بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Effect of phosphate level on the outcome of COPD patients in the Intensive Care Unit

Thesis

Submitted for partial fulfillment of M.Sc. Degree
in **Intensive Care Medicine**

Submitted by

Ahmed Mohamed Ahmed Hassan Heikal

M.B.B,CH.

Under Supervision of

Prof. Dr. Gihan Seif El Nasr Mohamed
Professor of Anaesthesia, Intensive Care and Pain Management
Faculty of Medicine, Ain Shams University

Prof. Dr. Ahmed Ali El Shebiny
Assistant Professor of Anaesthesia Intensive Care and Pain Management
Faculty of Medicine, Ain Shams University

Dr. Mohammed Mahmoud Maarouf
Lecturer of Anaesthesia, Intensive Care and Pain Management
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم

صدق الله العظيم

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Ahmed Mohamed Heikal

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List of Abbreviations

Abbr.	Full-term
2,3BPG	**:** 2,3 Biphosphoguanide.
ABGs	**:** Arterial blood gases.
AECOPD	**:** Acute exacerbated chronic obstructive pulmonary disease.
ALT	**:** Alanine aminotransferase.
AST	**:** Aspartate aminotransferase.
ATP	**:** Adenosine triphosphatase.
ATS	**:** American Thoracic Society.
AUC	**:** Area under the curve.
BE	**:** Base excess.
Ca	**:** Calcium.
CBC	**:** Complete blood count.
CO_2	**:** Carbondioxide.
COPD	**:** Chronic obstructive pulmonary disease.
CT	**:** Computed tomography.
dl	**:** Deciliter.
ECG	**:** Electrocardiogram.
FEV_1	**:** Forced expiratory volume in one second.
FiO_2	**:** Fraction of inspired oxygen.
FVC	**:** Forced vital capacity.
GI	**:** Gastrointestinal.
GOLD	**:** Global Initiative for Chronic Obstructive Lung Disease.

HCO_3	**:** Bicarbonate.
H_2O	**:** Water.
ICU	**:** Intensive care unit.
INR	**:** International Normalized Ratio.
K	**:** Potassium.
L	**:** Liter.
MDI	**:** Metered dose inhaler.
mEq	**:** Milliequivilant.
Mg	**:** Magnesium.
mg	**:** milligram.
ml	**:** milliliter
mmHg	**:** Millimeter mercury.
MV	**:** Mechanical ventilation.
Na	**:** Sodium.
NIPPV	**:** Non invasive positive pressure ventilation.
NIV	**:** Non invasive ventilation.
NPV	**:** Negative Predictive value.
$PaCO_2$	**:** Partial pressure of arterial carbon dioxide.
PaO_2	**:** Partial pressure of arterial oxygen.
PEEP	**:** Positive end-expiratory pressure.
PH	**:** Negative logarithm of hydrogen ion concentration.
PO_4	**:** Phosphorus.
PPV	**:** Positive Predictive Value.
Pt	**:** Prothrombine time.
PTH	**:** Parathormone.
Ptt	**:** Partial thromboplastine time.
ROC	**:** Receiver operator characteristic curve

SaO_2	**:** Arterial oxygen saturation.
SD	**:** Standard deviation.
SPSS	**:** Statistical package for social science.
TIMPs	**:** Tissue inhibitors of matrix metalloproteinases.
USA	**:** United State of America.
WHO	**:** World Health Organization
β_2	**:** Beta 2.

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Introduction

The prevalence of chronic obstructive pulmonary disease (COPD) in developed countries is progressively increasing, because of the process of aging of populations. Acute exacerbation of COPD with decompensated respiratory acidosis lead to repeated hospital admissions and are associated with high mortality, making it the leading cause of disability and morbidity **(Barnes, 2000)**.

The World Health Organization predicts that by 2020, COPD will rise from its current ranking as the 12th most prevalent disease worldwide to the fifth and from the sixth most common cause of death to the third by the year 2020. The admission of COPD patients to an intensive care unit is common, as 74% of them need mechanical ventilation (MV) support. Despite the diffuse use of non-invasive MV recently, many patients still need traditional MV. Some studies had showed a relationship between severity of disease and blood phosphorus levels **(GOLD, 2019)**.

The lower phosphorus blood levels are, the more serious the disease is, however its effect on COPD patients is not clear enough. Severe hypophosphatemia may lead to serious complications such as tetany, seizures, coma, rhabdomyolysis, respiratory failure and ventricular tachycardia. Although

hypophosphatemia has been only occasionally implicated as a cause of respiratory failure, its impact on respiratory muscle functioning in patients hospitalised for other reasons remains to be determined **(Amanzadeh and Reilly, 2006)**.