بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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MONA MAGHRABY

Faculty of Medicine
Ain Shams University
Intensive care Department

Use of Lactate Clearance as a Predictor of Mortality Rate after Initial Resuscitation in Patient with Severe Sepsis or Septic Shock

Thesis

Submitted for Partial Fulfillment of Master Degree
In Intensive Care

By

Noha Mohammed Abdellah Aboassal
M.B.B.Ch.

Under Supervision of

Prof. Dr. Bassem Boulos Ghobrial
Professor of Anesthesia, Intensive Care and Pain Management
Faculty of Medicine - Ain Shams University

Dr. Sahar Mohamed Talaat
Assistant Professor of Anesthesia, Intensive Care and Pain Management
Faculty of Medicine -Ain Shams University

Dr. Karim Ahmed Sedky
Lecturer of Anesthesia, Intensive Care and Pain Management
Faculty of Medicine -Ain Shams University

Faculty of Medicine
Ain Shams University
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Contents

List of Abbreviations

Abb.	Full term
AIDS	Acquired immunodeficiency syndrome
ALI	Acute lung injury
AMP	Adenosine monophosphate
ATP	Adenosine triphosphate
APACHE	Acute Physiology and Chronic Health Evaluation
aPTT	Activated partial thromboplastin time
ARDS	Acute respiratory distress syndrome
BNP	Brain natiuretic peptide
C 3	Complement 3
C 4	Complement 4
CAP	Community acquired pneumonia
CCP	Calcitonin carboxyl
CD	Cluster of differentiation
CGRP	Calcitonin gene related peptide
CIC	Circulating immune complexes
CNS	Central nervous system
COX	Cyclooxygenase
CRP	C reactive protein
DAMPs	Danger-associated molecular patterns
EGDT	Early goal directed therapy
ESR	Erythrocyte sedimentation rate
ESRD	End stage renal disease
FcRn	Fc receptor

Abb.	Full term
ICU	Intensive care unit
IgG	Immunoglobulin G
IL-6	Interleukin-6
iNOS	Inducible nitric oxide synthase
KD	Dissociation constant
LPS	Lipopolysaccarides
MAC	Membrane attack complex
MAP	Mean arterial pressure
MELD	Model for end stage liver disease
MOF	Multi organ failure
MW	Molecular weight
NO	Nitric oxide
PAM	Peptidylglycine alpha-amidating monooxygenase
PAMPs	Pathogen-associated molecular patterns
PCT	Procalcitonin
CT	Calcitonin
PN	Parenteral nutrition
PPIs	Proton pump inhibitors
RNS	Reactive nitrogen species
ROS	Reactive oxygen species
RRT	Renal replacement therapy
$ScvO_2$	Central venous oxygen saturation
SIRS	Systemic inflammatory response syndrome
SOFA	Sepsis-related Organ Failure assessment

Abb.	Full term
SPSS	Statistical Package for the Social Science
SSC	Surviving sepsis campaign
TLC	Total leucocytic count
TLR	Toll like receptor
TNF	Tumor necrosis factor

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Abstract

Background: Early diagnosis of sepsis is the key for improving the survival. Culture is the diagnostic tool but the microbiological origin of infection is demonstrated in about 2/3rd of cases. Biomarkers have an important place in this process because they can indicate the presence or absence of sepsis and they are also important in evaluating the response to therapy and recovery from sepsis.

Aim of the work: to find a correlation between the lactate clearance and mortality in patients with severe sepsis.

Patients and Methods: The study was conducted on 60 adult critically ill patients of both sexes with severe sepsis, who were admitted to the unit of Critical Care Unit in Ain Shams University Hospital. All participants were subjected to the following: detailed history, full laboratory and radiological investigations to diagnose sepsis including lactate level on presentation (0 hour), after 6 hours and after 24 hours, then lactate clearance is calculated and patients were divided to lactate clearance group and non-clearance group.

Results: The study showed that clearance patients significantly had lower mortality rate, SOFA score, vasopressor therapy duration, ventilation need and hospital stay days than the non-clearance patients.

Conclusion: Lactate is a good marker for predicting mortality and evaluating the initial resuscitation and management of severe sepsis and septic shock.

Key words: lactate clearance, mortality rate, initial resuscitation, sepsis or septic shock.

Introduction

Sepsis is life-threatening organ dysfunction caused by a dysregulated host response to infection **(Singer et al., 2016).** Severe sepsis and septic shock are the biggest cause of mortality in critically ill patients **(Gaieski et al., 2013).** Early identification and appropriate management in the initial hours after sepsis improves outcomes **(Rhodes et al., 2016).**

The Surviving Sepsis Campaign recommends the use of many parameters to assess perfusion in sepsis: mean arterial blood pressure (MAP), urine output, central venous oxygen saturation ($ScvO_2$) and arterial lactate as a resuscitation goal **(Rhodes et al., 2016).**

Biomarkers, biologic molecules that characterize normal or pathogenic processes and can be objectively measured, have been suggested as a means of aiding diagnosis, predicting disease severity and outcome, and monitoring response to therapy. More than 170 such markers have been studied for potential use in septic patients **(Vincent et al., 2011).**

In septic patients, biomarkers should ideally allow the differentiation between infectious and noninfectious causes of inflammation and predict the onset of the clinical