بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

MONA MAGHRABY

HEMODYNAMIC MONITORING IN CRITICALLY ILL PATIENTS IN PAEDIATRIC ICU

Thesis

Submitted for Partial Fulfilment of
MD Degree in ***Pediatrics***

By

Beshoy Attaallah Ebrahim Sheehata
M.B., B.Ch. (2011), M.Sc. (2017)
Faculty of Medicine - Ain Shams University

Supervised by

Prof. Dr. Tarek Ahmed Abdelgawad
Professor of Paediatrics
Faculty of Medicine - Ain Shams University

Dr. Sondos Mohamed Magdy
Lecturer of Paediatrics
Faculty of Medicine - Ain Shams University

Dr. Marwa Waheed Abd Elhady Nassef
Lecturer of Paediatrics
Faculty of Medicine - Ain Shams University

Faculty of Medicine - Ain Shams University
2021

Acknowledgments

First and foremost, I feel always indebted to ***Allah*** *the Most Beneficent and Merciful.*

Really I can hardly find the words to express my gratitude to ***Prof. Dr. Tarek Ahmed Abdelgawad,*** *Professor of Paediatrics, Faculty of Medicine - Ain Shams University, for his supervision, continuous help, encouragement throughout this work and tremendous effort he has done in the meticulous revision of the whole work. It is a great honor to work under his guidance and supervision.*

I would like also to express my sincere appreciation and gratitude to ***Dr. Soudos Mohamed Magdy****, Lecturer of Paediatrics, Faculty of Medicine - Ain Shams University, for her continuous directions and support throughout the whole work.*

I cannot forget the great help of ***Dr. Marwa Waheed Abd Elhady Nasseff****, Lecturer of Paediatrics, Faculty of Medicine - Ain Shams University for her invaluable efforts, tireless guidance and for her patience and support to get this work into light.*

Words fail to express my love, respect and appreciation to ***my wife Suzy Abdo*** *for her unlimited help and support.*

Last but not least, I dedicate this work to my family, whom without their sincere emotional support, pushing me forward this work would not have ever been completed.

Beshoy Attaallah Ebrahim Sheehata

List of Contents

List of Abbreviations

Abb.	Full term
AC	*Alternating electrical Current*
ACTH	*Adrenocorticotropic Hormone*
AKI	*Acute kidney injury*
ALT	*Alanine aminotransferase*
ARDS	*Acute respiratory distress syndrome*
AST	*Aspartate aminotransferase*
BP	*Blood pressure*
BSA	*Body Surface Area*
BUN	*Blood Urea Nitrogen*
CABG	*Coronary Artery Bypass Surgery*
cAMP	*Cyclic Adenosine Monophosphate*
CaO2	*Arterial O2 content*
CBC	*Complete blood count*
CI	*Cardiac Index*
CNS	*Central Nervous System*
CO	*Cardiac output*
CPB	*CardioPulmonary Bypass*
CRP	*C reactive protein*
CVP	*Central Venous Pressure*
DAMP	*Damage-associated Molecular Pattern*
DIC	*Disseminated Intravascular Coagulation*
dIVC%	*Inferio Vena Cava Collapsibility Index*
DO2	*Oxygen delivery*
ECMO	*Extracorporeal membrane oxygenation*
ED	*Emergency Department*
EDTA	*Ethylenediaminetetraacetic acid*
EDV	*End Diastolic Velocity*
EF	*Ejection Fraction*
ELISA	*Enzyme Linked Immunosorbent Assay*
ET	*Ejection Time*
Fio2	*Fractional oxygen content*
FS	*Fractional shortening*
FVa	*Active Factor V*

List of Abbreviations cont...

Abb.	Full term

FVII .....Factor VII
FVIIIa .....Active Factor VIII
FXa .....Active Factor X
GIT .....Gastrointestinal tract
GRV .....Gastric residual volumes
GS.....Gastroschosis
HFOV .....High-Frequency Oscillatory Ventilation
Hgb .....hemoglobin
HMGB1 .....High-Mobility Group Box 1 Protein
HR.....Heart Rate
IAP .....Intraabdominal Presuure
I-FABP .....Intestinal fatty acid binding protein
IF-γ .....Interferon gamma
IL-1 .....Interleukin 1
IL-12 .....Interleukin 12
IL-4 .....Interleukin 4
IL-6 .....Interleukin 6
IM .....Intramuscular
INR.....International Normalized Ratio
IO .....Intraosseous
IV .....Intravenous
IVC .....Inferior Vena Cava
IVCCI .....Inferior Vena Cava Collapsibility Index
IVCI .....Inferior Vena Cava Index
IVCT .....Isovolumetric Contraction Time
IVIG .....Intravenous Immune Globulin
IVRT .....Isovolumetric Relaxation Time
IVS .....Interventricular Septum
K .....Potassium
LVEDD .....left ventricular end-diastolic dimension
LVEDV .....Left Ventricular End-Diastolic Volume
LVESD .....Left ventricular end-systolic dimension
LVESV .....Left Ventricular End Systolic Volume

List of Abbreviations cont...

Abb.	Full term
LVOT	*Left Ventricular Outflow Tract*
MAMPs	*Microbial-Associated Molecular Patterns*
MAP	*Mean arterial pressure*
MPI	*Myocardial Performance Index*
MRAP	*Mean Right Atrial Pressure*
NA	*Sodium*
NEC	*Necrotizing Enterocilitis*
NF-κB	*Nuclear Factor Kappa B*
NIRS	*Near infrared spectroscopy*
NO	*Nitric oxide*
P/F	*Pao2/Fio2 ratio*
PAC	*Pulmonary Artery Catheter*
PAI1	*Plasminogen Activator Inhibitor 1*
PALS	*Pediatric Advanced Life Support*
PaO2	*Partial pressure of oxygen*
PARDS	*Pediatric ARDS*
PDEI	*Phosphodiesterase inhibitors*
PEEP	*Positive end expiratory pressure*
PiCCO	*Pulse Contour Cardiac Output*
PICU	*Pediatric Intensive Care Unit*
PLRT	*Passive leg-raising Test*
PPV	*Pulse Pressure variation*
PRR	*Pattern Recognition Receptors*
PSAX	*Parasternal short axis*
pSOFA	*Pediatric Sequential [Sepsis-related] Organ Failure Assessment*
PSV	*Peak Systolic Velocity*
PT	*Prothrombin Time*
PWD	*Pulsed wave Doppler.*
qSOFA	*Quick Sequential [Sepsis-related] Organ Failure Assessment*

List of Abbreviations cont...

Abb.	Full term
RAGE	*Receptor for Advanced Glycation End-products*
RCT	*Randamaized control trial*
ROS	*Reactive oxygen species*
RRI	*Renal Resistive Index*
RV	*Right Ventricule*
RVEF	*Right Ventricular Ejection Fraction*
SCV	*Superior vena cava*
SIRS	*Systemic inflammatory response syndrome*
SmvO2	*Central mixed Venous Oxygen Saturation*
SOFA	*Sequential [Sepsis-related] Organ Failure Assessment*
SPAP	*Systolic Pulmonary Artery Pressure*
SpO2	*FiO2 oxygen saturation to fractional oxygen content*
SV	*Stroke volume*
SVI	*Stroke Volume Index*
SVO2	*Central Venous Oxygen Saturation*
SVR	*Systemic vascular resistance*
SVRI	*Systemic vascular Resistance Index*
SVV	*Stroke Volume Variation*
TAMOF	*Thrombocytopenia-associated multiple organ failure*
TAXI	*Transfusion and Anemia Expertise Initiative*
TDI	*Tissue Dopple Imaging*
TFPI	*Tissue Factor Pathway Inhibitor*
TLR	*Toll-Like Receptors*
TNF-α	*Tumor Necrosis Factor Alpha*
tPA	*Tissue-type Plasminogen Activator*
TTE	*Transthoracic echocardiography*

List of Abbreviations cont...

Abb.	Full term

UOP ..... *Urine Output*
Upa .....*Urokinase-type Plasminogen Activator*
US .....*Ultrasound*
VA .....*Veno-Arterial*
VIS.....*Vasoactive Inotrope Score*
VO2 .....*Oxygen consumption*
VTI .....*Time Velocity Index*
VV .....*Veno-Venous*

List of Tables

Table No.	Title	Page No.

Tables of Review

List of Tables cont...

Table No.	Title	Page No.

Tables of Results

List of Tables cont...