Neutrophil CD64 as an Early Diagnostic Marker in Neonatal Sepsis

Protocol of Thesis

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بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم

صدق الله العظيم

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This work is dedicated to …

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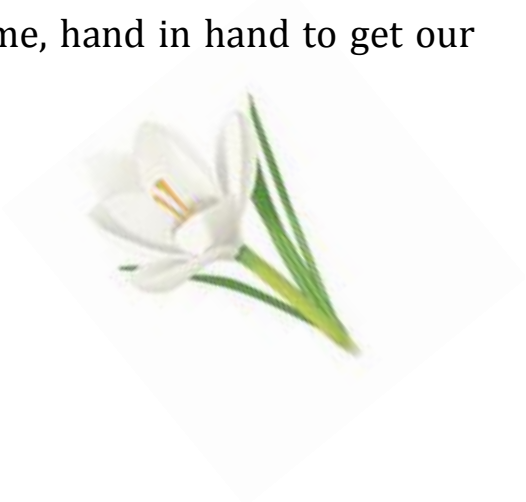

List of contents

List of Abbreviations

Abbreviations	*Full term*
AAP……	American Academy of Pediatric
ADC……	Analogue-to-Digital Conversion
AKF……	Acute kidney Failure
ALT……	Alanine Transferase
ANC……	Absolute Neutrophil Count
APRs……	Acute Phase Reactants
APTT……	Activated Partial Thromboplastein Time
ASUH……	Ain Shams University Hospital
ASUSH……	Ain Shams University Specialized Hospital
AUC……	Area Under the Curve
C. albicans…	Candida albicans
C3 ……	Complement 3
CBC……	Complete Blood Count
CD11b……	Cluster of Designation 11b
CD14……	Cluster of Designation 14
CD163……	Cluster of Designation 163
CD64……	Cluster of Designation 64
CDC……	Centre of Disease Prevention and Control
CLSI ……	Clinical and Laboratory Standards Institute
CMV……	Cytomegalovirus
CNS……	Central Nervous System
CoNS……	Coagulase-Negative *Staphylococci*
CPAP……	Continuous Positive Airway Pressure
CR3A……	complement receptor 3 A
CRP……	C-Reactive Protein
CSF……	Cerebrospinal Fluid
CSFs …….	Colony stimulating factors
CVP……	central venous pressure
dC……	Delta Change
DIC……	Disseminated Intravascular Coagulopathy
DNA……	Deoxyribonucleic Acid
E. coli……	*Escherichia Coli*
EDTA……	Ethyl- Enediamine Tetraacetate
EFF. ……	Efficacy
EOS……	Early Onset Sepsis

ETT……	Endotracheal Tube
FcγRI……	Fc-gamma receptor 1
FISH……	Fluorescence In-Situ Hybridization
FITC ……	Fluorescein Isothiocyanate
FN……	False Negative
FP……	False Positive
FSC……	Forward Scatter
GA……	Gestational Age
GBS……	Group B *Streptococcus*
G-CSF……	Granulocyte Colony Stimulating Factor
GIT……	Gastrointestinal Tract
HAIs……	Healthcare Associated Infections
HDL……	High Density Lipoprotein
Hg……	Hemoglobin
HIV……	Human Immunodeficiency Virus
Hs-CRP……	Highly Sensitive C-Reactive Protein
HSS……	Hematological Scoring System
HTN……	Hypertension
I/M ratio……	Immature/Mature ratio
I: T ratio……	Immature: Total ratio
IAP……	Intrapartum Antibiotic Prophylaxis
ICAM-1……	Intercellular Adhesion Molecule 1
IF-γ……	Interferon - Gamma
IL-1……	Interlukin-1
IL-3……	Interlukin-3
IL-6……	Interleukin-6
IL-8……	Interleukin-8
ILO……	International Labor Organization
IQR……	Interquartile Range
ITGAM……	Integrin alpha M
ITS……	Internal Transcribed Spacer
LBW……	Low Birth Weight
LDL……	Low Density Lipoprotein
LOH……	Length Of Hospitalization
LOS……	Late Onset Sepsis
LPS……	Lipopolysaccharide
MCV……	Mean Corpuscular Volume
MDR……	Multidrug Resistant
MFI……	Mean Fluorescent Intensity

MHA……	Mueller-Hinton Agar
MODS……	Multi-Organ Dysfunction Syndrome
MPV……	Mean Platelet Volume
MRI……	Magnetic Resonance Image
MRSA……	Methicillin-Resistant *Staphylococcus* Aureus
MSSA……	Methicillin-Susceptible *Staphylococcus* Aureus
NEC……	Necrotizing Enterocolitis
NICU……	Neonatal Intensive Care Unit
NPV……	Negative Predictive Value
NS……	Neonatal Sepsis
OGD……	Obstetrics and Gynecology Department
P value……	Probability value
PAI-1……	Plasminogen activator inhibitor-1
PBS……	Phosphate buffered saline
PCR……	Polymerase Chain Reaction
PCT……	Procalcitonin
PDW……	Platelet Distribution Width
PLT……	Platelet count
PMNL……	Polymorph Nuclear Leukocyte
POC……	Point Of Care
PPHN……	Persistent Pulmonary Hypertension
PPV……	Positive Predictive Value
PROM……	Premature Rupture Of Membrane
PT……	Prothrombin Time
RBCs……	Red Blood Cells
RDS……	Respiratory Distress Syndrome
ROC ……	Receiver Operating Characteristic
ROM……	Rupture Of Membrane
S. agalactiae….	Streptococcus agalactiae
S. aureus……	*Staphylococcus* Aureus
SIRS……	Systemic Inflammatory Response Syndrome.
Spp……	Species
SPS……	Sodium-polyanetholesulphonate
SPSS ……	Statistical Package for Special Sciences
SSC……	Side Scatter
T_1……	total ranks
TAT……	Thrombin-antithrombin III complex
TAT……	Turnaround Time
TC……	Total Cholesterol

TG……	Triglyseride
TLC……	Total Leukocyte Count
TN……	True Negative
TNF-α……	Tumor Necrosis Factor-α
TP……	True Positive
tPA……	tissue Plasminogen Activator
TPN……	Total Parenteral Nutrition
TSA……	Trypticase Soya Agar
TSB……	Tryptone Soya Broth
UN……	United Nations
USA……	United States of America
UTI……	Urinary Tract Infection
VLBW ……	Very Low Birth Weight
WBCs……	White Blood Cells
WHO……	World Health Organization

List of Table

List of figures

INTRODUCTION

Sepsis in newborns is a common fatal disorder affecting 1.1-2.7% of all newborns ***(Stoll et al., 2011).***In spite of extensive research and development in understanding and treatment of neonatal sepsis, sepsis continues to be a major source of morbidity and mortality in the neonatal population ***(Lawn et al.,2006).***

Neonatal sepsis (NS) remains a diagnostic burden problem by showing minimal initial symptoms of subtle character, nonspecific manifestations, and diagnostic pitfalls***.*** The clinical course can be fulminate and fatal if treatment is not commenced promptly. It is therefore crucial to establish early diagnosis and initiate adequate therapy ***(Volker et al., 2013).***

Neonatal sepsis is classified into early-onset sepsis (EOS) within the first 72 hours of life and late-onset sepsis (LOS) afterwards ***(Stoll et al., 2011).***Early-onset sepsis is most often related to perinatal factors including prolonged rupture of amniotic membranes, maternal colonization with group B β streptococcus(GBS) and maternal chorio`amnionitis ***(Ganatra et al.,2010).*** Late-onset sepsis, diagnosed >72 hours after birth, is primarily hospital acquired and occurs more commonly in preterm *infants* ***(Bizzarro et al., 2005).***