



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Role of Capnography 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 Kareem 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
ETCO₂	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
PACO₂	.....	Partial Arterial Pressure of Carbon Dioxide
PC	.....	Pressure Controlled
PEEP	.....	Positive End Expiratory Pressure
PEFR	.....	Peak Expiratory Flow Rate
PETCO₂	.....	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 (CO₂) concentration in the patient's airway to be recorded during the respiratory cycle.

-Introduction-

Monitoring end- tidal CO₂ tension (PetCO₂) 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 PetCO₂ as a reflection of PaCO₂ has been explored, and there is controversy over its usefulness as a noninvasive method to approximate PaCO₂ 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 PetCO₂ at one point in time usually correlate well with the corresponding value of PaCO₂ (*Donati et al., 1985; Russell and Graybeal, 1990*).

Clinical and noninvasive assessments of oxygenation and hypercapnia by pulse oxymeter and capnography 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 H₂O, and positive end expiratory pressure (PEEP) 3 cm H₂O 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 capnography in COPD patient during weaning from mechanical ventilation.