

Changes in oscillometry parameters observed in post-TB COPD patients treated with LABA+LAMA and LABA+LAMA+ICS over 3 months: An Indian observational multicentric study

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Introduction: 10.8 million cases of Pulmonary Tuberculosis (TB) are diagnosed every year globally, of which 88% are cured. TB survivors remain at a heightened risk of developing respiratory diseases, particularly COPD, with a reported prevalence of 99% small airways obstruction, due to lung damage and remodelling in the airways. We aimed to evaluate the efficacy of LABA+LAMA and LABA+LAMA+ICS treatments in post-TB COPD patients on small airway obstruction using lung oscillometry parameters.

Methods and Materials: Cured post-TB-COPD patients (FEV1/FVC≤70%) were recruited from 12 clinics across India in this observational multicentric study. Demographics, symptoms, CAT score, spirometry and lung oscillometry indices were captured at baseline and at 3-months follow-up in patients on LABA+LAMA and on LABA+LAMA+ICS

Results: Of the 183 post-TB COPD patients recruited in the observational study, 3-month follow-up data for lung oscillometry parameters for patients receiving LABA+LAMA and LABA+LAMA+ICS were available for 94 patients. Mean age of participants, average TB duration and proportion of symptoms have been shown in Table 1 and 2. Table 3 presents the lung oscillometry parameters in response to different pharmacotherapy regimens, measured at baseline and at the 3-month follow-up visit

Table 1. Demographic details

Parameter	LABA+LAMA (N=40)		LABA+LAMA+ICS (N=54)		p-value
	Frequency/	Percentage/	Frequency/	Percentage/	
	Mean ±SD	(Min, Max)	Mean ±SD	(Min, Max)	
Gender (Male: Female)	29:11	72.5%:27.5%	39:15	72.2%:27.8%	0.715
Age (Yr.)	62.65±9.15	(37.09,79.04)	67.45±9.63	(41.67,89.28)	0.059
TB Duration (Yr.)	22.26±15.26	(1.10,51.79)	30.64±14.83	(2.14,55.13)	0.020

Table 2. Symptoms description of the study population

Parameter	Visit	LABA + LAMA (N=40)			LABA + LAMA + ICS (N=54)		
		Frequency	Percentage	p-value	Frequency	Percentage	p-value
Cough	Baseline	34	85.00%	0.007	41	75.93%	0.042
	Visit 03	22	55.00%		30	55.56%	
SOB	Baseline	40	100.00%	<0.001	54	100.00%	0.002
	Visit 03	24	60.00%		44	81.48%	

Table 3. Lung Oscillometry parameters in response to different pharmacotherapy at baseline and 3-month follow-up visit

Parameters	LABA+LAMA(n=40)			LABA+LAMA+ICS (n=54)		
	Baseline	3-month	p-Value	Baseline	3-month	p-Value
R5 (cmH2O/L/sec) Median and p-value	5.77	3.94	p=0.002	5.93	5	p=0.007

R20 (cmH2O/L/sec) Median and p-value	2.74	2.35	p=0.032	3.23	2.86	p=0.009
R5-R20 (cmH2O/L/sec) Median and p-value	2.77	1.61	<0.001	2.6	2.12	p=0.07
AX (cmH2O/L) Median and p-value	20.61	7.29	P<0.001	32.73	20.02	p=0.045
X5 (cmH2O/L/sec) Median and p-value	-4.02	-2.19	p<0.001	-4.15	-3.33	p=0.014

Discussion: Oscillometry effectively captured treatment response, with AX showing more than a 60% reduction in both the treatment arms from baseline.

Conclusion: Lung oscillometry can be an effective tool to evaluate treatment response in Post-TB COPD patients. Incorporating oscillometry into routine practice could enhance the monitoring of therapeutic outcomes.

Key Words: Post Tuberculosis, Lung Oscillometry, COPD