

**CASE REPORT****ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE****S Basnet, P Adhikary and B Aryal\***

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*\*Correspondence to : Dr Bijay Aryal, Department of Clinical Pharmacology, Chitwan Medical College, Bharatpur-10, Chitwan, Nepal.**Email: phrbijayaryal@gmail.com.***ABSTRACT**

Chronic obstructive pulmonary disease (COPD), characterized by an airway obstruction caused by emphysema, chronic bronchitis, or both, is a common and growing clinical problem that is responsible for a substantial worldwide health burden. We present a case of a 61 years old former heavy smoker with a known case of COPD having shortness of breath which gradually increased in severity and present even at rest (MRC Grade IV) and increased purulence and volume of phlegm. Digoxin, hydrocortisone, and ceftriaxone were administered to manage the exacerbation as emergency procedure along with nebulized oxygen. The patient was nebulized with the mixture of salbutamol, ipratropium, and normal saline. Later, parenteral medication was shifted to oral therapy, i.e., antibiotic (azithromycin) and corticosteroid (prednisolone). The symptoms improved with the appropriate medication.

**Key Words:** *acute exacerbation of COPD, bronchodilators and prednisolone***INTRODUCTION**

Internationally accepted opinion, including the 1995 American Thoracic Society (ATS) statement, has defined COPD as a disease state characterized by chronic airflow limitation due to chronic bronchitis, emphysema, or both. The airflow limitation is usually progressive and is associated with an abnormal inflammatory response of the lungs to noxious particles or gases, primarily caused by cigarette smoking. Although COPD affects the lungs, it also produces significant systemic consequences. It is a common and growing clinical problem that is responsible for a substantial worldwide health burden.<sup>1,6</sup> COPD affects 16.4 million persons in the United States and at least 52 million worldwide, and it accounted for 2.74 million deaths in 2000.<sup>2,3</sup> Acute exacerbations of COPD are variously defined but are characterized by worsened dyspnea and increased volume of phlegm, purulence of phlegm, or both. They are often accompanied by hypoxemia and worsened hypercapnia.<sup>7,9</sup>

**CASE PRESENTATION**

A 61 years old former heavy smoker with a known case of chronic obstructive pulmonary disease (COPD) presents to the emergency room with history of shortness of breath which gradually increased in severity and present even at rest (MRC Grade IV) and increased purulence and volume of phlegm. He also had peripheral chest pain. He was under medication for COPD for 3-4 years.

Examination revealed respiratory distress, decreased air entry, and wheezes. The oxygen saturation was 61%. ECG showed sinus rhythm. Lab investigation showed normal level of sugar, urea, creatinine, sodium, and potassium. Haematology showed abnormal values of WBC (20,000/cumm), neutrophil (87%),

lymphocytes (12%), and monocytes (1%).

Inj. Hydrocortisone 200 mg IV, oxygen nebulization, tablet Digoxin 0.5 mg, and inj. Ceftriaxone 2 g were immediately administered during emergency procedure. The patient was nebulized with the mixture of salbutamol, ipratropium, and normal saline. Later, parenteral medication was shifted to oral therapy, i.e., antibiotics (azithromycin 500 mg and cefixime 400 mg) and corticosteroid (prednisolone 40 mg).

**DISCUSSION**

While there is no drug therapy that can alter the decline in lung function over time, improved symptoms, a reduction in exacerbation and hospitalization rates, better exercise capacity, and an overall improvement in health status can be expected with the therapies that are currently available.

Initial therapy included supplemental oxygen. Systemic corticosteroid was administered, which was replaced with oral medication when the symptoms was improved, and later inhaled corticosteroid (fluticasone) was prescribed. Several randomized, placebo-controlled trials<sup>10,11</sup> have demonstrated that systemic corticosteroids accelerate improvement in airflow, gas exchange, and symptoms and reduce the rate of treatment failure. Data from a large number of patients suggest that inhaled corticosteroids can improve postbronchodilator FEV1 and bronchial reactivity in stable COPD.<sup>12,14</sup> In this case, digoxin was also included in the emergency management. There is positive effect of digoxin on the function of the diaphragm in patients with COPD,<sup>15</sup> both global inspiratory and expiratory muscle strength is increased significantly.<sup>16</sup> Initially, the patient was nebulized with the mixture of salbutamol, ipratropium, and normal saline along

with oxygen. When the symptoms were improved, metered dose inhaler was recommended. Substantial evidence shows that both inhaled beta-adrenergic agonists (salbutamol) and anticholinergic agents (ipratropium bromide) can improve airflow during acute exacerbations of COPD. Specifically, the administration of a bronchodilator can increase the FEV1 and the FVC by 15 to 29 percent over a period of 60 to 120 minutes.<sup>17,20</sup> Bacterial infection may contribute to acute exacerbations of COPD. During the emergency procedure, ceftriaxone was administered, and later, oral antibiotics cefixime and azithromycin were administered. Studies show that antibiotics for acute exacerbations of COPD support their use when there is purulent sputum.<sup>17,21</sup> It improved peak expiratory flow rates in patients with decrease in peak expiratory flow rate that has been observed during an acute flare.<sup>22</sup> The use of antibiotics reduces the risk of treatment failure and mortality in moderately or severely ill patients. The choice of antibiotic should be guided by local resistance patterns and the patient's recent history of antibiotic use. Pantoprazole 40 mg was administered for the purpose of gastroprotection.

### CONCLUSION

Hospitalized patients with acute exacerbation of COPD should receive initial therapy including supplemental oxygen. Combined bronchodilator therapy should be used, with ipratropium bromide and salbutamol administered every four to six hours initially; nebulizers are recommended whenever the patient's distress level raises but as the condition improves and the distress level is reduced, metered-dose inhalers can be used. Digoxin can be used to increase the inspiratory and expiratory muscle strength when required. Antibiotics should be prescribed when there is increased dyspnea and increased purulence and volume of phlegm. Sputum staining and cultures are reserved for cases that are refractory to antibiotic therapy. Oral systemic corticosteroids should be prescribed to improve the symptoms and reduce the rate of treatment failure (tapering over the course of eight days).

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