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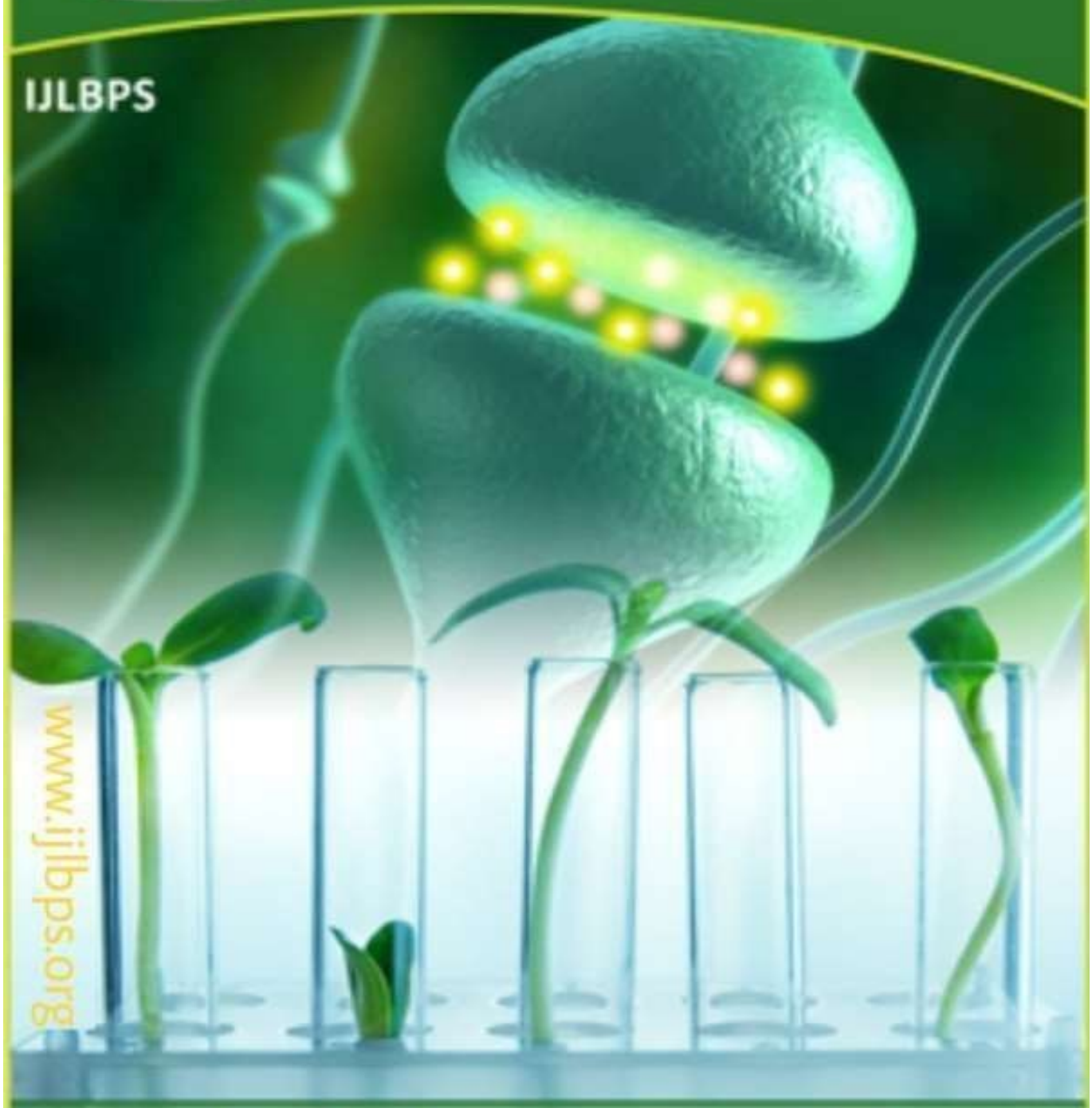

E-mail: editorijlbps@gmail.com editor@ijlbps.org

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Placebo-controlled trials on the safety and efficacy of tiotropium bromide in patients with chronic obstructive pulmonary disease and bronchitis

Srinidhi[1*], Madhan Mohan[2], Vijaya Laxmi[3] G Raju[4]

[1] Department of pharmacology, Rajiv Gandhi Institute of Medical Sciences, Kadapa, AP, India.

[2] Department of Biochemistry & Molecular Biology, Institute of Genetics and Hospital for Genetic Diseases, Osmania University, Hyderabad, AP, India.

[3] Department of Pharmacology, Osmania Medical College, Hyderabad, AP, India.

[4] Monco Biotechnologies Pvt. Limited, Ameerpet, Hyderabad, AP, India.

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Abstract:
Although asthma may strike at any age, it most often manifests in children. A person with this condition may experience wheezing and shortness of breath on a regular basis, the intensity of which might vary from person to person. As per the World Health Organization (WHO), Asthma affects an increasing global population of 100–150 million people, or about the same as the population of the Russian Federation. Over 180,000 people each year are losing their lives to this illness on a global scale. Both asthma and chronic obstructive pulmonary disease (COPD) are airway illnesses with clear clinical definitions, yet each has its own unique pathophysiology and therapeutic response. The safety profile of tiotropium is similar to that of a placebo, and it is well-tolerated. Resting bronchomotor tone in chronic obstructive pulmonary disease (COPD) is thought to be mostly caused by the parasympathetic nervous system, which is thought to play a significant role in the autonomic regulation of airways. With that in mind, we set out to compare 18mcg of tiotropium metered dose inhalation to a placebo group of individuals with chronic obstructive pulmonary disease (COPD) and bronchial asthma over the course of 14 weeks. Tiotropium, when administered once daily by dry powder inhaler at a dosage of 18 mcg, improved bronchial asthma and chronic obstructive pulmonary disease (COPD) symptoms for at least 24 hours. From a clinical and spirometric perspective, the medication is effective and safe. Reduced symptom severity, less need for rescue medicine, and fewer acute episodes were all outcomes of our research.
Keywords: bronchial asthma, chronic obstructive pulmonary disease, tiotropium, PLACEBO

INTRODUCTION

Asthma attacks all age groups but often starts in childhood.It isa disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. In an individual, they may

occur from hour to hour and day to day. This condition is due to inflammation of the air passages in the lungs and affects the sensitivity of the nerve endings in the airways so they become easily irritated. In an attack, the lining of the passages swell causing the airways to narrow and reducing the flow of air in and out of the lungs. Asthma cannot be cured, but could be controlled. A significant family history of asthma or allergies, as well as exposure to indoor allergens (such as cats, cockroaches, and household mites in bedding, carpets, and stuffed furniture), particularly during infancy, are the highest risk factors for developing asthma. Tristan da Cunha is an island in the South Atlantic Ocean where one out of every three residents suffers with asthma. A research there indicated that the likelihood of a child developing the ailment was much higher if both parents had asthma. The prevalence of asthma is on the rise, affecting an estimated 100–150 million people worldwide. This is nearly equal to the population of the Russian Federation. Over 180,000 people each year are losing their lives to this illness on a global scale. No nation is immune to the public health crisis that is asthma. The disease's prevalence, nevertheless, varies substantially in poorer nations. By working together on a global and national scale, we can significantly lower the societal expenses associated with asthma. Globally, the monetary burden of asthma is thought to surpass that of tuberculosis and HIV/AIDS put together. Recent data from the National Health and Nutrition Examination Survey III suggests that there may be as many as 24 million cases of chronic obstructive pulmonary disease (COPD) and an estimated 30 million cases of asthma in the US.

Based on clinical evaluation scores and spirometric measurements, the current research found that tiotropium was safer and more effective than placebo in the chronic obstructive pulmonary disease (COPD) and mild to moderate asthma (Br. Asthma) groups. The safety profile of tiotropium is similar to that of a placebo, and it is well-tolerated. It is thought that the parasympathetic nervous system is primarily responsible for resting bronchomotor tone in chronic obstructive pulmonary disease (COPD) (1–5), and it also plays a significant role in the autonomic regulation of airways. Asthma and chronic obstructive pulmonary disease (COPD) are mostly interchangeable terms.

With that in mind, we set out to compare 18mcg of tiotropium metered dose inhalation to a placebo group of individuals with chronic obstructive pulmonary disease (COPD) and bronchial asthma over the course of 14 weeks.

MATERIALS AND METHODS

The present clinical study was conducted in patients with stable as well as exacerbated COPD and Bronchial asthma in Andhra Pradesh Government General and chest Hospital from May 2005 to Feb 2006. A total of 120 patients, out of which 50 patients with mild to moderate COPD, 50 Bronchial asthma patients and another 20 patients each 10 with placebo study. They were diagnosed based on the clinical findings and pulmonary function tests. The study was conducted for a period of 14 weeks.

Study Design

This is an open label, randomized, parallel group study. The total number of patients in both COPD and Bronchial Asthma categories were randomized into 3 groups; had 50 patients bronchial asthma, 50 patients of COPD and 20 patients each disease with placebo.

Table 1: Pateint Groups	
Group I received	50 patients of COPD.Treated with 18mcg of Tiotropium.(2puffs/day).
Group II received	50 patients of Bronchial Asthma. Treated with 18mcg of Tiotropium inhaler.(2puffs/day).
Group III – (Group-IIIA & Group-III B)	Group-III A -10 patients of COPD and Group-III B,10 Bronchial asthma patientsBoth groups received, Inhalation with placebo 2 puffs / day , everyday morning.

Inclusion Criteria for Bronchial Asthma Patients

Patients with the following criteria were included in this study:

- Patients in the age group of 12 to 65 yrs of either sex.
- Patients with the history of episodic wheezing, difficulty in breathing, chest tightness, and cough with or without expectoration.
- Patients having nocturnal symptoms and family history of asthma.
- Patients with the history of seasonal and the diurnal variation.
- Patients with the history of non-smokers.

Inclusion Criteria for COPD Patients

- Patients in the age group of 40 to 70 of either sex.
- Patients with the history of cough, productive sputum and SOB.
- Patients with the history of smoking, 10 packs / year or more, FEV1 of 65 % or less of predict for age.
- Patients must be willing to give written informed consent and able to adhere to dose and visit schedule.
- Patients who are stable on inhaled corticoste-roids are allowed to be enrolled and to remain on the treatment throughout the study.

Exclusion Criteria for both COPD and Br. Asthma Patients

Patients with the following criteria were excluded from the study:

- Patients in the age group of less than 12 and more than 80 years of either sex.
- Pregnant or lactating woman.
- Subjects quit smoking less than 3 months prior to the screening visit.
- Patients have clinically significant lung disease other than COPD and Bronchial Asthma e.g., Bronchectasis, acidosis, pulmonary fibrosis, tuberculosis, etc.
- Patients use oxygen >2 liters per min for >2 h /day.
- Subjects have had cancer diagnosed or treated within the 5 years.
- Patients require chronic or prophylactic treatment with antibiotics.
- Patients with symptomatic prostatic hyperplasia or bladder-neck obstruction.
- Subjects have clinically significant abnormalities on chest x-ray (Other than evidence of COPD / Br. Asthma) at the screening visit or within the previous year.
- Patients with H/O Allergic rhinitis, myocardial infarction, increased total blood eosinophile count in COPD group patients.

OUR CONTRIBUTION

In order to make this project as successful we concerned on various issues and information and contributed them to this paper.

To made the patient report perfect and accurate we collected the particulars of the patient like Name, age, address, occupation, and out patient number were taken.

History

Detailed history was taken with special attention to the following points like Cough; Expectoration; Haemoptysis; Breathless-ness,wheezing; Nocturnal Awakening; Chest pain.

Personal History: History of Smoking, Drinking

Allergy History – Food, house dust, traffic dust, perfumes, soaps, powders, hair dye and other.

Past History

i. History as similar complains in the past.

ii. History of chronic bronchitis, pulmonary T.B., tropical pulmonary eosinophilia.

iii. Diabetis mellitus, Hypertension, Chronic renal failure.

iv. Malignancy.

Family History: History of bronchial Asthma/ COPD among 1st degree Relatives.

Treatment History

(a) History of bronchodilator therapy, H/O Hospitalization.

(b) Corticosteroid therapy.

After the history was taken, a detailed clinical examination was done.

Investigations

The following table contains the investigations were done:-

(Baseline, after drug administration, 5 times in the 1st day, 3rd day, 7th day and every 2nd week up to three and half months).

Blood examination, Sputum examination, chest x-ray, ECG were done to exclude other Conditions.

A written informed consent was obtained from the patient.

Table 2: Patient Information

1. **Blood Examination:**
   - a. Haemoglobin
   - b. Total count
   - c. Differential count
   - d. Absolute eosinophiles count
   - e. Erythrocyte sedimentation Rate
   - f. Peripheral smear
   - g. Random Blood Sugar
   - h. Serum Creatinine
2. Sputum Examination:
   - a. Eosinophilic Count.
   - b. A.F.B.
3. Electrocardiography.
4. Chest x-ray PA view.
5. Pulmonary function test.

Treatement Description:

Patient was given study number and included in one of the group:-

Group I: -COPD patients-(50 cases).

Drug - Tiotropium bromide inhalation.

Dose - 18 mcg, once daily.

Duration - 14 weeks.

Group. II: -Br. Asthma Patients. (50 cases).
Drug - Tiotropium bromide inhalation.

Dose – 18 mcg. Once daily.

Duration – 14 weeks.

GroupIII**:** GpIIIA : COPD patients treated with placebo,GpIIIB: Bronchial asthma patients treated with placebo . Either cases (10 each).

Drug – Placebo.

Dose – 2 puffs / day.

Duration: - 14 weeks.

All the patients were advised to take salbutamol inhalation (100-150 mcg) as needed. All the drugs were given as metered dose inhalation. Patients were shown inhalation techniques with spacers. They were advised to rinse their mouth after each inhalation. They were followed up 3 times in the 1st week after that every 2nd week till a period of 14 weeks. At each visit, they were clinically assessed and PFT was done.

Monotoring

Screening was done for the following parameters before and after treatment: 1) Cough 2) Wheeze 3) Breathlessness 4) Severity of nocturnal symptoms 5) Frequency of use of rescue Medication.

Score for Cough, Wheeze, Breathlessness and Severity of nocturnal Symptoms (33) for Br. Asthma:-

O – No Symptoms

1 – Mild

2 – Moderate

3 – Severe

Score for frequency of Use of Rescue Medication (34).

O – <2 puffs/week.

1 – < 2 Puffs day.

2 – 2 to 4 Puffs /day.

3 – >4 Puff / day.

At each visit, patients were assessed for any adverse effects. Hence the diagnosis of COPD can be confirmed with the help of spirometry. The differences between COPD and Asthma have an important bearing on treatment:

COPD: Backbone of treatment inhaled bronchodilators.

Asthma: Backbone of treatment inhaled corticosteroids.

RESULTS AND DISCUSSION

The purpose of this trial was to determine whether or not tiotropium bromide was safe and effective for individuals with mild to moderate chronic obstructive pulmonary disease (COPD) and mild intermittent or mild persistent asthma. Each patient was treated for 14 weeks with daily inhalations of 18 mcg of medication using a spacer. As a bronchodilator, tiotropium is an antimuscarinic medicine that works for a long time and is used one day. It is particularly effective as an M3 receptor blocker. According to the ERS Consensus Statement (1995), the American Thoracic Society (1995), and GOLD (2001), bronchodilators constitute the mainstay of pharmacotherapy for patients with chronic obstructive pulmonary disease (COPD). To distinguish a medicine from other bronchodilator medications, it is essential to know how it works, how often to administer it, when it starts working, how long it takes to work, how much better it makes you feel, and what kinds of adverse effects it has. All things considered, tiotropium bromide meets all of these requirements. The focused administration to the lung, higher spirometric outcomes, and greater tolerability of inhaled medication have often led to its preference over oral therapy. Treatment intervention is helpful in people with chronic obstructive pulmonary disease (COPD), and the currently available bronchodilators have helped alleviate symptoms. Out of all the bronchodilators tested, tiotropium bromide met every standard for excellence. When taken once daily, the effects have been shown to last for 24 hours in both single-dose and multiple-dose tests (Maesen et al., 1995; Littner et al., 2000). Patients with mild to moderate chronic obstructive pulmonary disease (COPD) and mild intermittent or mild persistent bronchial asthma showed much better improvement in lung function after therapy with tiotropium bromide, according to our research.

in comparison to placebo or other bronchodilators. In every group, patient compliance was over 95%. Our findings are in line with other studies that have

used the same medicine but used different methods. A common symptom of moderate to severe chronic obstructive pulmonary disease (COPD) is considerable hyperinflation, which puts strain on the respiratory muscles and makes breathing much more difficult. Patients often report less dyspnea and improved exercise tolerance once hyperinflation is decreased. Increased inspiratory capacity, decreased FRC or thoracic gas volume, and improved emptying are the ways in which bronchodilators lessen hyperinflation. Tiotropium reduced FRC and improved inspiratory capacity compared to placebo after 4 weeks of therapy, according to Celli et al. (2003). Using a constant work rate cycle ergometer, O'Donnell and colleagues (2004) showed that tiotropium improved dyspnea index scores and endurance time by 21% compared to placebo by reducing hyperinflation and allowing for larger tidal volume recruitment during exercise. Pharmaceutical Company Boehringer Ingelheim

supported four research articles published in prestigious peer-reviewed publications that provide light on how well Tiotropium works to treat chronic obstructive pulmonary disease (COPD) (Table 3). Casaburi et al. (2002) conducted a randomized controlled experiment that lasted one year and compared 921 individuals who were given 18 mcg of Tiotropium daily with those who received a placebo. For one year, 535 patients were randomly allocated to receive either 18 µg of Tiotropium once daily or 40 mcg of ipratropium once every four hours in a randomized, double-blind, double-dummy research conducted by Vincken et al. (2002). In a 6-month randomized, double-blind, double-dummy experiment, Donahue et al. (2002) compared salmeterol 50 mcg bid via metered-dose inhaler with 18 mcg of Tiotropium using a dry powder inhaler. In a 6-month randomized, double-blind, double-dummy experiment, Brusasco and colleagues (Brusasco et al., 2003) evaluated 1,207 patients who were given salmeterol, placebo, or Tiotropium.

Casaburi *et al*. (2002) demonstrated that compared with placebo, Tiotropium reduced wheezing and shortness of breathe but not cough or chest tightness when using a severity score from 0 to 3. In the studies comparing Tiotropium and placebo, there was a statistically significant

Table 3: Summary of Major Treatment Studies With Tiotropium Bromide Inhaler in COPD

Reference	No	Duration	Comparison	Results
Casaburi *et al.* (2002)	921	1 yr	Tiotropium 18 mcg vs. placebo.	Reported that Tiotropium could reduce exacerbations by 14-24%vs placebo
Vincken *et al.,* (2002)	535	1 yr	Tiotropium 18mcg vs. ipratropium 40mcg qid	Reported that Tiotropium could reduce exacerbation by 14-24% Vs ipratropium
Donahue *et al.* (2002)	623	6 months	Tiotropium 18 mcg Vssalmeterol	Reported that there was a statistically significant improvement in TDI [44, 45].
Brusasco *et al.* (2003)	1,207	6 months	Tiotropium 18 mcg vs. salmeterol 50 mac bid	Compared with salmeterol, Tiotropium achieved a clinically relevant drop in SGRQ (i.e., a > 4-point drop)

Note: TDI - Transition Dyspnea Index, SGRQ – St. George Respiratory Questionnaire, FRC- Functional Residual capacity.

improvement in the TDI, (Casaburi *et al*., 2002; Vincken *et al*., 2002; and Donahue *et al*., 2002) whereas similar findings were found in one of the two studies that compared it with salmeterol but not the other.Tiotropium caused a significant improvement in the SGRQ score (a reduction of 4 or more points) compared with placebo (Casaburi *et al*., 2002; and Donahue *et al*., 2002) or ipratropium. Compared with salmeterol, Tiotropium achieved a clinically relevant drop in SGRQ (*i.e.*, a >4-point drop), whereas salmeterol did not, but the difference between the two was not statistically significant. The Medical Outcomes Study Short Form-36 measures general health status rather than respiratory health specifically. In trials comparing Tiotropium with placebo and ipratropium, Tiotropium showed statistically significant improvement in the domains of role physical and physical health summary compared with the control agent.

Vinken et al. (2002) and Casaburi et al. (2002) found that compared to ipratropium, Tiotropium reduced exacerbations by 14 to 24%. As a starting point for evaluating the effectiveness of bronchodilators, the spirometric response to medication delivery has traditionally been beneficial. Medication for chronic obstructive pulmonary disease (COPD) begins with smoking cessation and continues with bronchodilator treatment. When symptoms become chronic, current recommendations call for anticholinergic medication on a regular basis. Tiotropium, the next-generation anticholinergic medicine, has just been disclosed after two decades of effective usage of ipratropium bromide. One month of research and single-dose experiments confirmed 24-hour effects, making once-daily dosage the principal benefit of Tiotropium.

FVC. Compared to ipratropium, tiotropium duration. A recent large trialRennard *et al*. (2001) comparing with ipratropium bromide to solmeterol demonstrated that with ipratropium and solmeterol had a similar AUC for both FEV_1 and FVC from 0-12 h. The spirometric improvements with the novel anticholinergic Tiotropiumhave now been evaluated in separate comparative trials with two common used maintenance inhaled bronchodilators prescribed for the treatment of COPD or Bronchial asthma patients.

A 3-month trials with 288 COPD patients demonstrated that Tiotropium therapy was superior to ipratropium in improving FEV_1 and treatment resulted in increased predose forced expiratory volume in one second (FEV1), peak FEV1 (50 ml), and average FEV1 (80 ml) across six consecutive postdose measurements. Tiotropium proved to be the most successful treatment for both bronchial asthma and chronic obstructive pulmonary disease (COPD) patients in the current study, with an overall superiority in all end points. In both situations, it reveals a rather consistent reaction. Like other inhaled anticholinergic drugs, Tiotropium's bronchodilator effectiveness is often prolonged and tolerance is not an issue. Patients on Tiotropium reported a significant decrease in shortness of breath (SOB) and wheezing, in addition to improvements in objective measurements of airflow. The study found that the level of bronchodilation was quite beneficial in both situations. With chronic obstructive pulmonary disease (COPD), Tiotropium has been the subject of several clinical investigations. The effectiveness of the Tiotropium bromide inhaler in individuals with bronchial asthma has not been shown in many studies. However, our research found that tiotropium is helpful in both spirometric and clinical measures for individuals with moderate intermittent and mild persistent asthma. As a result, once-daily dosage with Tiotropium may result in better bronchodilation. Furthermore, the ongoing

The fact that Tiotropium improves airflow at regular intervals suggests that it could be useful as a maintenance medication. Additional research is needed to ascertain whether the long-term enhancement of airflow with Tiotropium might potentially enhance exercise tolerance, sleep quality, and other aspects of quality of life for those suffering from chronic obstructive pulmonary disease (COPD) and bronchial asthma. Only in cases of severe chronic asthma is tiotropium bromide beneficial, according to the British Thoracic Society (BTS) and revised Indian recommendations. The current study backs up the results of the earlier research. All treatment groups did not experience any negative side effects, with the exception of a small number of instances (<10%) where dry mouth was noted. No group had local side effects, such as oral candidiasis, regardless of the therapy. The use of a spacer and a thorough mouth rinse after each inhalation may be to blame. Using a spacer lessens the likelihood of oral candidiasis and reduces medication deposition in the oropharynx. No side effects were detected in our trial, and the dosage utilized was well-tolerated.

SUMMARY

In both clinical and spirometric assessments, tiotropium was shown to be safer and more effective than placebo in individuals with chronic obstructive pulmonary disease (COPD) and bronchial asthma. Less dependence on rescue medicine with salbutamol, improved symptom management, and subjective global ratings were also present with these findings. Tiotropium was determined to be a safe and well-tolerated medicine throughout the 14-week research, with the exception of a noted increase in dry mouth. Patients with bronchial asthma and chronic obstructive pulmonary disease (COPD) may benefit from using tiotropium once daily as a bronchodilator, according to this study's results. Asthma treatment's primary objective

the alleviation of symptoms in chronic obstructive pulmonary disease (COPD), whereas the former involves lowering inflammation in the airways. In terms of bronchodilator use, there are several parallels between asthma and chronic obstructive pulmonary disease (COPD) patients. Since reversibility is seen in both asthma and chronic obstructive pulmonary disease (COPD), the presence or absence of bronchodilator reversibility does not differentiate the two conditions. Partially irreversible airflow blockage is characteristic of chronic obstructive pulmonary disease (COPD), however many asthma patients have persistent obstruction, and many COPD patients have a reversible component. Both disorders are characterized by chronic inflammation. The following symptoms are present in both conditions: 1. A smaller reduction in FVC due to reduced airflow, which is somewhat more pronounced in chronic obstructive pulmonary disease (COPD). 2. Both lead to mucus blockage and smooth muscle contraction. 3. Interaction between genes and the environment impacts both. Our research using Tiotropium aimed to assess the safety and effectiveness in patients with bronchial asthma and chronic obstructive pulmonary disease (COPD) due to the parallels and few differences between the two disorders. We took a total of 120 patients. Split into three categories. There were three groups: one that received tiotropium treatment for chronic obstructive pulmonary disease (COPD) (50 patients), another that received the drug for bronchial asthma (50 patients), and a third that received a placebo (ten patients for bronchial asthma and ten patients for COPD). For 14 weeks, participants in the therapy group took 18 mcg of Tiotropium bromide daily via inhaler, two puffs in the morning. Two puffs of placebo inhalation per day were administered to participants in the placebo group. These individuals were seen by doctors at the government's outpatient general and chest departments.

Hyderabad Medical Center. After each

inhalation, patients were instructed to rinse their mouths well and utilize a spacer. Every patient was instructed to utilize salbutamol inhalation as required, with 100 mcg every puff. Two COPD patients in the medication group were not included in the trial because they did not comply with the treatment plan. Because they failed to appear for scheduled follow-up appointments, three COPD patients in the placebo group were not included in the analysis. The COPD therapy group that received tiotropium bromide showed the most improvement in FEVI, FVC, and FEVI/FVC% compared to the other three groups. Patients in the Br. Asthma group also exhibited significant improvements in clinical and spirometric measures, according to the current results. Few studies have examined the usage of Tiotropium in asthma patients up to now. On the other hand, Tiotropium protected the airways against methacholine-induced constriction for as long as 48 hours, according to one research (Rennard et al., 2001).

In both conditions, symptoms were less severe and rescue salbutamol was used less often. None of the therapy groups reported an increase in asthma symptoms. Mild dry mouth was the only side effect noted across all treatment groups. Relatively few side events, such as moderate dry mouth, were reported in the Tiotropium group, according to the safety profile. Mild dry mouth was experienced by 10% of participants with Tiotropium in the COPD group (5 out of 50 patients) during the research. Dry mouth (10%) was the only adverse effect associated with the medication, and it was usually moderate. The median start was between three and four weeks, and it persisted throughout the duration of therapy. One side effect that patients with bronchial asthma had was dry mouth, which affected 6% of patients.

No one dropped out of the trial due to dry mouth. In our investigation, no major side effects were noted. In terms of changes in laboratory values, electrocardiograms, or physical examination findings, there were no discernible differences between the therapy groups. After the study medicine was administered, no significant changes were seen in the heart rate or blood pressure of any of the groups. Therefore, the only negative effect that was consistently seen in our trial was dry mouth. So yet, no significant medication interactions have been detected. Because they share receptors, ipratropium bromide and tiotropium will lessen tiotropium's efficacy if taken together. Prostate enlargement, renal impairment, narrow-angle glaucoma, or bladder neck blockage should all be considered before using anticholinergic medications. In every therapy group, patient compliance was 95%.

CONCLUSION

The Present study showed Tiotropium was demonstrated to provide superior safety and efficacy relative to placebo in both COPD as well as Br. Asthma group in both clinical assessment score and spirometrically.In the spirometric assessment with Tiotropium in COPD treatment group (n-48), reports showed significant improvement in FEV_1 i.e., 0.22L, in FVC 0.31L and FEV_1/FVC ratio was improved by 96% with respect to the baseline, which is statistically significant ($P<0.001$). Clinically symptomatic improvement was observed in cough, SOB, wheeze and nocturnal severity of symptoms. Frequency of rescue medication was also decreased by mean change score of 0.45 (78.2%) with regard to baseline score 2.10 ($P<0.001$) during the period of 14 weeks. In case of Bronchial asthma treatment group (n-50) reports showed significant improvement in both clinically as well as spirometrically but less effective compared with COPD treatment group. In spirometric assessment, FEV_1 is improved by 0.21L, FVC by 0.31L and FEV_1/FVC ratio improved by 92.14% with respect to baseline which is statistically significant ($P<0.005$). Clinically, the mean score reports showed 60-70% improvement when compared to baseline.

These reports showed significant improvement with Tiotropium both clinically as well as spirometrically with fewer side effects i.e. mild dry mouth. Many studies are available with Tiotropium in COPD patients, which provides consistent reports of efficacy and safety of this drug but very few studies are available with Tiotropium in Bronchial asthma patients. However, it will be important to perform further comparative studies with large sample in multi centric studies, using Tiotropium in all the stages of Bronchial asthma patients to evaluate the safety and efficacy of the drug and also to document the role of Tiotropium in Bronchial asthma. Inspirometric as well as clinically, placebo in COPD group patients (n-7) and Bronchial asthma group patients (n-10) showed very less improvement, which is statistically not significant. The improvement observed was superior to placebo 2puff/day with MDI. The overall results of our study suggests that Tiotropium in the dose of 18 mcg once daily via dry powder inhaler result in 24 h bronchodilation as well as consistent and sustained improvement for both the COPD and the Bronchial asthma patients. It is safe and efficacious drug both clinically and spirometrically. Our study showed decrease in symptoms, decrease in rescue medication frequency and also reduce frequency of acute attacks. Patient's compliance was good in all the 3 groups of patients.

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