شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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

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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HANAA ALY

Albumin as Early Fluid Bolus Therapy after Cardiac Surgery in the Critical Care Units

Thesis

Submitted for Partial Fulfillment of master's degree in Intensive Care.

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GD	*Graves' Disease*
ABG	Arterial Blood Gases
AKI	Acute Kidney Injury
AUC ROC	Area Under the Receiver Operating characterizing Curve
BUN	Blood Urea Nitrogen
CI	Cardiac Index
CO	Carbon Oxide
CPB	CardioPulmonary Bypass
CVP	Central Venous Pressure
dIVC	distensibility Index for the IVC
ECF	ExtraCellular Fluid
EEO	End-Expiratory Occlusion
FBT	Fluid Bolus Therapy
HES	Hydroxyl Ethyl Starch
IBM SPSS	Statistical Package for Social Science
LV	Left Ventricle
MAP	Mean Arterial Pressure
NS	Non-Significant
NYHA	New York Heart Association
PPV	Pulse Pressure Variation

PRBC	Packed Red Blood Cells
RAP	Retrograde Autologous Priming
RCT	Randomized Clinical Trials
RRT	Renal Replacement Therapy
RV	Right Ventricle
S	Significant
S1P	Sphingosine-1-phosphate
SID	Strong Ion Difference
SVV	Stroke Volume Variation
VTI	Velocity Time Integral

INTRODUCTION

Fluid bolus therapy is ubiquitous in the ICU. It is classically given to treat hemodynamic instability ***(Cecconi et al.;2014).*** This is a common situation in patients after cardiac surgery ***(Parke et al.;2014).*** Classically, the main target here is intravascular volume expansion in order to increase mean arterial pressure (MAP) and cardiac index (CI) ***(Vincent;2013).***

The timing of fluid bolus administration, the *speed* of delivery, the type and volume of fluid, the clinical indications and physiological targets, and the evaluation of response are still not fully understood ***(Cecconi et al., 2015, Toscani et al., 2017, Glassford et al., 2014).***

In ICU, only 50% of patients with hemodynamic instability appear responsive to fluid bolus therapy ***(Bentzer et al.;2016).*** Maintaining fluid homeostasis during and after cardiac surgery is a daily challenge and is compounded by the endothelial dysfunction triggered by extracorporeal circulation ***(Koning et al.;2016).***

There is clinical and institutional variation in fluid selection. Crystalloids are still the most currently used in post-cardiac surgical patients ***(Parke et al.;2014).*** Studies reported dissipation of their cardiovascular effect early within 10

minutes following the end of fluid infusion after surgery ***(Aya et al.;2016).***

A recent European survey reported that crystalloid solutions are now preferred, perhaps as a consequence of safety concerns related to some synthetic colloids such as hydroxyl ethyl starch (HES) ***(Reddy et al.;2016, Protsyk et al.;2017).*** Artificial colloids, such as HES and gelatin, may have a longer lasting effect on hemodynamics, but they have been associated with significant risks ***(Myburgh et al., 2012, Perner et al., 2012, Haase et al., 2013, Lewis et al., 2018).***

Many clinicians acknowledge that colloids traditionally often have been reserved for rapid plasma volume expansion and fluid resuscitation, even if evidence and beliefs vary widely. After exclusion of patients with traumatic brain injury, ***(Medicine;2007)***. human albumin solutions have repeatedly been shown to be safe and may achieve longer lasting hemodynamic effects ***(Mårtensson et al., 2018, Medicine, 2004, Bihari et al., 2019).***

Albumin was evaluated in two different concentrations against normal saline in two trials; 4% albumin in the "SAFE" study and 20% albumin in "HAS FLAIR" pilot study. But, a lot of arguments evolved against these two trials, especially HAS

FLAIR study ***(Medicine;2004, Wigmore et al.;2019).*** No clear winner in this ongoing debate can be declared in the absence of robust evidence.

Also, fluid resuscitation with 20% albumin solutions have been associated with decreased fluid requirements and less fluid accumulation in ICU patients, compared with iso-oncotic (4 – 5%) albumin ***(Otten;2014, Mårtensson et al.;2018).***

Aim of the Work

The aim of this study is to investigate the cardiovascular effect of using 20% albumin in patients after cardiac surgery.