



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكروفيلم

# بسم الله الرحمن الرحيم



**MONA MAGHRABY**



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# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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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 تغييرات



## يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



**MONA MAGHRABY**



# **Mean Platelet Volume (MPV) and Plasma Lactate Level in the Diagnosis and Prognosis of Neonatal Bacteremia**

Thesis

*Submitted For Partial Fulfillment of Master Degree in  
Clinical Pathology*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لسببائك لا علم لنا  
إلا ما علمتنا إنك أنت  
العليم العظيم

صدقة الله العظيم

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## *List of Abbreviations*

<b>Abb.</b>	<b>Full term</b>
<i>Apo</i> .....	<i>Apolipoprotein</i>
<i>APRs</i> .....	<i>Acute phase reactants</i>
<i>BLA</i> .....	<i>Blood lactic acid</i>
<i>CBC</i> .....	<i>Complete blood picture</i>
<i>CONS</i> .....	<i>Coagulase negative staphylococcus</i>
<i>CRP</i> .....	<i>C reactive protein</i>
<i>DIC</i> .....	<i>Disseminated intravascular coagulopathy</i>
<i>EOS</i> .....	<i>Early onset sepsis</i>
<i>FISH</i> .....	<i>Fluorescence in situ hybridization</i>
<i>GBS</i> .....	<i>Group B-streptococcus</i>
<i>G-CSF</i> .....	<i>Granulocyte-Colony Stimulating Factors</i>
<i>GTP</i> .....	<i>Guanosine triphosphate</i>
<i>HDL-C</i> .....	<i>High-density lipoprotein cholesterol</i>
<i>HSS</i> .....	<i>Hematological system scoring</i>
<i>ICAM-1</i> .....	<i>Circulating intercellular adhesion molecule-1</i>
<i>IVIG</i> .....	<i>Intravenous immunoglobulin</i>
<i>LOS</i> .....	<i>Late onset sepsis</i>
<i>LTA</i> .....	<i>Anti-lipoteichoic acid</i>
<i>MALDI TOF MS</i> .	<i>Matrix-assisted laser desorption / ionization time-of-flight mass spectrometry</i>
<i>MBL</i> .....	<i>Mannose binding protein</i>
<i>MODS</i> .....	<i>Multi organ dysfunction syndrome</i>
<i>MPV</i> .....	<i>Mean platelet volume</i>
<i>MRSA</i> .....	<i>Methicillin resistant staphylococcus aureus</i>
<i>NEC</i> .....	<i>Necrotizing enterocolitis</i>
<i>NICU</i> .....	<i>Neonatal Intensive Care Unit</i>
<i>PCR</i> .....	<i>Polymerase chain reaction</i>
<i>PCT</i> .....	<i>Procalcitonin</i>
<i>PSP</i> .....	<i>Panceartic stone protein</i>

## *List of Abbreviations (cont...)*

<b>Abb.</b>	<b>Full term</b>
<i>PTX3</i> .....	<i>Pentraxin 3</i>
<i>Q-SOFA</i> .....	<i>Quick sequential organ failure assessment</i>
<i>SAA</i> .....	<i>Serum amyloid-A</i>
<i>SIRS</i> .....	<i>Systemic inflammatory response syndrome</i>
<i>SOFA</i> .....	<i>Sequential organ failure assessment</i>
<i>VLBW</i> .....	<i>Very low birth weight</i>
<i>WHO</i> .....	<i>World health organization</i>

## INTRODUCTION

Neonatal sepsis is a clinical syndrome characterized by signs and symptoms of infection with or without bacteremia. It is caused by various organisms invading the blood stream, which may be, bacterial, viral, fungal, or protozoal, whereas in bacterial sepsis, bacteremia is a cardinal feature (*Karne et al., 2017*).

Globally, sepsis is considered to be the major cause of high morbidity and mortality among neonates, despite the efforts done in health care units. Around 40% of under –five deaths worldwide occur in the neonatal period, owing to 3.1 million newborn deaths annually (*Shehab El-Din et al., 2015*).

Unfortunately, the symptoms and signs of neonatal sepsis are subtle and non-specific, so rapid diagnosis and management become a challenge every health care worker faces (*Bhat, 2017*). Blood culture and sepsis screening tests (elevated CRP, elevated total leukocytic count, and thrombocytopenia) are the most common used methods routinely. Although blood culture is the gold standard method for diagnosis of bacterial sepsis, at least 24 hours are needed for preliminary diagnosis. So, a rapid and reliable diagnostic tests are needed (*Singhi et al., 2009; Hofer et al., 2012*).

Thrombocytopenia is a common hematological abnormality in neonates with bacteremia. The auto-analyzers readily provide platelet indices along with platelet counts without any additional cost. However, these indices are not given proper attention. One of the important platelet indices available for clinical utility is the mean platelet volume (MPV), which is defined by the arithmetic mean of platelets (*Bhat, 2017*).

Lactic acid is the metabolite of the anaerobic oxidation of sugar (glycolysis) and is generated by many organs as the brain, skeletal muscles and red blood cells. There have been a few studies conducted on the influence of blood lactic acid detection on neonatal bacterial sepsis diagnosis (*Jia et al., 2017*).

## **AIM OF THE WORK**

To determine the role of mean platelet volume (MPV) and plasma lactate level in the diagnosis and prognosis of neonatal bacterial sepsis.