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A CASE STUDY ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) represents a significant global health burden characterized by persistent respiratory symptoms and airflow limitation resulting from airway and/or alveolar abnormalities. Primarily caused by long-term exposure to noxious particles or gases—most notably cigarette smoke and environmental pollutants—the condition encompasses chronic bronchitis and emphysema, leading to progressive lung function decline. The pathophysiology involves chronic inflammation that triggers structural remodelling, small airway narrowing, and the destruction of lung parenchyma, which reduces the effective surface area for gas exchange. Patients typically present with dyspnoea, chronic cough, and sputum production, often punctuated by acute exacerbations that accelerate disease progression and increase mortality risk. While COPD is currently incurable, management strategies focusing on smoking cessation, pharmacological interventions such as bronchodilators and inhaled corticosteroids, and pulmonary rehabilitation are essential to alleviate symptoms, improve quality of life, and reduce the frequency of life-threatening complications.

KEY WORDS: COPD, Bronchodilators, Exacerbation, Patient Counseling.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a progressive lung disease that makes it hard to breathe. It mainly includes emphysema and chronic bronchitis, and is most often caused by long-term exposure to irritants like cigarette smoke, air pollution, or occupational dusts. In COPD, the airways and air sacs in the lungs become damaged or inflamed, leading to narrowed airways, excess mucus, and reduced airflow. Common symptoms are shortness of breath, chronic cough, wheezing, and chest tightness that tend to worsen over time, especially with physical activity. While COPD has no cure, early diagnosis, quitting smoking, medications, and pulmonary rehab can help manage symptoms and slow progression. As COPD progresses, everyday activities like walking upstairs, carrying groceries, or even getting dressed can become challenging due to persistent breathlessness and fatigue. Flare-ups, also called exacerbations, can cause symptoms to suddenly worsen and may require hospitalization if not managed quickly. Treatment usually involves a mix of inhalers to open the airways, medications to reduce inflammation, oxygen therapy for advanced cases, and lifestyle changes like quitting smoking and staying active. Pulmonary rehabilitation programs that teach breathing techniques and exercise training can also make a big difference in quality of life. With the right management plan and regular checkups, many people with COPD can maintain independence and stay active for years.

CASE PRESENTATION

PATIENT DESCRIPTION

A 65-year-old male was admitted to the hospital with complaints of increased breathlessness, chronic cough with mucoid expectoration, and easy fatigability. The patient has a 30-year history of smoking and was previously diagnosed with hypertension.

PHYSICAL EXAMINATION

- **Temperature:** 98.6^0F
- **$SP0_2$:** 89% On room air.
- **Pulse Rate:** 88 bpm
- **Blood Pressure:** 140/90mmHg
- **Respiratory system:** Bilateral wheezing and decreased breath sounds were noted during auscultation.

INVESTIGATION

LABORATORY PARAMETERS	OBSERVED VALUES	NORMAL VALUES
ESR	28mm/hr	Below 20mm/hr
TC (Total Count)	11,500 cells/µL	4,000-11,000cells/mm^3
HB(Haemoglobin)	13.0gm/dL	13.5-17.5g/dL

Chest X-Ray

Findings showed hyperinflation of the lungs and a flattened diaphragm, which are Characteristic of chronic obstructive changes.

DIAGNOSIS

Based on the clinical presentation, smoking history, and radiological findings, the patient was diagnosed with **Acute Exacerbation of COPD**

TREATMENT

- **NEB.DUOLIN:** Contains Levo salbutamol and Ipratropium Bromide to treat shortness of breath and airway obstruction.
- **INJ.METHYLPRED:** Methylprednisolone 40mg given once daily to prevent acid - related issues.
- **Oxygen Therapy:** Administered to maintain SPO_2 within the target range of 88-92% for COPD patients.

PROGNOSIS&FOLLOW-UP

The Patient condition improved over five days. As the time of discharge his vitals were stable (SPO_2 94%, Temperature 98.4^0F). He was advised to continue the following

- **Inhaler Therapy:** Budesonide and Formoterol for long-term maintenance.
- **Lifestyle:** Strict smoking cessation and avoiding environmental triggers.

DISCUSSION

The management of COPD exacerbation focuses on minimizing the impact of the current event and preventing future occurrences. Bronchodilators remain the mainstay of treatment to reduce airway resistance. As noted in practice, patient adherence to inhaler techniques and lifestyle changes, such as hydration and rest play critical role in recovery.

PATIENT COUNSELING

- **Monitoring:** Regularly check respiratory rate and oxygen level at home.
- **Hydration:** Drink plenty of fluids to avoid dehydration and help clear mucus.
- **Techniques:** Proper use of nebulizers and inhalers is essential for effective drug delivery.
- **Home Care:** Warm honey and lemon drinks may help soothe coughing.

COPD is a significant burden on the healthcare system, particularly for patients over 65 years of age. Early intervention, proper medication adherence, and smoking cessation are vital to improve the quality of life and reduce the frequency of hospitalizations.