بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

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جامعة عين شمس

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قسم

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MONA MAGHRABY

The Prognostic Value of Hypophosphatemia in Acute Exacerbation of Chronic Obstructive Pulmonary Disease (COPD)

Thesis

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in Critical Care Medicine

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بِسْمِ اللَّـهِ الرَّحْمَـنِ الرَّحِيمِ

"وَمَا تَوْفِيقِي إِلَّا بِاللَّهِ عَلَيْهِ
تَوَكَّلْتُ وَإِلَيْهِ أُنِيبُ"

صدق الله العظيم

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List of Contents

List of Tables

Table No.	Title	Page No.

List of Figures

List of Abbreviations

Abb.	Full term

ABGs ..... *Arterial blood gases.*

AECOPD ..... *Acute exacerbated chronic obstructive pulmonary disease.*

AIDS ..... *Acquired immunodeficiency syndrome*

ALT ..... *Alanine aminotransferase.*

AST ..... *Aspartate aminotransferase.*

ATP ..... *Adenosine triphosphatase.*

Ca ..... *Calcium.*

CBC ..... *Complete blood count.*

CO2 ..... *Carbon dioxide.*

COPD ..... *Chronic obstructive pulmonary disease.*

CPK ..... *Creatine phosphokinase*

Cr. ..... *Creatinine*

CT ..... *Computed tomography*

DLCO ..... *Diffusing capacity of the lung for carbon monoxide.*

ECG ..... *Electrocardiogram.*

FENa ..... *Fractional excretion of sodium*

FEPo4 ..... *Fractional excretion of phosphate*

FEV1 ..... *Forced expiratory volume in one second.*

FiO2 ..... *Fraction of inspired oxygen.*

FVC ..... *Forced vital capacity.*

GOLD ..... *Global Initiative for Chronic Obstructive Lung Disease.*

HCO3 ..... *Bicarbonate.*

I: E ..... *Inspiration to expiration ratio*

ICSs ..... *Inhaler corticosteroids.*

ICU ..... *Intensive care unit.*

INR ..... *International Normalized Ratio.*

List of Abbreviations *(Cont...)*

Abb.	Full term
K	*Potassium.*
LABAs	*Long acting beta agonists.*
LAMAs	*Long acting muscarinic agonist*
MDI	*Metered dose inhaler.*
MEq	*Milliequivalent.*
Mg	*milligram.*
MgSO4	*Magnesium.*
Ml	*Milliliter*
MmHg	*Millimeter mercury.*
MV	*Mechanical ventilation.*
Na	*Sodium.*
NIPPV	*Noninvasive positive pressure ventilation.*
NLHBI	*National Lung, Heart, and Blood Institute*
NPV	*Negative Predictive value.*
PaCO2	*Partial pressure of arterial carbon dioxide.*
PaO2	*Partial pressure of arterial oxygen.*
PEEP	*Positive end-expiratory pressure.*
PH	*Negative logarithm of hydrogen ion concentration.*
PO4	*Phosphorus.*
PPV	*Positive Predictive Value.*
Pt	*Prothrombin time.*
PTH	*Parathormone*
Ptt	*Partial thromboplastin time.*
RBS	*Random blood sugar.*
SaO2	*Arterial oxygen saturation.*
SD	*Standard deviation*
SPSS	*Statistical package for social science.*
VT	*Tidal volume*
WHO	*World Health Organization*

INTRODUCTION

Acute exacerbations of Chronic Obstructive Pulmonary Disease with decompensated respiratory acidosis lead to repeated hospital admissions and are associated with high mortality, making it the leading cause of disability and morbidity[2].

The admission of COPD patients to an intensive care unit is common, and up to 74% of these patients need mechanical ventilatory support. Thus, correction of the precipitating factors is the cornerstone in improving the outcome and minimizing the length of hospital stay in such patients [3].

Hypophosphatemia may interfere with respiratory function in COPD patients through different mechanisms such as muscular exhaustion, respiratory muscle weaknesses, which is common among hypophosphatemic patients, and usually improves with phosphate repletion[4].

Previous studies showed a relationship between severity of disease and blood phosphorus levels. However, the association between phosphorus levels and outcome as well as duration of mechanical ventilation in COPD patients remains unclear [5].

Aim of the Work

This study aims to examine the prognostic value of hypophosphatemia in COPD patients and evaluate the association between serum phosphorus levels and severity of attacks, need for mechanical ventilatory support, mortality and duration of mechanical ventilation and ICU stay.

Chapter 1

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Chronic obstructive pulmonary disease is a common respiratory condition characterized by airflow limitation. It affects more than 5% of the population and is associated with high morbidity and mortality. It is the third-ranked cause of death in the United States, killing more than 120,000 individuals each year. As a consequence of its high prevalence and chronicity, COPD causes high resource utilization with frequent clinician office visits, frequent hospitalizations due to acute exacerbations, and the need for chronic therapy (e.g., supplemental oxygen therapy, medication) [6].

Establishing a correct diagnosis of COPD is important because appropriate management can decrease symptoms (especially dyspnea), reduce the frequency and severity of exacerbations, improve health status, improve exercise capacity, and prolong survival. As current and former smokers are also at risk for a number of other medical problems for which treatment is very different, respiratory symptoms should not be attributed to COPD without appropriate evaluation and diagnosis [7].

I. Definition:

The definition of COPD and its subtypes (emphysema, chronic bronchitis, and chronic obstructive asthma) and the interrelationships between the closely related disorders that cause airflow limitation provide a foundation for understanding the spectrum of patient presentations[7].

Several features of COPD patients identify individuals with different prognosis and/or responses to treatment. Whether these features identify separate "phenotypes" of COPD or reflect disease severity remains unclear. However, evaluation of these features can help guide clinical management, and their use in classification of patients is now recommended[8].

The Global Initiative for Chronic Obstructive Lung Disease, a project initiated by (NHLBI) and (WHO), defines COPD as follows:

COPD is a common, preventable, and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases. The chronic airflow limitation that characterizes COPD is caused by a mixture of small airways disease (e.g., obstructive bronchiolitis) and parenchymal destruction (emphysema), the relative contributions of which vary from person to person. Chronic inflammation causes