بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Diagnostic Evaluation of Modified Hematological Sepsis Score and Presepsin in Neonatal Sepsis

Thesis

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In ***Clinical Pathology***

Presented by

Marina Mamdouh Malky Ibrahim
M.B.B.Ch., Ain Shams University

Under supervision of

Prof. Dr. Dalia El Sewefy
Professor of Clinical Pathology
Faculty of Medicine, Ain Shams University

Assist. Prof. Dr. Shaimaa Abdelmalik Pessar
Assistant Professor of Clinical Pathology
Faculty of Medicine, Ain Shams University

Dr. Mariam John Amin Ibrahim
Lecturer of Pediatrics and Neonatology
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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Marina M. M. Ibrahim

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List of Abbreviations

Abb.	Full term
AKI	*Acute kidney injury*
ANC	*Absolute neutrophil count*
AUC	*Area under the ROC curve*
BENCH	*Benha children hospital*
CBC	*Complete Blood Count*
CD	*Clusters of differentiation*
CONS	*Coagulase-Negative Staphylococcus*
CRP	*C-reactive protein*
CSF	*Cerebrospinal fluid*
CVC	*Central venous catheters*
EOS	*Early-Onset Sepsis*
GBS	*Group B streptococcus*
G-CSF	*Granulocyte colony stimulating factor*
GDM	*Gestational diabetes mellitus*
HDN	*Hemorrhagic disease of the newborn*
HSS	*Hematological sepsis score*
I:T	*Immature to total*
IL	*Interleukin*
IVIG	*Intravenous immunoglobulins*
KM	*Kaplan-Meier*
LOS	*Late onset neonatal sepsis*
LP	*Lumbar puncture*
LPBs	*LPS-binding proteins*
LPSs	*Lipopolysaccharides*
MHSS	*Modified hematological sepsis score*
NEC	*Necrotizing enterocolitis*

List of Abbreviations (Cont...)

Abb.	Full term
NICU	*Neonatal intensive care unit*
NRBC	*Nucleated RBCs*
PCT	*Procalcitonin*
PE	*Pre eclampsia*
PIH	*Pregnancy induced hypertension*
PMNs	*Polymorphonuclear leukocytes*
PROM	*Premature rupture of membranes*
RDS	*Respiratory distress syndrome*
ROC	*Receiver-operating characteristic*
SAA	*Serum amyloid A*
sCD14	*sCD14-subtype*
sCD14	*Soluble form of CD14*
SIL2R	*Interleukin-2 soluble receptor*
SIRS	*Systemic inflammatory response syndrome*
TLR4	*Toll- like receptor 4*
TNF	*Tumor necrosis factor*
TPN	*Total parenteral nutrition*
UTI	*Urinary tract infection*
VLBW	*Very low birth weight*

INTRODUCTION

Neonatal sepsis is one of the major causes of morbidity and mortality among newborns in developing countries. It is a life-threatening clinical emergency that demands urgent diagnosis and treatment ***(Shah et al., 2012).***

In Egypt, a multi-center study reported that 45.9% of the neonates admitted to neonatal intensive care units (NICUs) were due to suspected neonatal sepsis ***(Pessar, 2016).*** Consequently, caregivers should maintain a high suspicion for the possibility of sepsis in neonates ***(Edwards, 2016).***

Proper management is not guaranteed due to nonspecific symptoms and signs, delay of culture results, and a high rate of false-negative results. Attempts have been made to use hematologic parameters, acute phase reactants, and cytokine profiles for early and accurate diagnosis of neonatal sepsis; however, none was adequately sensitive or specific ***(Pessar, 2016).***

In 1988 Rodwell et al studied individual parameters and developed Hematological Sepsis Score (HSS) which combined different aspects of the blood picture to suggest sepsis ***(Rodwell et al., 1988).***

More studies in 2013 have presented presepsin as a valuable potential biomarker for early diagnosis of sepsis, risk stratification, and evaluation of prognosis in adult patients in

the emergency department ***(Liu, 2013)*.** Presepsin (soluble sCD14 subtype, sCD14-ST) is a circulating molecule fragment derived from sCD14 and serves as a mediator of lipopolysaccharide response against infectious agents ***(Masson, 2014)***. Presepsin was superior to IL-6, CRP, and Procalcitonin (PCT) discriminating between survivors and non-survivors as well as low-grade sepsis versus severe sepsis or septic shock ***(Pieteris et al., 2012)*.** However it has been seldom studied in pediatric patients and results are so far inconclusive ***(Kaiserova et al., 2016).***

In 2017, the modified hematological sepsis score hypothesized that changing some parameters of Rodwell's hematological sepsis score can improve the specificity without altering the sensitivity in diagnosing neonatal sepsis. These changes were removing parameters that are repetitive of the same pathogenic mechanism such as immature to mature neutrophil ratio, increasing the weightage for low neutrophil count, and adding a new parameter which is the nucleated RBCs ***(Krishnamurthy et al., 2017).***