis. Weight of the sputum were measured and

recorded. The result evaluated that the weight of the sputum expectorated is significantly greater after postural drainage techniques than before applying postural drainage technique. So it is concluded that knowledge regarding postural drainage is an effective method of airway clearance in bronchiectasis.¹⁹

MP Murray, JL Pentland (2009 June), conducted a study at Royal infirmary of edinburgh and the researchers reported the efficiency of regular chest physiotherapy in bronchiectasis patients. The data was collected by using Leicester cough questionnaire the total number of 20 patients not practising regular chest physiotherapy were enrolled in a randomised cross over trial of 3 month of twice daily chest physiotherapy which is compared with 3 months of no chest physiotherapy. The treatment effect was estimated using the differences of the pairs of observations from each patient and stated that there was a significant improvement in total Leicester cough questionnaire score and 24 hours sputum volume also increased with regular chest physiotherapy. After the study it was concluded that regular chest physiotherapy in bronchiectasis patients having significant benefits.²⁰

Tang CY, Taylor NF, Black stock FC (2009 Sep.) Department of Physiotherapy Maroondhah Hospital Australia conducted a study on the effect of chest physiotherapy on obstructive diseases. The study consists of thirteen trials and the study suggested that chest physiotherapy techniques may benefit patients who requiring assistance with sputum clearance so concluded that proper guidelines is needed to improve the effectiveness of chest physiotherapy in airway clearance.²¹

Balachendron et al, (2005 June), Kanchi Kamakoti Childs Trust Hospital Chennai conducted a study on the application of chest physiotherapy in the airway clearance of acute and chronic respiratory disorders with retained airway secretions, the researchers reported that this therapy is not difficult if one has a proper understanding of the basic concept and principle behind the manoeuvre and concluded that chest physiotherapy is essential to improve and maintain the well being of the patients with airway obstruction and proper knowledge regarding this therapy is essential to make it simple and more effective.²²

NHS Lothian (2008 Dec.) department of respiratory medicine royal infirmary of Edinbargh UK conducted a study on effectiveness of regular chest physiotherapy in bronchiectasis patients the data was collected by using Leicester cough questionnaire the data was collected from two group which consist of 10

bronchiectasis patients in a group. The first group received full instruction to use physiotherapy twice daily and other group will received the current standard treatment regiment for bronchiectasis for 3 months. After that first group will received the current standard treatment regiment for bronchiectasis and the second group will received full instruction to use physiotherapy twice daily. At each review sputum samples will be collected and health related quality of life questionnaires be completed and the study concluded that chest physiotherapy in bronchiectasis patients having significant benefits.²³

Research in support of chest physiotherapy interventions in patients with bronchiectasis patients is limited, so further large scale research is required.

Conclusion

Rehabilitation from Bronchiectasis is an easy process, which involves a dedicated multidisciplinary team of professionals and the full participation of patient. Dramatic effects on individual's dyspnea, oxygenation, improved PEFr and reduction in sputum quantity are seen:

My recommendations are;

1. Create awareness among doctors and other health care workers about the indications and usefulness of Chest Physical Therapy for the better management of patients with Bronchiectasis.
2. The facility of Chest Physical Therapy should be available in most hospitals.
3. Early Chest Physiotherapy can prevent several complications and also help the patients to gain independence and return to an active life style.

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