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التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

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شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

بعض الوثائق الاصلية تالفة

بالرسالة صفحات

لم ترد بالاصل

Non invasive versus invasive blood gas monitoring in critically ill patients on mechanical ventilator

(Evaluation of reliability, accuracy, and economic impact)

Thesis

Submitted for partial fulfillment of M.D. in
Anaesthesiology and Pain Relief

617,96

by

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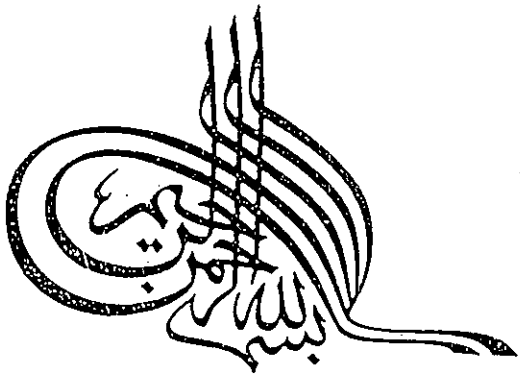

﴿ ...نَرفَعُ دَرَجَاتٍ مَّن نَّشَاءُ وَفَوقَ كُلِّ ذِى عِلمٍ عَلِيمٌ ﴾

سورة يوسف (آية ٧٦)

To .. The Memory of My Father

To .. The Memory of My Brother

To .. My Mother, and

To .. My lovely daughters;

Shrouk and Shaza

Mostafa

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Mostafa Galal

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Introduction

Aim of the work

INTRODUCTION

The primary life sustaining functions of the respiratory system are to deliver oxygen to the pulmonary capillaries and carbon disoxide to the atmosphere (Samson Wright, 1955).

Confirming the adequacy of oxygenation and alveolar ventilation is an integral part of monitoring the progress of critically ill patient on mechanical ventilator (Raffin, 1986).

In critically ill patient, the first task is to ensure adequate gas exchange for survival, therapy itself may cause complications as high inspired oxygen concentrations (FIO_2) may cause pulmonary damage. Finally ventilatory therapy is withdrown as the patients pulmonary functions improve (Jones et al, 1988).

Although arterial blood gas analysis (ABG) has been the gold standard for early detection of arterial hypoexemia and hypercarpia, yet it is an invasive procedure, gives information intermittently with a substantial delay between sampling and availability of results (Glavin and Jones, 1989).

Invasive arterial blood gas analysis is considered the cornerstone of modern ventilator management despite its intermittent sampling. An arterial blood gas (ABG) is used to measure or assess (1) oxygenation, (2) ventilation, and (3) acid-base status. Normally, the body regulates these different parameters automatically, but when the patients are severly ill with respiratory or kidney disorders, acid-base regulation becomes compromised. This necessitates greater intervention by the medical team. However, with more intervention comes the need for

accurate feedback, so that one can know if the therapeutic maneuvers were sufficient to correct for ventilation, oxygenation, or acid-base abnormalities (Fallat, 1982).

Accurate and reliable continious monitoring of oxygenation and ventilation at bedside should eventually replace (ABG) analysis (Kellher, 1989; Tremper and Barker, 1989).

In non invasive blood gas monitoring two recent advances in safety monitoring technology address preventable causes of patient injury in the critical case unit (Gravenstein, 1982), pulse oximetry which measures patient oxygenation, and capnography which assess ventilation.

Pulse oxymetry and caponmerty have taken its standered role in clinical anaethesia as they provide rapid cotinious monitoring, ease of use,portability and non invasive (Zorab, 1989; Carlon et al, 1998).

Capnometry is the measurement of the partial pressure (or concentration) of CO_2 in the patient's airway during the entire ventilatory cycle (Good, 1991). A capnometer provides a numerical measurement of inspired and end-tidal CO_2 (Anonymous, 1987). Capnography is the graphic display of the partial pressure or concentration of CO_2 as a waveform, usually plotted as CO_2 versus time. When the waveform display is calibrated, capnography includes capnometry (Swedlow, 1986).

Safety monitoring using pulse oximetry and capnography is new a puplished standard of care to minimize preventable disaster i.e. oxygenation via pulse oximetry or ventilation via capnography (Tinker et al, 1989). Oxygen saturation seems an ideal safety related variable to

monitor, since virtually all patients experience hypoxemia before irreversible injury regardrless of the cause of the injury (Scuderi et al, 1992).

The provision of pulse oxymetry and capnometry at bedside can't be justified until clinical effectiveness and economic efficiency are satisfactory studied,documented and compared to the usuall invasive arterial blood gases analysis (Jubran and Tobin, 1990).

Pulse oxymetry and capnography may be early examples in a new era of medicine in which relatively inexpensive and versatile computer technologies enable us to practice a higher quality of medicine more efficiently. These technologies had reduced the number of blood gas determinations and allowed our practices to be of higher quality and had reduced the economic impact in our hospital (Roizen et al, 1992).