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# بسم الله الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني



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# جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

## قسم

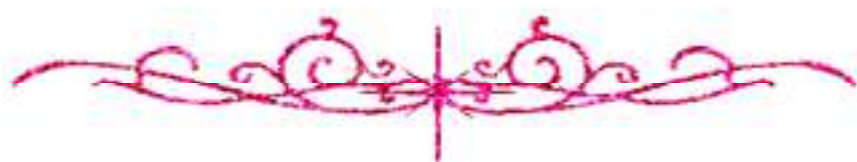
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بعض الوثائق الأصلية تالفة  
وبالرسالة صفحات لم ترد بالأصل





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# **NEONATAL SEPSIS REVIEW ARTICLE, RECENT TRENDS AND CASE PRESENTATION**

*Essay*

*Submitted in Partial Fulfillment for  
M.Sc. In Pediatrics*

*By*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"اقرأ باسم ربك الذي خلق \*

خلق الإنسان من علق \* اقرأ و

ربك الأكرم \* الذي علم بالقلم

\* علم الإنسان ما لم يعلم"

صلى الله عليه وسلم

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## List of abbreviations

Ab :	Antibody
Ag :	Antigen
ARDS :	Acute Respiratory Distress Syndrome.
B. fragilis :	Bacteroid fragilis.
CAH :	Congenital Adrenal Hyperplasia.
CBC :	Complete Blood Count.
CD :	Cluster of Differentiation [leukocytic surface Antigen].
cGRP:	Calcitonin Gene Related Peptide.
CHF :	Congestive heart failure.
c. albicans :	Candida albicans.
c. Jejuni:	Clostridium jejuni.
CONS :	Coagulase Negative Staphylococci.
CRP :	C – Recative Protein.
CSF :	Cerebro Spinal Fluid.
C.T. :	Computerized Tomography.
C. tetani :	Clostridium tetani.
C.T.G. :	Cardiac monitoring by external transducer.
C.V.C :	Central Venous Catheter.
DAT :	Direct Antiglobulin Test.
D.I.C. :	Disseminated Intravascular Coagulopathy.
D.N.A. :	Deoxyribonucleic acid.
E- $\alpha$ - 1-P.I.	Elastase - $\alpha$ - 1 Proteinase Inhibitor.
ECG :	Electrocardiography.
E. coli. :	Escherechia coli.
EMG :	Electromyography.
E.O.S. :	Early Onset – Sepsis.
E.S.R. :	Erythrocyte Sedimentation Rate.
ESBL :	Extended spectrum B Lactamase producing Strains.
5 FC :	5 Flurocytosine.
F.F.P. :	Fresh Frozen Plasma.
FMLP :	Formyl – Methionyl – Leucyl – Phenylalanine.
G – C.S.F:	Granulocyte – colony Stimulating Factor.
GBS :	Group B – Streptococci.
GM- CSF:	Granulocyte Monocyte Colony Stimulating Factor.
Gm +ve :	Gram positive.
Gm –ve :	Gram negative.
G6 PD :	Glucose 6 Phosphate Dehydrogenase.



H.I.V. :	Human Immunodeficiency Virus.
HLA :	Human Leukocytic Antigen.
HLHS :	Hypoplastic Left Heart Syndrome.
HMD :	Hyaline Membrane Disease.
H.P.F. :	High Power Field.
H.S.S. :	Hematological Scoring System.
H.S.V. :	Herpes Simplex Virus.
I.C. hge:	Intra-Cranial Haemorrhage.
I.D.S. :	Incidence Density of Sepsis.
IL – (n) :	Interleukin number (n).
I: M ratio:	Immature : Mature neutrophils ratio.
I : T ratio :	Immature : Total neutrophils ratio.
Igs :	Immunoglobulins.
INF :	Interferone.
I.V.I.G.:	Intravenous Immunoglobulins.
L.A.P.:	Leukocytic Alkaline Phosphatase.
L.B.W. :	Low Birth Weight.
L.monocytogenes:	Listeria monocytogenes.
L.O.S. :	Late Onset Sepsis.
L.P. :	Lumbar Puncture.
L.P.S. :	Lipo Poly Saccharide.
MHC :	Major Histo Competability.
M. hominis :	Mycoplasma hominis.
M.R.I. :	Magnetic Resonance Imaging.
MRSA :	Multi Resistant Staph. Aureus.
mRNA:	messenger RNA.
MODS :	Multiple Organ Dysfunction Syndrome.
NEC :	Necrotizing Entero Colitis.
NICU :	Neonatal Intensive Care Unit.
N.N. Sepsis:	Neonatal Sepsis.
N. O. :	Nitric Oxide.
N.S.P. :	Neutrophil Storage Pool.
PAF :	Platelet Activating Factor.
PAT :	Paroxysmal Atrial Tachycardia.
PCR :	Polymerase Chain Reaction.
PHA :	Phytohaemagglutinin.
PMNs:	Polymorphnuclear leukocytes.
PROM :	Premature Rupture Of Membranes.
R.D.S.:	Respiratory Distress Syndrome.
rh-G- CSF :	recombinant human G- C.S.F.



<b>RNA :</b>	Ribonucleic acid.
<b>R.S.V. :</b>	Respiratory syncytial Virus.
<b>S. agalactiae:</b>	Streptococcus aglactiae.
<b>S. aureus. :</b>	Staphylococcus aureus.
<b>S. epidermidis :</b>	Staphylococcus epidermidis.
<b>SICAM :</b>	Surface Inter cellular Adhesion Molecule.
<b>SGF :</b>	Stem cell Growth Factor.
<b>SIRS :</b>	Systemic Inflammatory Response Syndrome.
<b>SOD :</b>	Super Oxide Dimutase.
<b>S.V.T. :</b>	Supraventricular Tachycardia.
<b>Tc:</b>	T. Cytotoxic lymphocyte.
<b>TEG :</b>	Thrombo – Elasto – Graphy.
<b>TGF – B. :</b>	Transforming Growth Factor B.
<b>TH :</b>	T- Helper lymphocytes.
<b>T.L.C. :</b>	Total leukocytic Count.
<b>T. Pallidum :</b>	Treponema Pallidum.
<b>TNF :</b>	Tumour Necrosis Factor.
<b>T.T.N. :</b>	Transient Tachypnea of the Newborn.
<b>U.T.I. :</b>	Urinary Tract Infection.
<b>VISA :</b>	Vancomycin Insensitive Staph. Aureus.
<b>VRE :</b>	Vancomycin Resistant. Enterococci.

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## **INTRODUCTION AND AIM OF THE WORK**

One of the biggest challenges in caring for neonates is identifying which one is septic. The neonate is defined as an infant younger than 28 days, because of poor immune response to infectious organisms, the neonate may appear to hide signs of infection or present ones so vague that sepsis might be overlooked until the infant is in a seriously compromised condition (*Kathy, 1998*).

Rule out sepsis may be the most common discharge diagnosis among infants admitted to the neonatal intensive care unit (*Escobar, 1999*).

Despite neonatal sepsis was recognized longtime ago however, there is still disagreement about the proper definition of N.N. sepsis (*Gotoff, 2000*).

The aim of this work is to review lectures papers written about neonatal sepsis, showing the recent trends in diagnosis and management of this serious medical problem. The study also contained 10 cases presented from Benha University hospital neonatal intensive care unit.

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# NEONATAL SEPSIS

## Definition:

Neonatal sepsis, sepsis neonatorum, & N.N. septicemia are terms that have been used to describe the systemic response to infection in newborn infants. There is a little agreement on the proper use of the term that is whether it should be restricted to bacterial infections, +ve blood cultures, or severity of illness (*Gotoff, 2000*).

The differentiation of sepsis & infection may become important because new modalities of therapy directed at the mediators of sepsis in addition to the microorganisms, are already in clinical trials (*Ziegler et al., 1991*).

Odio define N.N. sepsis as, a clinical syndrome ch. ch. by systemic signs & symptoms & bacteremia during the 1<sup>st</sup> month of life (*Odio, 1995*).

While *Zimmerman and Taylor* gave the following definition sepsis the inflammatory response to infection (*Zimmerman and Taylor, 1997*).

*Suffrediui* define sepsis as a subset of SIRS (systemic inflammatory response) is the culmination of a series of events initiated by microorganisms (and their protein or lipid products) and mediated by the hosts own immune system (*Suffrediui, 1994*).



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In the past *McCracken* use the term only for cases with the blood cultures N.N. sepsis is a disease of infants who are less than one month of age, are critically ill, and have +ve blood culture the presence of clinical manifestation distinguishes this condition from the transient bacteremia observed in some healthy neonates (*McCracken, 1981*).

N.N. septicemia is defined as a generalized bacterial symptomatic infection in 1<sup>st</sup> 28 days of life, verified by a +ve blood culture (*Ohlsson et al., 1986*).

Another author used the term according the clinical condition of the patient N.N. sepsis is a clinical syndrome resulting from the pathophysiologic effect of local or systemic infection in 1<sup>st</sup> month of life (*Dobson and Baker, 1990*).

However, disagreement about definition of sepsis is an old issue in neonatology in 1949 *Silverman and Homan* summarize the differences in defining sepsis.

“The generic term “sepsis of the newborn” has been used to describe three overlapping pathologic states in the newborn. First, the most inclusive use of the term refers to toxic states of any cause whatever, most of them related to some infectious process but a certain proportion probably independent of infection. Second, a more restricted use of the term includes all infectious processes occurring during the newborn period accompanied by a positive blood culture. Since the newborn period by definition comprises the first month of life, there is ample opportunity, especially in the latter part of this time interval, for an infant to acquire an infection with bacteremia in a manner similar to that