بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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MONA MAGHRABY

Role of Therapeutic Bronchoscopy in Comparison to Standards of Care in Critically Ill Patients with Acute Respiratory Failure

Thesis

Submitted for partial Fulfillment of Master Degree in General Intensive Care

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Mohamed Atef Elbassiony

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List of Abbreviations

Abb.	Full term
ABG	Arterial Blood Gases
ALI	Acute Lung Injury
APRV	Airway Pressure Release Ventilation
ARDS	Acute Respiratory Distress Syndrome
ARF	Acute Respiratory Failure
BAL	Broncho-Alveolar Lavage
BAS	Bronchoaspiration
CBC	Complete Blood Count
CESAR	Conventional Respiratory Support Versus Extracorporeal Membrane Oxygenation For Severe Acute Respiratory Failure
CNS	Central Nervous System
COPD	Chronic Obstructive Pulmonary Disease
COVID-19	Coronavirus Disease 2019
CPAP	Continuous Positive Airway Pressure
CT	Computed Tomography
DM	Diabetes Mellitus
ECG	Electrocardiography
ECMO	Extracorporeal Membrane Oxygenation
ETS	Endotracheal Suction
ETT	Endotracheal Tube
FBS	Fiberoptic Bronchoscopy
FFP	Flexible Fiberoptic Bronchoscopy
FiO2	Fraction of Inspired Oxygen
HFNC	High Flow Nasal Cannula
HFNO	High Flow Nasal Oxygen
HTN	Hypertension

List of Abbreviations Cont...

Abb.	Full term
ICU	Intensive Care Unit
IMV	Invasive Mechanical Ventilation
NIV	Non Invasive Ventilation
P(A-a)O2	Difference Between Calculated Alveolar and Measured Arterial Oxygenation Levels
PaCO2	Partial Pressure of CO2
PaO2	Partial Pressure of O2
PEEP	Positive End Expiratory Pressure
PH	Potential of Hydrogen
PiO2	Pressure of Inspired Oxygen
RCTs	Randomized Control Trials
SaO2	Oxygen Saturation
SARS-COV-2	Severe Acute Respiratory Syndrome Corona Virus 2
TSA	Trial Sequential Analysis

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INTRODUCTION

Acute respiratory failure (ARF) is a sudden failure of oxygenation, carbon dioxide clearance or both. Hypoxic ARF is most commonly caused by pneumonia, cardiogenic or non-cardiogenic pulmonary edema, or pulmonary haemorrhage, while the underlying causes of hypercapnic ARF include drug overdose, neuromuscular disease, chest wall abnormalities and severe obstructive airway disorders ***(Warrell et al., 2011).*** The most severe type of ARF is acute respiratory distress syndrome (ARDS) ***(Rubenfeld et al., 2012).***

Many advances have been seen over the past few years regarding supportive treatment (i.e., mechanical ventilation) of patients suffering ARF and needing clinical management in an intensive care unit (ICU**)** ***(Mancebo et al., 2002).*** Endotracheal suctioning (ET suctioning) is an important activity in reducing the risk of consolidation and atelectasis that may lead to inadequate ventilation ***(Day et al., 2002).*** ET suctioning is a component of bronchial hygiene therapy and mechanical ventilation that involves the mechanical aspiration of pulmonary secretions from a patient's artificial airway to prevent its obstruction ***(Guglielminotti et al., 1998).***

It is common to perform diagnostic and therapeutic bronchoscopies simultaneously. In one study of 198 fiberoptic bronchoscopies performed in critical care units, 47% were performed for therapeutic reasons, 44% for diagnostic reasons,

and 9% for both potential benefits of therapeutic bronchoscopy include increased oxygenation and reduced respiratory work of breathing ***(Tai, 1998).*** While the potential harms include hypoxemia, bleeding, laryngo and bronchospasm, and cardiovascular complications. Therapeutic bronchoscopy with endobronchial washing and/or suctioning is used in critically ill patients with ARF to remove secretion, reinflate atelectasis and increase oxygenation ***(Raoof et al., 2001).***

Broncho-Alveolar Lavage (BAL), bronchial wash, and protected specimen brush are bronchoscopic procedures used to provide microbiological samples from lower respiratory airways. However, because of the risk of viral transmission, bronchoscopy is not routinely indicated for the diagnosis of COVID-19 ***(Wahidi et al., 2020).*** Bronchoscopy in critically ill patients with COVID-19 has been required to manage complications (atelectasis, hemoptysis, etc.) as well as to obtain samples for microbiological cultures and to assist in the management of artificial airways (guide intubation and percutaneous tracheostomy) ***(Liang et al., 2020).***