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بالرسالة صفحات لم ترد بالأصل

Faculty of postgraduate childhood Studies *Department of Medical Studies for Children*

Serum Presepsin and Amyloid-A as Early Markers in the Diagnosis of Neonatal Sepsis and their Relation to Anthropometric Assessment

Thesis

Submitted for fulfillment of PhD in Childhood Studies
(Child Health and Nutrition)
Medical Studies Department for Children

Presented by

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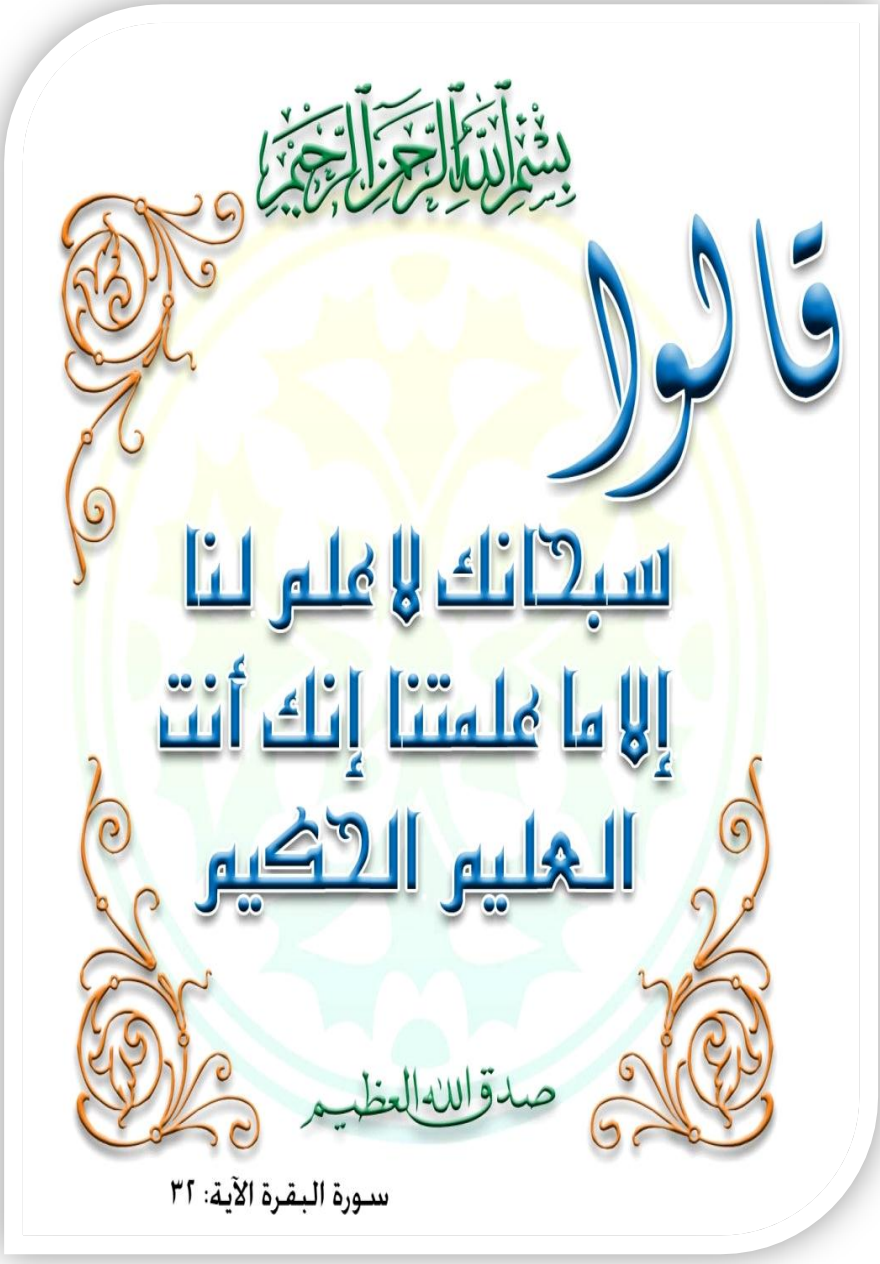
2020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سورة البقرة الآية: ٣٢

Dedication

*I would like to dedicate this work to my **mother**, **husband** and my **sons**, for their continuous support, encouragement and motivation not only through my whole life but also because they endured all my negligence towards them throughout the period of that thesis. If it weren't for you I wouldn't be.*

Acknowledgments

Thanks are all to **Allah**, *to whom I related any success in achieving any work in my life and for blessing me throughout my life by HIS Compassion and Generosity.*

I would like to convey special appreciation and sincere thanks **Prof. Dr. khalad Hussen Taman (god bless his soul)** *Professor of Pediatrics & Dean of Postgraduate Childhood Studies faculty, Ain Shams University for her supervision, giving the idea of research.*

I should state my deep thanks to **Prof. Dr. Howaida Hosny El Gebaly,** *Professor of Pediatrics & Dean of Postgraduate Childhood Studies faculty, Ain Shams University for her supervision, giving the idea of research, helpful guidance and advices. It is mainly due to her generous effort; this work could be possible.*

I would like to convey special appreciation and sincere thanks to **Prof. Dr. Asharf Hamed Shaalan,** *Professor of Biological Anthropology National Research Centre for his advices and keen concern throughout work.*

I am also grateful to **Prof. Dr. Nyera EL Morsy** *&* **Prof. Dr. Muhammad Al-Tohamy,** *Professors of Biological Anthropology National Research Centre fortheirsteady help in writing thesis*

I'm extremely appreciating **Dr. Samer Hamed El Khayat,** *Assistant Professor of Pediatrics, Postgraduate Childhood Studies faculty, Ain Shams University, for his great care, valuable instructions.*

I would like to express my real appreciation to **Prof. Dr. Abd El Rahman Galhom,** *Professor of Pediatrics, El Warrak hospital for providing all facilities not only for fulfillment of all applied clinical& official information needed for cases recruitment but also for learning me all clinical skills that's were helpful in clinical practice and enormous efforts, supportive suggestions, standing beside me and helping me at any time.*

I would also like to thank **Prof. Dr. Rokia Abd-El Shafy,** *Professor of Biological Anthropology, and National Research Centre for being a main part of this thesis team.*

Many thanks and appreciation to all neonatal parents who have been convinced of the value of this study and approved to join it.

Mai Mohsen Badiaa Hassen

Abstract

Background: Neonatal septicemia causes significant morbidity and mortality. Early accurate diagnosis and treatment are fundamental. Presepsin and serum amyloid-A (SAA) biomarkers could be two of the earliest markers that aid in the diagnosis of sepsis. **Aim: To i**nvestigate the role of presepsin and SAA as simple applicable tests for early prediction and diagnosis of neonatal sepsis and to correlate between both presepsin and SAA, in one hand, and total leukocytic count, immature/total leukocyte ratio, CRP and blood culture, on another hand. **Patients and Methods:** Case control study comprising 90 neonates with gestational age ≥36 weeks; 60 pediatrics and 30 controls. Presepsin, SAA, total leukocytic count, immature/total leukocyte ratio, CRP and blood culture were measured during first and third days of admission for patients while were measured once on admission for controls. **Results:** Mean serum presepsin and SAA levels were not only significantly higher but also detected earlier in patients than controls. Presepsin was the most sensitive (93.3%) followed by SAA and lastly CRP (85.0%). With regard to specificity; presepsin and SAA came first, equally, by (100%) then CRP (86.7 %). As regard to positive predictive value of the markers presepsin and SAA came first equally by (100%) then CRP (92.7 %). Finally, presepsin had the highest negative predictive value (88.2%) followed by SAA (85.7 %) compared to CRP (74.3 %). **Conclusion:** Presepsin and SAA are accurate, highly sensitive and specific markers either for prediction or diagnosis of early onset sepsis in contrast to CRP or hematological scoring system (HSS).

Keywords: Neonatal sepsis, Presepsin, Amyloid A

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List of Abbreviations

AAP	**:**	American Academy of Pediatrics
AGA	**:**	Appropriate-for-gestational age
APRs	**:**	Acute-phase reactants
AUC	**:**	Area Under the Curve
AUC	**:**	Area under curve
BMI	**:**	Body mass index
BPD	**:**	Broncho-pulmonary dysplasia BPD
BS	**:**	Biceps
BSF	**:**	Estimate of Body Surface
BSF	**:**	Body surface
BW	**:**	Birth weight
CDC	**:**	Center for Disease Control
CHL	**:**	Crown-heel length
CoNS	**:**	Coagulase negative Staphylococci
CRP	**:**	C reactive protein
CS	**:**	Caesarean section
CSFs	**:**	Colony stimulating factors
CVC	**:**	central venous catheters
DEMPU	**:**	Diabetes Endocrine and Metabolism Pediatric Unit
EMR	**:**	Eastern Mediterranean region
EOS	**:**	Early-onset sepsis
FFM	**:**	Fat-free mass

GA	**:**	Gestational age
GBS	**:**	Group B streptococcus GBS
G-CSF	**:**	Granulocyte colony stimulating factor
GIT	**:**	Gastrointestinal tract
GM-CSF	**:**	Granulocyte macrophage colony stimulating factor
HC	**:**	Head Circumference
HDL	**:**	High Density Lipoprotein
HRC	**:**	abnormal HR characteristics
HSS	**:**	Hematological Scoring System
HSS	**:**	Hematological sepsis score
I/T	**:**	Immature/Total
IL-1b	**:**	Interleukin- 1b
IMCI	**:**	Integrated Management of Childhood Illness
IUGR	**:**	Intrauterine growth restriction
IVIG	**:**	Intravenous immunoglobulin
LBW	**:**	Low birth weight
LCAT	**:**	Lecithin cholesterol acyl transferase
LGA	**:**	Large-for-gestational age
LOS	**:**	Late-onset sepsis
LP	**:**	Lumbar puncture
LPBP	**:**	Binding protein
LPS	**:**	Lipopolysaccharides
LT	**:**	Length
MAC	**:**	Mid Arm Circumference

MAC/HC	**:**	Mid-arm circumference/head circumference index
MDG4	**:**	Millennium Development Goal
MDR	**:**	Multiple drug resistant
MRSA	**:**	Methicillin Resistant Staphylococcus Aureus
NICU	**:**	Neonatal intensive care unit
NICU	**:**	Neonatal Intensive Care Unit
NM	**:**	Neonatal mortality
NPV	**:**	Negative predictive value
NRN	**:**	Neonatal Research Network
OD	**:**	Optical density
PCT	**:**	Procalcitonin
PGE2	**:**	Prostaglandin E2
PI	**:**	Ponderal index
PLT	**:**	Platelets
PMN	**:**	poly morphonuclear cells
PPV	**:**	Positive predictive value
Presepsin	**:**	Soluble CD14 subtype
pro-ADM	**:**	Proadrenomedullin
pro-ADM	**:**	Proadrenomedullin
PROM	**:**	Prolonged premature rupture of membranes
PROM	**:**	Prolonged rupture of membranes
PSPN	**:**	Human Presepsin
PT	**:**	Prothrombin Time

PTT	**:**	Partial Thromboplastin Time
RDS	**:**	respiratory distress syndrome
ROC	**:**	Receiver Operating Characteristic
SAA	**:**	Serum Amyloid-A
SAA	**:**	Serum Amyloid A
SBS	**:**	Subscapular skinfold
SDG	**:**	Sustainable Development Goals
SGA	**:**	Small-for gestational-age
SIRS	**:**	systemic inflammatory response syndrome
SPS	**:**	Suprailiac
sTREM-1	**:**	Soluble triggering receptor expressed on myeloid cells-1
suPAR	**:**	Soluble urokinase-type plasminogen receptor
suPAR	**:**	Plasminogen activator receptor
SVD	**:**	Spontaneous vaginal delivery
TLC	**:**	Total Leucocytic count
TLR4	**:**	Toll-like receptor 4
TNF	**:**	Tumor necrosis factor
TRACE	**:**	Time-Resolved Amplified Cryptate Emission
TS	**:**	Tricipital skin fold
uPAR	**:**	Urokinase-type plasminogen activator receptor
UTI	**:**	urinary tract infection