Original Research Article **Pharmacology**

International Journal of Pharma and Bio Sciences **ISSN 0975-6299**

A RANDOMISED OPEN LABEL PARALLEL GROUP STUDY ON EVALUATION OF EFFICACY AND SAFETY OF GEMIFLOXACIN VERSUS CEFPODOXIME IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS.

RENUKA. A*, VASANTHI. C AND DARLING CHELLATHAI

[1]*Assistant Professor, Department of Pharmacology, Madha Medical College & RI, Chennai*
[2] *Professor, Department of Pharmacology, Sri Ramachandra Medical College & Research Institute, Porur, Chennai-600116.*
[3]*Professor & Head of the Department, Department of Pharmacology, Sri Ramachandra Medical College & Research Institute, Porur, Chennai-600116.*

ABSTRACT

One of the most important cause of death is Chronic Obstructive Pulmonary Disease.[1] The present study is a randomised, open label, parallel group study, distinguishing the safety, efficacy of Cefpodoxime vs Gemifloxacin in Chronic Obstructive Pulmonary Disease patients. The primary objective of the study is to compare the efficacy of Gemifloxacin versus Cefpodoxime in the management of Chronic Obstructive Pulmonary Disease. The secondary objective of the study is to explore the safety of the two drugs. The study was conducted at the OP block of the Chest Medicine Department of Sri Ramachandra Medical College and Research Institute.100 patients participated in the study, 50 patients in each group. Tab. Cefpodoxime 200 mg bd for 7 days was given to 50 subjects and Tab. Gemifloxacin 320 mg once daily for 5 days was given to 50 subjects. In the Gemifloxacin group, the mean FEV_1 was 64.944% before treatment and 73.790% post medication. The transformation in FEV_1 was 13.62%, Standard deviation was 1.3600. In the Cefpodoxime group, the mean FEV_1 was 64.102% before treatment and 69.574% after treatment. The change in FEV_1 was 8.54%, Standard deviation was 1.3898. The difference between the treatment groups was statistically significant and p value = 0.005. The present study has exposed that Gemifloxacin is more efficacious than the widely used antibiotic, Cefpodoxime in Chronic Obstructive Pulmonary Disease patients.

KEYWORDS: *Chronic Obstructive Lung Disease, Gemifloxacin, Cefpodoxime, FEV1 (Forced expiratory volume in one second)*

Dr. A. RENUKA*

Assistant Professor, Department of Pharmacology,
Madha Medical College & RI, Chennai.

Received on: 13-02-2017
Revised and Accepted on: 17-04-2017
DOI: http://dx.doi.org/10.22376/ijpbs.2017.8.2.p324-331

INTRODUCTION

The Global Initiative for Chronic Obstructive Lung Disease (GOLD), and the World Health Organization (WHO), defines an exacerbation of chronic obstructive pulmonary disease (COPD) as "an acute event characterized by a worsening of the patient's respiratory symptoms that is beyond normal day-to-day variations and leads to a change in medication".[1]The global prevalence of physiologically defined condition, COPD in adults aged more than forty years is approximately 9-10 per cent. Recently, the Indian Study on Epidemiology of Asthma, Respiratory Symptoms and Chronic Bronchitis in Adults has shown that the overall prevalence of chronic bronchitis in adults aged more than thirty five years is 3.49 per cent. The development of COPD is multifactorial and the risk factors of COPD include genetic and environmental factors.[2]Chronic obstructive pulmonary disease continues to be one of the important cause of morbidity, mortality, and health-care costs, worldwide. The burden of COPD will increase in years to come. The challenge we all will face in the next few years will be implementation of cost-effective prevention and management strategies.[3]The global prevalence of physiologically defined Chronic Obstructive Pulmonary Disease (GOLD stage 2 or more) in adults aged ≥40 years is approximately 9-10 per cent. The Burden of Obstructive Lung Disease (BOLD) study from 12 sites involving 9425 subjects who had completed post bronchodilator spirometry testing found that the overall prevalence of COPD of GOLD stage II or higher was 10.1 per cent and the prevalence was 11.8 per cent for men and 8.5 per cent for women.[4]According to WHO by the year 2020 COPD will become the third leading cause of death and there may be an additional 100 million persons with COPD by 2025.[5] Hospitalization is a major cost driver in COPD management in various health care systems, with hospital care projected to account for 45% of direct COPD costs in the US in 2010.[6]Chronic obstructive pulmonary disease is the third leading cause of death in the world and the second leading cause of death in India. It costs the Indian economy more than Rs.35000 crores every year, which is more than the annual budget allotted to the Ministry of Health and Family Welfare, Government of India. Half a million of people die due to COPD every year in India. COPD causes more deaths than those due to tuberculosis, malaria and diabetes. According to the WHO, deaths due to COPD are estimated to increase by 160 per cent by the year 2030. Despite this enormous health burden, COPD remains an unknown disease in India.[7]According to the updated 2013 Global initiative for Chronic Obstructive Lung Disease (GOLD) guidelines, COPD is defined as "a common preventable and treatable disease characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lungs to noxious particles or gases.[8]Exacerbations of COPD are symptomatically defined as acute events that leads to a change in treatment and are associated with an accelerated decline in lung function and health status. The chronic airflow limitation characteristic of COPD is caused by a mixture of small airway disease (obstructive bronchiolitis) and parenchymal destruction (emphysema).[9] The increase in the rates of chronic bronchitis in recent years has prompted the need for change in antibiotics to effectively treat Acute Exacerbation of COPD. The study drug Gemifloxacin was focused on finding a better antimicrobial therapy, out of the two comparative drug groups (Cefpodoxime and Gemifloxacin), so that a better and safer antibiotic can be recommended for the treatment of acute exacerbation of chronic obstructive pulmonary disease.The main purpose of the study is to compare Gemifloxacin versus Cefpodoxime, to find the most efficacious drug therapy to achieve better cure rates and to control the frequency of exacerbations with minimal adverse effects. However, data comparing the safety and efficacy of Cefpodoxime and Gemifloxacin from a large sample of patients is lacking. Therefore this study proposes to compare the safety and efficacy of Cefpodoxime and Gemifloxacin in acute exacerbations of COPD patients. The aim of the study is to compare the safety and efficacy of Gemifloxacin versus Cefpodoxime in the treatment of chronic obstructive pulmonary disease (COPD). The primary objective of the study is to compare the efficacy of Gemifloxacin versus Cefpodoxime in the treatment of Chronic Obstructive Pulmonary Disease and to explore the drug which has more efficacy and to distinguish the symptoms in Quality of Life after treatment with Cefpodoxime and Gemifloxacin in patients with Chronic Obstructive Pulmonary Disease. The secondary objective of the study is to assess the safety by comparing tolerability and adverse effect associated with both the drugs individually and to identify a drug with least side effect.

Materials and methods

This is a Randomised, Open Label, Parallel group study, comparing the efficacy and safety of Cefpodoxime vs Gemifloxacin in patients with acute exacerbations of Chronic Obstructive Pulmonary Disease.Each patient from Cefpodoxime group was given drugs for 7 days.Each patient from Gemifloxacin group was given drugs for 5 days. The study was conducted from March 2014 to January 2015. The study was operated at the OP block of the Department of TB and Chest Medicine of Sri Ramachandra Medical College and Research Institute, Porur, Chennai- 60011.

100 patients participated in the study, 50 patients in each group.

1. Tab. Cefpodoxime 200 mg twice a day.(Tablet Cepodem, manufactured by Ranbaxy Laboratories Limited, each tablet contains 200 mg of Cefpodoxime).

Tab. Gemifloxacin 320 mg once a day.(Tablet Gembax, manufactured by Ranbaxy Laboratories Limited, each tablet contains 320 mg of Gemifloxacin) are the investigational products. After approval from the Institutional Ethics committee, (Reference: CSP-MED/14/FEB/12/45) the study was operated at the outpatient clinic of TB & Chest medicine, Sri Ramachandra Hospital. 125 patients diagnosed to have acute exacerbation of chronic obstructive pulmonary disease was enlisted out of which 100 patients was randomized to two groups as the remaining 25 patients did not satisfy the inclusion criteria or they did not give informed consent form. A baseline investigation protocol

was followed before prescribing either product. Patient's voluntary informed written consent was obtained after explaining the risk and benefits, purpose and protocol of the study to the patient. Then the hundred patients underwent computer- generated randomization and divided into two groups. 50 patients were given Tab. Cefpodoxime 200 mg bd for 7 days and 50 patients were given Tab. Gemifloxacin 320 mg od for 5 days. The therapy was given free of cost. The patients were informed of the possible adverse effects of the two drugs. They were informed of the right to withdraw from the study at any juncture and that they can continue treatment at this hospital even after withdrawal. Contact numbers of the investigator was given to the patients for reporting of any adverse effects.The data from patients was collected. General and systemic examination were done. Baseline total count, Differential Count, Haemoglobin, Erythrocyte Sedimentation Rate, Pulmonary function tests, Sputum Culture were done. Chest X Ray was done at the time of screening to exclude Tuberculosis and other abnormal condition. Sputum culture was done at the time of screening to include infectious exacerbations of COPD. Baseline investigations were done to exclude any abnormalities due to other diseases. They were assessed by clinical examination, FEV_1 and questionnaire on their Quality of Life which was done at the baseline visit and reviewed for FEV_1, clinical signs and symptoms at the 7^{th}day. Quality of life Questionnaire was done at the baseline and at the end of 12 weeks. Later through telephone calls (once in a week) for eleven weeks, the long term adverse effect was recorded. The subjects were not allowed to use any other antibiotics during the study period. In case of worsening symptoms and signs, subjects were withdrawn from the study. Anticholinergics, theophylline derivatives, inhalational steroids, inhalational beta 2 agonists were allowed as concomitant medications. Then the data was entered and subjected to statistical analysis.

Eligibility criteria

Those volunteers who fulfill all the following inclusion criteria will be invited to participate in the study. Ages eligible in the study: patients of age between 18 to 60 yrs.Genders eligible in the study: both male and female.Accepts healthy volunteers: No

Inclusion criteria

Males and females of age between 18 to 60 yrs.Subject is willing and able to give written informed consent.Documented cases of COPD who are presenting with the signs and symptoms of acute exacerbation of COPD clinically will be included in the study. Subjects fulfilling TYPE I AND TYPE II GOLD criteria .i.e. type I – mild (FEV_1/FVC<0.7 and FEV_1 > 80%) type II –moderate (FEV_1/FVC <0.7 and FEV_1<80%).

Exclusion criteria

Males and females aged below 18 yrs and above 60 yrs. Pregnant and lactating women. Cases of lung cancer, pulmonary tuberculosis, pneumonia, bronchial asthma. History of allergy to Gemifloxacin or Cefpodoxime. Patients with history of diabetes. Subjects who had taken a course of antibiotic 4 weeks prior to screening. Cases of severe renal failure, hepatic failure, heart failure .Subject currently enrolled in an investigational drug or device study.

Study end points

Primary Efficacy Endpoints

To find out which of the two drugs Cefpodoxime and Gemifloxacin will lead to a much more improvement in Pulmonary function tests- FEV_1 Quality of Life Questionnaire

Secondary Efficacy Endpoints

To find out which of the two drugs will lead to

1. More tolerability.
2. Lesser side effects.

STATISTICAL ANALYSIS

All statistical analysis were performed using Statistical Package for Social Science (SPSS, version 17) for Microsoft windows. The data were normally distributed. And therefore parametric tests were performed. Descriptive statistics were presented as numbers and percentages. The data were expressed as Mean and SD. Independent sample student t test were used to compare continuous variables between two groups. A chi-squared test was used for comparison between two attributes. A Pearson correlation coefficient analysis was used to examine the association of two related variables. A two sided p value < 0.05 was considered statistically significant. Wilcoxon signed rank test and Mann Whitney test was used to measure the Quality of Life changes.

RESULTS

This study titled "A Randomised open label parallel group study on evaluation of efficacy and tolerability of gemifloxacin versus cefpodoxime in patients with chronic obstructive pulmonary disease." was conducted at Department of Chest Medicine, Sri Ramachandra Medical College & Research Institute, Sri Ramachandra University. All the participants who gave written informed consent to participate in this study were recruited from the outpatient clinics of Department of Chest Medicine. The trial was designed and conducted in accordance with (GCP) Good Clinical Practice guidelines as per ICH- GCP. (International Conference on Harmonisation). Out of the total 125 patients screened, 100 patients were included in the study and the rest were excluded as they did not meet the eligibility criteria. The patients selected were diagnosed to have acute exacerbations of COPD and were randomized to the two treatment groups. There were no dropouts in the study. The baseline values of the subjects who took part in this study were given. There was no significant difference in baseline values among the two groups. In the Gemifloxacin group, with a sample size of 50, according to the GOLD Criteria, 29 (58%) patients had mild and 21 (42%) patients had moderate symptoms in the Gemifloxacin group. In the Cefpodoxime group, with a sample size of 50, 18 (36%) patients had mild symptoms and 32 (64%) had moderate symptoms.

Table 1
Baseline patent characteristics
(*Randomised Population*)

Parameter	Gemifloxacin group	Cefpodoxime group
Age (years)	50.28	50.20
Sex		
Male	20 (40%)	26 (52%)
Female	30 (60%)	24 (48%)
Smokers	6 (12%)	6(12%)
Hypertension	13 (26%)	15(30%)
Mild COPD	29 (58%)	18 (36%)
Moderate COPD	21 (42%)	32 (64%)

Efficacy profile

The efficacy of the drugs was assessed using the parameter, FEV1 . In the Gemifloxacin group, the mean FEV1 was 64.944% before treatment and 73.790% after treatment. The change in FEV1 was 13.62%, Standard deviation was 1.3600. In the Cefpodoxime group, the mean FEV1 was 64.102% before treatment and 69.574% after treatment. The change in FEV1 was 8.54%, Standard deviation was 1.3898. The difference between the treatment groups was statistically significant and p value = 0.005.

Table 2
Parameters in the gemifloxacin group

Primary end point	Baseline	7 th day	Mean percent change	P value
FEV_1	64.944	73.790	13.62	0.005

Table 3
Parameters in the cefpodoxime group

Primary end point	Baseline	7 th day	Mean percent change	P value
FEV_1	64.102	69.574	8.54	0.005

Table 4
Between group analysis for the difference in FEV_1

	GEMIFLOXACIN		CEFPODOXIME		T – test	P value / Sig
	Mean	SD	Mean	SD		
FEV_1	8.8364	1.3600	5.472	1.3898	0.539	0.005

Change in FEV_1 from Day 0 to Day 7

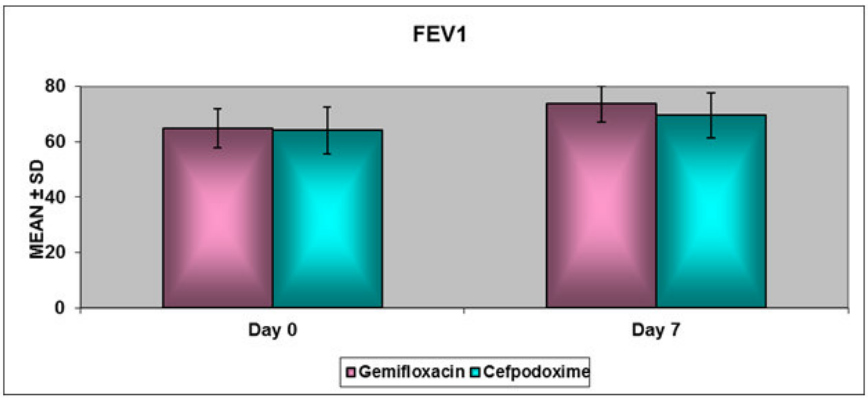


Figure 1
Change in FEV_1 from Day 0 to Day 7

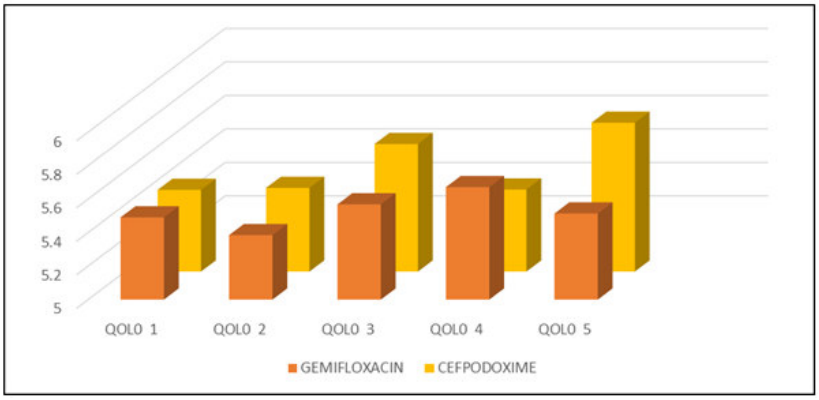
Safety profile of the drugs

Both the drugs were well tolerated by the patients without any major adverse event. Overall, the adverse effects were found to be more or less the same in both the groups, with Gemifloxacin group reporting very few adverse effects especially diarrhea which was not significant. This is because of the smaller sample size.

Change in QOL from week 0 to week 12 in the gemifloxacin and cefpodoxime group

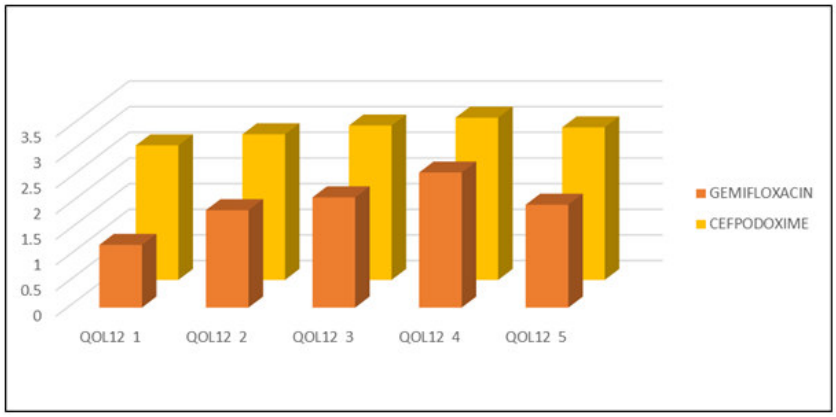
The Quality of Life questionnaire consists of 5 questions. It assessed the mobility, ability to do their day to day activities and the need for nebulization of the patients. It assessed the severity of illness of the patient and whether the ongoing treatment is adequate. The change in Quality of life assessed by Wilcoxon signed

rank test in the two groups were: -6.258 vs -6.221, 6.243 vs -6.242, -6.246 vs -5.687, -6.186 vs -6.002 and -6.282 vs -6.015 for the 5 questions for Gemifloxacin and Cefpodoxime groups respectively. Between group results were assessed using Mann- Whitney test. This shows that Gemifloxacin improved symptoms of night time awakening, limitation of physical activities, need for reliever medications.



X-Axis- Quality of life questionnaire
Y-Axis- grading of the questionnaire

Figure 2
Baseline Quality of Life



X- Axis- Quality of life questionnaire
Y-Axis- grading of the questionnaire

Figure 3
Quality of Life at 12 weeks

DISCUSSION

Exacerbations of Chronic obstructive pulmonary disease are symptomatically defined as acute events that necessitates a change in treatment and are associated with an accelerated decline in lung function and a poor quality of life. The chronic airflow limitation characteristic of COPD is caused by a mixture of small airway disease and parenchymal destruction. COPD is a multicomponent disease involving extra pulmonary effects. The increase in the rates of COPD exacerbations in recent years has prompted the need for change in antibiotics. The study drug Gemifloxacin was focused on finding a better antimicrobial therapy, out of the two comparative drug groups, Cefpodoxime and Gemifloxacin, so that a better and safer antibiotic can be recommended for the treatment of acute exacerbation of chronic obstructive pulmonary disease.The recommendation for prescribing antibiotics in Acute Exacerbation of COPD is based on the seminal study, demonstrated by Anthonisen NR *et al*, Antibiotic Therapy in Exacerbations of Chronic Obstructive Pulmonary Disease where patients of Acute Exacerbation of COPD were randomly assigned to receive either antibiotics or placebo. Patients receiving antibiotics had a higher success rate in type I exacerbations (defined by increased dyspnea, increased sputum volume, and increased sputum purulence) compared to the placebo group, whereas those with only one or two cardinal symptoms did not benefit from antibiotic therapy.[10] So, antibiotics are definitely playing a major role in the treatment of acute exacerbations of COPD. Henceforth, our study has compared the efficacy and safety profile of two antibiotics in the treatment of acute exacerbations of COPD. In a recent multicentric trial, demonstrated by Lcrol C *et al*, Efficacy of anti-inflammatory or antibiotic treatment in patients with non-complicated acute bronchitis and discoloured sputum: a randomised placebo controlled trial states that treatment with antibiotics was associated with longer median time to next exacerbation even in those with non severe exacerbations[11].Our study states that the time taken for the next exacerbation has been protracted by treating with antibiotics, as the QOL questionnaire was

statistically significant within the groups.A meta-analysis of seven randomized controlled trials, demonstrated by Falagas ME *et al*, management of infection in exacerbations of chronic obstructive pulmonary disease, comparing short (5 days) versus long (7-10 days) treatment with antibiotics (same dosage and same route of administration), revealed no difference in treatment success across the two groups. There were fewer adverse events in the short treatment duration group.[12] Our study has proved that a curtailed period of treatment (5 to 7 days) with antibiotics will reduce the symptoms of patients with acute exacerbations of COPD, established by a change in FEV_1 which is statistically significant. Optimising antibiotic selection in treating COPD exacerbations demonstrated by Siddiqi *et al*, states that several new lines of evidence demonstrates that bacterial isolation from sputum during acute exacerbation in many instances reflects a cause-effect relationship. The study demonstrated that there are significant clinical benefits of antibiotic treatment in moderate and severe episodes. However, in the multitude of antibiotic comparison trials, the choice of antibiotics does not appear to affect the clinical outcome, which can be explained by several methodological limitations of these trials. Observational studies that examined the clinical outcome of exacerbations have repeatedly demonstrated certain clinical characteristics to be associated with treatment failure or early relapse. Optimal antibiotic selection for exacerbations has therefore incorporated quantifying the risk for a poor outcome of the exacerbation and choosing antibiotics differently for low risk and high risk patients, reserving the broader spectrum drugs for the high risk patients. Though improved outcomes in exacerbations with antibiotic choice based on such risk stratification has not yet been demonstrated in prospective controlled trials, this approach takes into account concerns of disease heterogeneity, antibiotic resistance and judicious antibiotic use in exacerbations[13]. Our study includes mild and moderate COPD cases and excludes severe COPD cases as they may require higher end antibiotics.Ann Allen *et al* demonstrated that treatments with tiotropium, long-acting beta 2-agonists and/or inhaled corticosteroids have shown a reduction of 20–25% in the rate of exacerbations. It is reasonable to assume that a different approach, such as effective antibiotic treatment, may further reduce the rate of recurrence which is proved by persistence of bacteria after antibiotic treatment for an exacerbation is associated with persistent bronchial inflammation, presence of bacteria in the airway (bronchial colonisation) which is associated with more frequent and severe exacerbations. Considering this evidence together, it can be hypothesised that effective antibiotic treatment results in bacterial eradication that may prevent recurrence, at least during the first months after the exacerbation, which is in agreement with the "fall and rise" hypothesis of bronchial bacterial infection. [14]In a randomized, multicenter, double-blind, parallel group Phase II study, demonstrated by Kim YL *et al*, assessed the clinical and antibacterial efficacy and safety of oral Gemifloxacin for the treatment of AECB included treatment Group A who took oral Gemifloxacin 160mg once daily for seven days and treatment Group B who took oral Gemifloxacin 320mg once daily for seven days. The clinical response was 84.2% in the Gemifloxacin 160-mg group, and 88.7% in the gemifloxacin-320 mg group, showing no statistically significant difference between two treatment groups. The most frequently reported adverse effects was abdominal pain in the Gemifloxacin 160mg group and increased level of hepatic enzyme in the 320mg group. The results of this study showed that Gemifloxacin at doses of 160mg or 320mg once daily for 7 days in the treatment of acute exacerbations of chronic bronchitis(AECB) in adults is a very effective and safe treatment both clinically and bacteriologically.[15] The dose of our study drug, Gemifloxacin, 320 mg was selected as it had a better tolerability profile and good clinical response.In a prospective, 26 week, double-blind, observational parallel group study, demonstrated by Henkel *et al*, the efficacy and safety of oral gemifloxacin 320 mg daily od for 5 days and 7 days of oral Clarithromycin 500 mg twice daily for AECB was assessed. The proportion of patients whose initial AECB resolved and who had experienced no further recurrences requiring antibiotics by week 26 was 71.0% in Gemifloxacin -treated patients compared with 58.5% for Clarithromycin -treated patients. [16] Our study compared the safety and efficacy of Gemifloxacin which was given once daily and Cefpodoxime which was given twice daily. Gemifloxacin given once daily had a better compliance when compared with Cefpodoxime given twice daily. A randomized, controlled trial, demonstrated by Chatterjee *et al*, was designed to evaluate the effectiveness and safety of Gemifloxacin, a new fluoroquinolone, versus Cefpodoxime, an oral third-generation cephalosporin, for the treatment of mild to moderately severe cases of AECB. The clinical success rates were comparable (84.6% in Gemifloxacin group versus 83.3% in Cefpodoxime group) and no statistically significant difference was observed between the groups. Adverse effects were mild, self-limiting and few (two in Gemifloxacin and three in Cefpodoxime arm) and tolerability was also good. The results of this randomized, single-blind trial demonstrated that a 7-day course of Gemifloxacin is therapeutically comparable to Cefpodoxime in terms of both clinical effectiveness and safety for the treatment of AECB patients.[17]The above study is similar to our study where the percentage difference between the two treatment groups was 13.6%, i.e between Gemifloxacin and Cefpodoxime, (73.79% in the Gemifloxacin group and 69.574% in the Cefpodoxime group) which is statistically significant (p value < 0.05).In our study, we observed that in the Gemifloxacin group, the mean FEV_1 was 64.944% before treatment and 73.790% after treatment. The change in FEV_1 was 13.62% from day 0 to day 7. In the Cefpodoxime group, the mean FEV_1 was 64.102% before treatment and 69.574% after treatment. The change in FEV_1 was 8.54% from day 0 to day 7. Adverse effect profile showed that both the Gemifloxacin and Cefpodoxime groups had fewer side effects with no major adverse events and Gemifloxacin group reported fewer adverse effects when compared to Cefpodoxime. Our study confirmed that Gemifloxacin is a safer alternative to the classical fluoroquinolone and also to the conventional Cefpodoxime due to its favourable profile, most notably because of no reports of fatal

events in patients treated with the drug. The Quality of life questionnaire shows that there is improvement in mobility and ability to do day to day activities and decrease in dyspnea in Gemifloxacin group compared to Cefpodoxime group. This may be because of the efficacy and tolerability of Gemifloxacin.The present study provides results that may help the design of future studies. It is a step beyond the right direction by performing lung function to all patients in mild and moderate phase and including only exacerbation of chronic obstructive pulmonary disease cases. The tendency towards better results in the moderate group will help researchers to select the right target population for future clinical trials. In addition, the use of the Quality of Life Questionnaire as the primary outcome takes into account the unique characteristics of exacerbations of chronic obstructive pulmonary disease. This is particularly important, because most studies of antibiotics have been modelled in exacerbations of COPD. This study, together with the previous quinolone studies will guide the design of the new generation of clinical trials of antibiotics in exacerbations of chronic obstructive pulmonary disease.[18]

Summary

Inspite of various other group of drugs used in the treatment of acute exacerbation of COPD, antibiotics have an important role in treating the bacterial infections. Our study, "A Randomised Open Label Parallel Group Study On Evaluation Of Efficacy And Tolerability Of Gemifloxacin Versus Cefpodoxime In Patients With Chronic Obstructive Pulmonary Disease" proves that the addition of antibiotic to the conventional treatment of acute exacerbations of COPD is more beneficial and in that Gemifloxacin was more efficacious than the conventional antibiotic, Cefpodoxime. The change in FEV_1 was13.82% in the Gemifloxacin group compared to 8.54% in the Cefpodoxime group.Gemifloxacin also has a favourable safety profile that suggests, this drug may be of particular benefit in selected groups of COPD patients, especially those with frequent exacerbations of COPD of infectious origin. The Quality of life is improved more with Gemifloxacin than Cefpodoxime. Thereby, Gemifloxacin is a promising antibiotic alternative to the widely prescribed antibiotic, Cefpodoxime.

CONCLUSION

This study, "A Randomised Open Label Parallel Group Study On Evaluation Of Efficacy And Tolerability Of Gemifloxacin Versus Cefpodoxime In Patients With Chronic Obstructive Pulmonary Disease" has demonstrated that Gemifloxacin has more efficacy than the widely used antibiotic, Cefpodoxime in patients with Chronic Obstructive Pulmonary Disease. Gemifloxacin also displays less adverse effects and better tolerability than Cefpodoxime. The improvement in Quality of life is also more in the Gemifloxacin group than the Cefpodoxime group. To conclude, Gemifloxacin is more efficacious and has a better safety profile than Cefpodoxime for the treatment of acute exacerbations of COPD. This study proves that early prescription of antibiotics in COPD exacerbation will surely reduce the severity of the disease.

CONFLICT OF INTEREST

Conflict of interest declared none.

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Reviewers of this article

Dr T Vedavijaya MD

Associate Prof,Dept of Pharmacology,Madha Medical College & RI,Kovur,Thandalam,Chennai.India

Mr. Anubrata Paul M.Sc. Biotech (Research)

Affiliation
Department of Biotechnology, Natural Products Research Laboratory, Centre for Drug Design Discovery & Development (C-4D) , SRM University, Delhi-NCR,Sonepat.

Prof.Dr.K.Suriaprabha

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We sincerely thank the above reviewers for peer reviewing the manuscript