



Comparative Study of Inhaled Tioatropium with Ipratropium Bromide in Chronic Obstructive Pulmonary Disease

Dr. Anjali P. Ghare

PACIFIC MEDICAL COLLEGE, Bhillo Ka Bedla, Pratapura, Udaipur, Rajasthan

ABSTRACT

COPD is a major cause of morbidity and mortality throughout the world. COPD is a common preventable and treatable disease. This study is designed to compare bronchodilator effect of inhaled Tioatropium compared with inhaled ipratropium bromide.

Aims & Objectives:

- 1) To study Pulmonary Function Test abnormalities in patient suffering from COPD.
- 2) To assess the reversibility of bronchoconstriction after inhalation of ipratropium and inhaled tioatropium.
- 3) To study comparative response of reversibility broncho construction inhaled tioatropium with ipratropium bromide.

Material & Materials: Total 100 patients of COPD were evaluated for this study. In selected patients baseline spirometry was done with computerized spirometer. In 50 patients Tioatropium 18 microgram was given and another 50 patient 40 microgram Tioatropium Bromide was given.

Result: Bronchodilator effect of Inhaled Tioatropium was found to be beneficial than Ipratropium in COPD patient.

Discussion: Both Tioatropium and Ipratropium Bromide are significant in COPD patient.

Conclusion: Inhaled Tioatropium is beneficial than inhaled Ipratropium in COPD Patient.

KEYWORDS : Tioatropium, Ipratropium Bromide, Spirometry.

Introduction:

COPD is a major cause of morbidity and mortality throughout the world¹. "COPD a common preventable and treatable disease is characterized by persistent air flow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in airways and lung to noxious particles or gases"².

Symptoms of COPD include dyspnea, chronic cough and chronic sputum production.

Anticholinergics are more useful in border line cases of asthma and COPD^{4,5}.

Tioatropium and ipratropium bromide are both recognized treatment in management of COPD³.

There are new studies which have compared Tioatropium and Ipratropium making an update necessary.

Aims & Objectives:

- 1) To study Pulmonary Function Test abnormalities in patient suffering from COPD.
- 2) To assess the reversibility of bronchoconstriction after inhalation of ipratropium and inhaled tioatropium.
- 3) To study comparative response of reversibility broncho construction inhaled tioatropium with ipratropium bromide.

Materials and Methods:

Total 100 patients of COPD were evaluated for this study. The diagnosis of each patient was made after obtaining a proper history and according to the clinical, radiological and PFT criteria.

In selected patients baseline spirometry was done with computerized Medgraphic Spirometer. This Spirometer met American Thoracic Society Criteria and was volume calibrated daily. Measurement accuracy was +/- 2%. 50 patients received Tioatropium 18 microgram and 50 patients received 40 microgram Ipratropium from DPI.

PFT performed after 60 minutes.

Results:

Spirometry evaluated after 1 hour later inhalation. Tioatropium produced significant improvement in FEV1 and FVC 12% greater than

baseline PFT than Ipratropium Bromide.

Discussion:

The result of this study are analyzed and discussed. 100 patients of COPD were studied.

KNV Palmer and ML Diament conducted a study and concluded that the functional defect to all COPD patients was obstruction and restriction of airway^{6,7, and 8}.

From this primary abnormality other pathophysiologic mechanisms were as follows:

- Disturbances in work of breathing.
- Lung mechanics
- Lung volumes
- Distribution of ventilation and perfusion mismatch.

This leads to hypoxemia and in severe Co2 retention and transient pulmonary hypertension⁹.

Drug binding studies with Tioatropium in human lung show that it approximately 10 fold more potent than Ipratropium¹⁰.

Another study shows inhaled Tioatropium more effective than inhaled Ipratropium in improving peak lung function test which is comparable to this study¹¹.

Another study suggests safety and efficacy of Tioatropium was significantly more to Ipratropium. So support use of Tioatropium as first line treatment of COPD.

Conclusion:

In this study male: female ratio was 3:1. Incidence of COPD was found to be more common after 40 years.

Most of the patients (Approximately 80%) had given history of tobacco chewing and smoking.

COPD definitely affect normal functions of lung causing abnormal pulmonary test graph showing obstruction and restriction. Both Tioatropium and Ipratropium have definite role in reversibility of broncho constriction. But Tioatropium achieved a significant greater improvement than Ipratropium (P < 0.05) in FEV1 level and FVC level.

References:

- [1] Global initiative for COPD, global strategy to COPD diagnosis management and prevention, 2001.
- [2] Environmental influences on the induction and incidence of asthma and COPD workshop ([http://www.epa.gov/nheer/OOpd workshop](http://www.epa.gov/nheer/OOpd%20workshop))
- [3] Essentials of medical pharmacology by KD Tripathi, 4th edition.
- [4] Ipratropium treatment of acute airway disease by Gorgy M Peterson, Peter 3 Boyls, Martin D. Besel and Jennet H. Vial(<http://www.the.annals.com/cgi/rprint37/339.p.d.f>. K.N.V. Palmer Diament)
- [5] Respiratory Pharmacotherapy-anticholinergic, Robert G Aucoin RPH, Louisiana USA
- [6] COPD in primary case-David Bellamy and Rachel Booker, 2000.
- [7] Comparison of pulmonary function in bronchial asthma and COPD Thorax (1970)25, 101
- [8] Comparison of pulmonary function in bronchial asthma and COPD thorax, KNV Palmer and ML Diament
- [9] Chest India edition, chest volume 4/number-2/March, April 2003 1101.
- [10] Peter J. Barnes MA, BM, DSC, Chest 2000, 117 (2-Suppl) 635-665, doi 1378 chest 117 suppl. 635.
- [11] Richard Casburi Ph.D., M.D. FCCP, Dic D Briggs Jr. MD FCCP, Jarees F Donohae MD FCCP. Charles W. Serby MD Shailendra for US T. Study chest 2000, 118 (5) 1294 1302 dio 10 1378 / chest 1185-1294.
- [12] Thorax 2000 55, 289, 294 doi 10 1130, Thorax 55.4289.