

Acute Exacerbations of COPD: A Case Study

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Abstract

A 68-year-old female presented to the emergency department with acute onset of shortness of breath, respiratory distress for one month, and disorientation. It was revealed to be Acute exacerbations of chronic obstructive pulmonary disease (AECOPD), describing the phenomenon of sudden worsening in airway function and respiratory symptoms in patients with COPD. This kind of condition requires immediate diagnosis and proper management. AECOPD causes the airways to become inflamed and narrow, causing breathlessness. Treatment involves the use of bronchodilators, steroids, antibiotics, and also use of additional oxygen support. This is long-term COPD that can be reduced by changing lifestyle. Early and proper diagnosis is necessary to provide appropriate and proper treatment.

Keywords: Acute Exacerbations, Bronchodilators, COPD

Introduction

Acute exacerbation is the rapid worsening of respiratory and airway function in patients with COPD. Along with viral and environmental factors, bacterial infections are also responsible for AECOPD. Comorbidities such as cardiovascular disorders and heart disorders can also exacerbate AECOPD episodes [1,2,3]. Treatment involves the use of bronchodilators, steroids, antibiotics, and also use of

additional oxygen support. Physical therapy, mucolytics, and airway-clearing devices are also helpful in specific individuals. When the respiratory system cannot adequately expel carbon dioxide from the body, type-II respiratory failure, also known as hypercapnic respiratory failure, develops [4,5,6].

Case Report

On January 28, 2023, at 9:15 p.m., a 68-year-old woman arrived at the emergency room complaining of acute onset of shortness of breath. Symptoms started to appear one month back which included respiratory discomfort and confusion. She was advised of hospitalization 15 days back.

The patient has a prior medical history of type 2 diabetes mellitus, COPD, hypertension, and ischemic heart disease. Initial physical testing uncovered:

BP -140/70 mm Hg Pulse rate - 80 bpm

O2 saturation - 78% on room air

During a chest exam, it was discovered that there was respiratory discomfort, wheezing, and bilateral creep. Moreover,

pH – 7.43

Pco2 – 44.4mmHg

Po2 – 51mmHg

HCO3 – 29.9mmHg

To stabilize her, she was advised- Diabetic Rich diet/SRD

SL NO.	MEDICATION	DIRECTION
1	Inj Pan 40(Pantoprazole 40mg)-IV	ODAC
	Inj Zofer 4(Ondansetron 4mg) – IV	SOS
	Inj Pipzo 4.5(Piperacilin 4000mg	TDS (ABST)
	Inj CortS 100(Hydrocortisone 100mg)	
	Inj Lasix 20(Furosemide 20mg) – IV	
	Tab Mucinac 600(Acetylcysteine 600mg)	1 TB (TDS)
	Tab Montek- LC (Levocetirizine+Montelukast)	ODHS
	Cap Doxt-SL(100)	1 CAP (BD)
	Nebuliser Duolin	6 HRLY

	Nebuliser Budecort	8 HRLY
	BiPap (iPAP/ePAP) 16/6 (mm Hg) Oxygen 4L/min	
	Syr Grilinctus BM	10ML QDS
	Tab Telma 40	OD
	Tab Atorfit-CV (20)	1 TAB (ODHS

CBG thrice daily

CBC was advised to establish whether an infectious or anemic source was present. CRP test, LFT, Serology

12 Lead ECG, Echocardiography 2D and ABG STAT.



Figure: Hyper inflated lungs consistent with COPD

Intake-output chart of urine was advised to monitor.

CBC revealed – WBC- 9700 /cumm

Hb-10.gm/dL CRP revealed – 54.3 mg/dL

On the second day of admission, her vitals were found to be -

BP – 130/90 mm Hg Pulse rate – 82bpm O2 saturation – 94%

Urine I/O - 600/900 ml

CBG-120

Physician included:

Inj. Fedrapime(2.25g)- BDS

Tab Claribid(500mg)- BDS

From Cardiac point of view:

Inj Lasix (20mg) IV-

Telma(40mg)- 1 tab OD

Atorfit(10mg)- I tab

Advised:

On the very next day, she was again examined. Her vitals revealed-

BP – 130/70mm Hg Pulse rate – 64 bpm

O2 saturation – 97 % with 4 lit/min

Urine I/O – 1600/900ml

Her ABG assessment revealed the following - the pH of blood is -7.4

pO2 – 122mm Hg

pCO2 – 45

O2 Saturation – 99 % on room air

HCO3 – 31mmol/L

Along with other medications and physiotherapy, the physician included.

Tab Clopitab(75mg)- ODAC

Inj Cordarone(150mg/ 3ml) IV-Over ½ hr Tab Cordarone(200mg)-

1 Tab OD

Inj Cenem(1gm)- TDS

BiPap – 16 hours on / 6 hours off and overnight

Spirometer - 3 ball.

To hold- Inj Pipzo(4.5gm)

Inj Fedrapime

To continue with other medications.

Monitor vitals.

Refer to Cardiology.

The 2nd physician diagnosed Asymmetric Septal Hypertrophy, Grade II AR, mild MR.

The patient was immediately advised for –

Moist O2 inhalation

Nebulization with Duolin responses

Nebulization with Foracort responses

Stop nebulization with Budecort responses.

Stop syrup Grilinctus BM and Inj. Cart-S

BL for CBC, CRP, Na+, K+, Urea, S. Creatine

BL for NT-pro BNP, D-dimer

Sputum for Gram Stain

Daily chest physiotherapy

Steam inhalation 2-3 times/day.

Suggestion:

Inj. Clexane(60mg)- OD× 5 days

Chest X-ray

To continue with others as before

One day later, her assessment revealed -

BP – 130/80

Pulse rate – 75 bpm

Ph- 7.43

PO2- 109mmHg

PCO2- 11 mmol/L

PHCO3- 35.7mmol/L

She was advised to shift to the ward the next day. That night in the ward, her vitals were-

Bp – 120/70 mmHg

Pulse rate - 77 bpm

O2 Saturation – 96% (2 Lt O2/min)

Urine I/O – 2000/1050 ml

Clinically, the patient became well with no further complications or discomfort. An X-ray taken a few months later showed progress. The X-ray is attached below:



Discussion

COPD exacerbations are caused by complex interactions between the host, respiratory viruses, airway bacteria, and environmental pollution, leading to increased inflammatory distress. For patients with acute exacerbation of COPD (AECOPD) and type 2 diabetes mellitus (T2DM) as comorbidity, it has poor outcomes [7,8,9]. Its prevalence and mortality rates are rising rapidly; the latest statistics indicate the prevalence of COPD in people aged ≥ 40 . Acute exacerbation is the leading cause of hospitalization and mortality among COPD patients. Severe exacerbation is linked to a high risk of early mortality and a median survival of only 3.6 years [10]. COPD is often linked to other chronic conditions, such as osteoporosis, cardiovascular disease, and metabolic syndrome [11,12].

Conclusion

This case included a 68-year-old female who developed AECOPD and COPD due to acute COPD exacerbation. It required inquiry,

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Declaration: The patient's written informed consent was acquired

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Asymmetric Septal Hypertrophy (asymmetric disproportionately increased myocardial wall thickness) worsens the conditions. Increased expiratory wheezes might be detected during physical exams.

The cough may get with AECOPD, and there might be an increase in Sputum volume. Hemoptysis, which might include blood mixed with purulent sputum, is highly prevalent during AECOPD [13,14,15].

AECOPD causes an increase in common respiratory symptoms such as coughing up sputum, exhaustion, and dyspnea. The treatment of all these can be done by using.

Antibiotics Corticosteroids Physiotherapy NIV(BiPap) [16].

including a chest X-ray, management with multiple medications, and an additional respiratory approach.

before this case report and any related photographs were published.

Conflict of Interest: The author says there are no competing interests.

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