

## Frequency of Reversibility in Patients of Bronchiectasis with Short Acting Beta-2 Agonist

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### ABSTRACT

**Aim:** To determine the frequency of reversibility in patients with bronchiectasis with short acting beta-2 agonist.

**Study design:** Descriptive case series.

**Setting:** This study was conducted in indoor and outdoor of Pulmonology Deptt. Jinnah Hospital, Lahore.

**Duration of study:** Six months.

**Methodology:** Sixty cases of bronchiectasis were included in this study. On the day of the study, spirometry was performed and values of FEV<sub>1</sub>, FVC, FEV<sub>1</sub>/FVC were noted. Then these patients were nebulised with 2.5mg salbutamol. After 15 minutes, spirometry was performed again and values of the above given parameters were noted. When FEV<sub>1</sub> was less than 80% of predicted and FEV<sub>1</sub>/FVC value was <70%, the spirometry was considered as obstructive pattern. Post bronchodilator improvement in FEV<sub>1</sub> and FVC was noted. Improvement of 12% in FEV<sub>1</sub> from pre-bronchodilator value was considered as post bronchodilator reversibility.

**Results:** There were 24(40%) patients who had reversibility and 36(60%) patients had no reversibility.

**Conclusion:** 40% patients had reversibility of bronchiectasis with short acting beta-2 agonists.

**Keywords:** Bronchiectasis, reversibility, spirometry, short acting  $\beta$ -2 agonist.

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### INTRODUCTION

Presence of a restrictive defect (FEV<sub>1</sub>/FVC ratio  $\geq$ 70% along with a reduction in FVC <80% of predicted values) is seen in only few cases and it indicates presence of significant atelectasis (due to mucus plugging), fibrosis (scarring resulting from chronic inflammation) or consolidation (commonly due to infection). A very low FVC can also be seen in advanced disease in which much of the lung has been destroyed. Reversibility testing i.e. features of improvement in FEV<sub>1</sub> and / or FVC after the administration of inhaled bronchodilator, means that chance of improvement with inhaled bronchodilator is there. Most of the people with bronchiectasis show features of airways hyper responsiveness.<sup>7</sup> In the past, studies have demonstrated about  $\geq$ 15% improvement in FEV<sub>1</sub> in >40% of cases of bronchiectasis after administration of a beta adrenergic agonist<sup>1</sup>.

Currently, medical treatment includes physiotherapy, antibiotics and occasionally mucolytics. Many patients with bronchiectasis do receive bronchodilator therapy. Evidence of effectiveness of bronchodilator therapy in

bronchiectasis has only recently started to be systematically studied. By demonstrating the reversibility with inhaled beta-2 agonists will open up a whole new world of proven modality in the treatment of bronchiectasis. Reversibility testing can be carried out with the inhaled anticholinergics and steroids, so making the treatment options wider and more scientifically based for this disease.

### METHODOLOGY

Sixty (60) clinically and radiologically diagnosed cases of bronchiectasis of both genders, of age ranging from 15 to 80 years presented to indoor and outpatient clinics of Pulmonary Department of Jinnah Hospital Lahore were included in the study. Smoker or ex-smoker, history of acute infective exacerbation during the past four weeks, associated respiratory disease diagnosed case of interstitial lung disease (ILD), chronic obstructive lung disease (COPD) and bronchial asthma on HRCT were excluded.

On the day of the study, spirometry of the patient was performed; values of FEV<sub>1</sub>, FVC, FEV<sub>1</sub>/FVC were noted in proforma to detect frequency of obstructive pattern of spirometry. Then these patients were nebulised with 2.5mg salbutamol. Salbutamol respiratory solution (5mg/ml) ½cc and ½cc normal saline was used for nebulization. After 15 minutes, spirometry was performed again and values of the above given parameters were noted in the

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Performa by researcher himself. All this information was collected through a specially designed Performa attached. The collected data was entered into SPSS computer program version 11.0 and analyzed.

## RESULTS

The detail of results is given in Tables 1, 2, 3 & 4

Table 1: Distribution of patients by age

Age (yr)	n	%age
15-20	10	16.7
21-30	4	6.7
31-40	18	30
41-50	16	26.7
51-60	10	16.7
61-70	2	3.3
Mean±SD	39.4±14.4	

Table 2: Distribution of patients by sex

Gender	n	%age
Male	34	56.7
Female	26	43.3
Total	60	100

Table 3: Distribution of patients by obstructive pattern

Obstructive pattern	n	%age
Yes	34	56.7
No	26	43.3
Total	60	100

Table 4: Distribution of patients by reversibility

Reversibility	n	%age
Yes	24	40
No	36	60
Total	60	100

## DISCUSSION

In our study, the mean age of the patients was 39.4 years. As compared with the study of Walker et al<sup>2</sup> the mean age of the patients was 53 years. In another study conducted by Sevgili et al<sup>3</sup> the mean age of the patients was 48.9 years, which is comparable with our study. In our study, there were

56.7% male and 43.3% female patients. As compared with the study of Walker et al<sup>2</sup> there were 44% male and 56% female patients. In another study conducted by Sevgili et al<sup>3</sup>, there were 60% male and 40% female patients which is comparable with our study.

In our study, 24(40%) patients had reversibility. As compared by King et al<sup>5</sup> 39% patients showed significant reversibility with short-acting beta-2 agonist, which is comparable with our study. In another study conducted by Kuziemski et al<sup>4</sup> the reversibility was found in 31% patients. In our study, 56.7% patients had obstructive pattern. As compared by King et al<sup>6</sup>. 50% patients showed obstructive pattern with short-acting beta-2 agonist in patients with bronchiectasis, which is comparable with our study.

## CONCLUSION

It is concluded that 24(40%) patients had reversibility with short acting beta-2 agonist while 36(60%) patients had no reversibility.

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