بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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قسم

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علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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MONA MAGHRABY

Role of Capnograghy during weaning from mechanical ventilation in patients with chronic obstructive pulmonary disease

Thesis

Submitted for Partial Fulfillment of Master Degree
In Chest Diseases

By

Ramy Karem Ali Ali
(M.B.,B.Ch.)

Supervised by

Prof. Dr. Yasser Mostafa Mohammed Mostafa
Professor of Chest Disease
Faculty of Medicine - Ain Shams University

Prof. Dr. Tamer Mohammed Ali
Professor of Chest Disease
Faculty of Medicine - Ain shams University

Faculty of Medicine
Ain Shams University
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List of Abbreviations

ABG .....Arterial Blood Gases

AC.....Assist Control

AECOPD .....Acute Exacerbation of chronic obstructive pulmonary disease

AF.....Atrial Fibrillation

ARF .....Acute Respiratory Failure

AUC .....Area under Curve

CHF .....Congestive Heart Failure

CKD.....Chronic Kidney Disease

COPD.....Chronic Obstructive Pulmonary Disease

CPAP .....Continuous Positive Airway Pressure

DBP .....Diastolic Blood Pressure

DH .....Dynamic Hyper Inflation

DM.....Diabetes Mellitus

ECG .....Electrocardiogram

EDs.....Emergency Departments

EMS.....Emergency Medical Services

EPAP .....Expiratory Positive Air Way Pressure

$ETCO_2$ .....End Tidal Carbon Dioxide

FEV1 .....Forced Expiratory Volume in One Second

FIO2 .....Fraction of Inspired Oxygen

FVC .....Forced Vital Capacity

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

Hb.....Haemoglobin

HCV .....Hepatitis C Virus

List of Abbreviations

HTN .....Hypertension

ICU .....Intensive Care Unit

IFR .....Inspiratory Flow Rate

IHD.....Ischemic Heart Disease

IMV.....Intermittent Mandatory Ventilation

IOC .....Inspiratory Capacity

IPAP .....Inspiratory Positive Air Way Pressure

K.....Serum Potassium

LOS.....Length of Stay

MV .....Mechanical Ventilation

Na .....Sodium

NPPV .....Non-Invasive Positive Pressure Ventilation

NPV .....Negative Predictive Value

$PACO_2$.....Partial Arterial Pressure of Carbon Dioxide

PC.....Pressure Controlled

PEEP .....Positive End Expiratory Pressure

PEFR .....Peak Expiratory Flow Rate

$PETCO_2$ .....Partial Pressure of Exhaled Carbon Dioxide

PIP.....Peak Inspiratory Pressure

PO2 .....Partial Pressure Oxygen

PPCs .....Post-Operative Pulmonary Complications

PPLATE .....Plateau Pressure

PPV.....Positive Predictive Value

PSV.....Pressure Support Ventilation

List of Abbreviations

ROC.....Receiver Operating Characteristic

RR .....Respiratory Rate

RSBI .....Rapid Shallow Breathing Index

SBP.....Systolic Blood Pressure

SBT.....Spontaneous Breath Trial

SD.....Standard Deviation

SGOT.....Serum Glutamic Oxaloacetic Transaminase

SGPT .....Serum Glutamic Pyruvic Transaminase

SIMV.....Synchronized Intermittent Mechanical Ventilation

SPO2 .....Saturation of Peripheral Oxygen

Temp.....Temperature

TLC.....Total Leucocytic Count

V/Q .....Ventilation Perfusion

VAC .....Volume Assist Control

VAP.....Ventilator Associated Pneumonia

VT.....Tidal Volume

WOB .....Work of Breath

WOB .....Work of Breathing

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD), a common preventable and treatable disease, is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases ***(GOLD, 2017).***

An acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is a clinical diagnosis made when a patient with COPD experiences a sustained (e.g, 24-48 h) increase in cough, sputum production, and/or dyspnea. AECOPD has clinical consequence ranging from a self-limited illness to progressive respiratory failure necessitating mechanical ventilation. Weaning of these patients may prove difficult and a spontaneous breath trial should be provided before the decision of extubation ***(Celli and Barnes, 2007).***

End-tidal carbon dioxide monitoring refers to the noninvasive measurement of exhaled carbon dioxide and has been used to monitor changes in arterial carbon dioxide ***(Ahrens and Sona, 2003)***.

Capnography is a technique that permits changes in the Carbon dioxide (CO_2) concentration in the patient's airway to be recorded during the respiratory cycle.

Monitoring end- tidal CO_2 tension ($PetCO_2$) might be useful in the critical setting to detect low cardiac output states, esophageal intubation and accidental disconnection from the ventilator ***(Stock, 1988; Hess, 1993).***

The use of $PetCO_2$ as a reflection of $PaCO_2$ has been explored, and there is controversy over its usefulness as a noninvasive method to approximate $PaCO_2$ during mechanical ventilation in intensive care medicine ***(Clark et al., 1992).***

In several studies performed on patients under total ventilatory support it has been reported that the values of $PetCO_2$ at one point in time usually correlate well with the corresponding value of $PaCO_2$ ***(Donati et al., 1985; Russell and Graybeal, 1990).***

Clinical and noninvasive assessments of oxygenation and hypercapnia by pulse oxymeter and capnograghy are used to monitor the patient during the trial of weaning of mechanically ventilated COPD patient ***(Australas, 2010).***

Spontaneous breath trial (SBT) with pressure support 7 cm H_2O, and positive end expiratory pressure (PEEP) 3 cm H_2O for a maximum of 2 hours duration was documented as a method of weaning by research and clinical experience ***(Esteban et al., 1997; Brochard, 1991).***

Aim of the Study

To evaluate the role of capnograghy in COPD patient during weaning from mechanical ventilation.