SEPSIS NEONATORUM

Essay

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By

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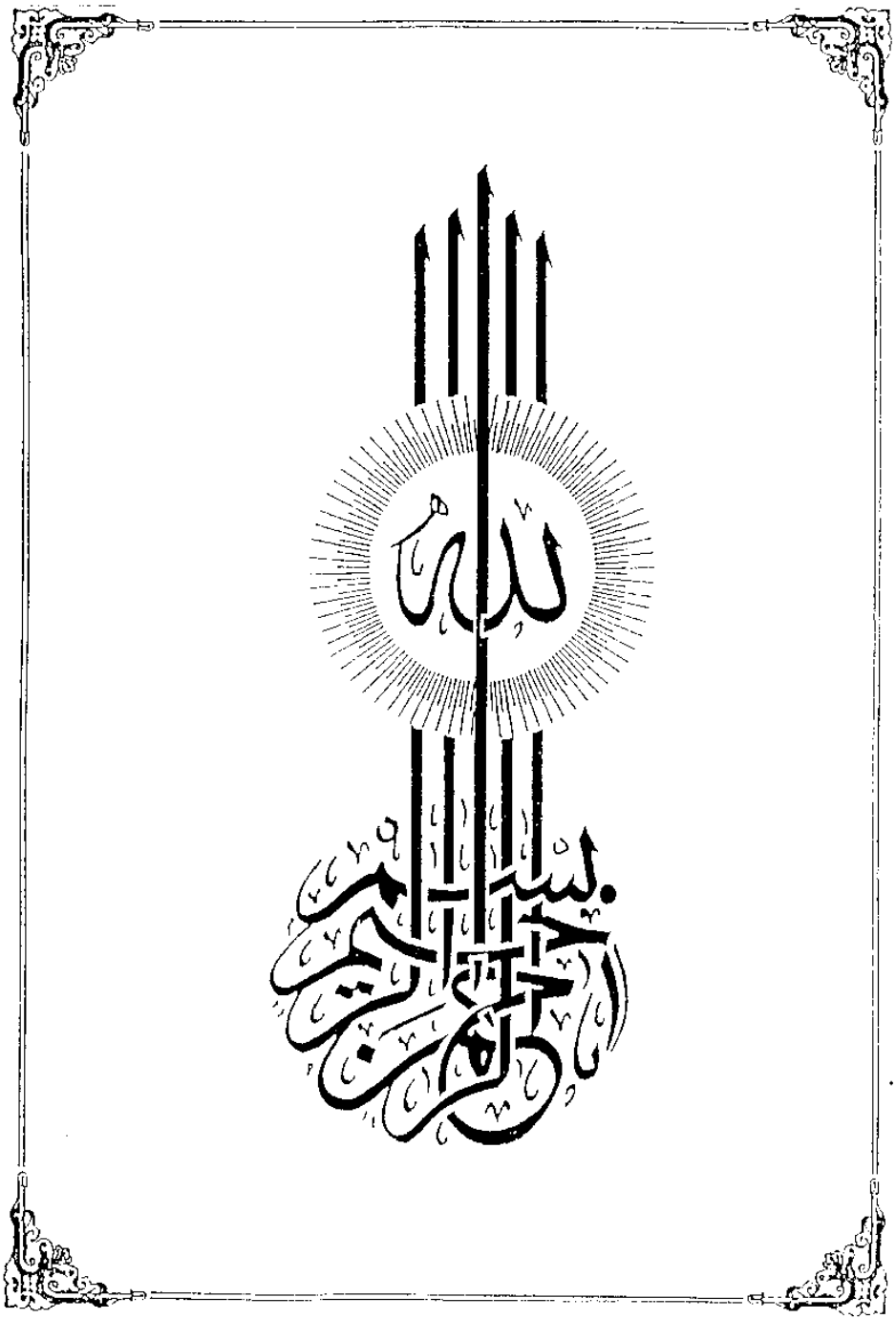

To my Family

LIST OF ABBREVIATIONS

ADCC	: Antibody - dependent cellular cytotoxicity.
CIE	: Countercurrent immune electrophoresis.
CMV	: Cytomegalo virus.
CRP	: C-reactive protein.
CSF	: Cerebrospinal fluid.
DIC	: Disseminated intravascular coagulation.
EEG	: Electroencephalogram.
ELISAs	: Enzyme linked immune sorbent assays.
ESR	: Erythrocyte sedimentation rate.
FMLP	: N-formyl- methionyl-leucyl - phenylalanine.
GBS	: Group B streptococcus.
HISG	: Human immune serum globulin.
HIV	: Human immune deficiency virus.
HLA	: Human leucocyte antigen.
IgA	: Immunoglobulin A
IgD	: Immunoglobulin D
IgE	: Immunoglobulin E
IgG	: Immunoglobulin G.
IgM	: Immunoglobulin M
I.M.	: Intramuscular.
ISG	: Immune serum globulin.
I.V.	: Intravenous.
IVIG	: Intravenous immunoglobulin.
LP	: Lumbar puncture.
MHC	: Major histocompatibility complex.

MRSA : Methicillin - resistant staphylococcus aureus.

NBT : Nitro - blue tetrazolium.

NICU : Neonatal intensive care unit.

NK : Natural killer.

PMNL : Polymorphonuclear leukocytes.

RDS : Respiratory distress syndrome.

RSV : Respiratory syncytial virus.

SPA : Suprapubic aspiration.

T_H : T-helper cell.

THAM : Tri - hydroxy methyl aminomethane.

TTN : Transient tachypnoea of the newborn.

UAC : Umbilical artery catheter.

UTI : Urinary tract infection.

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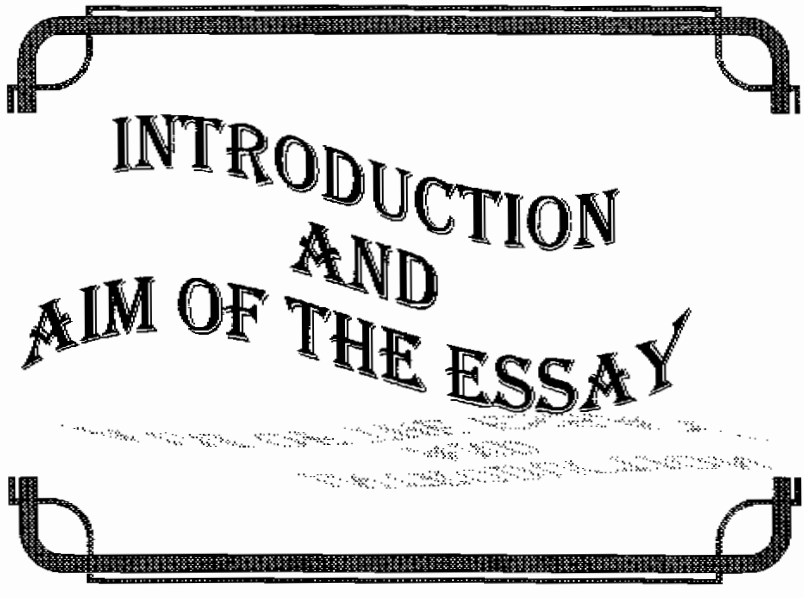

INTRODUCTION
AND
AIM OF THE ESSAY

INTRODUCTION AND AIM OF THE ESSAY

Sepsis neonatorum is a bacterial disease of infants during the first month of life which involves primarily the bloodstream, although spread to the meninges or other organs occurs in a substantial portion of affected infants. No obvious focus of infection of blood stream can be found in most cases. The presence of clinical manifestations distinguishes this condition from the transient bacteraemia observed in some healthy neonates ***(McCraken, 1981).***

Sepsis neonatorum is an uncommon condition in newborn infants especially the low birth weight infants. It is common in the hospital deliveries especially those who are cared for in newborn units for a long time and need incubator care ***(Hervas et al., 1993).***

The incidence of sepsis neonatorum ranges from one to four cases per 1000 live births, approximately one per 1000 live births for full term infants and four per 1000 live births for premature infants ***(McIntosh, 1984).***

The early and efficient diagnosis of neonatal sepsis in high risk newborn infants remains a difficult task. If treatment is delayed till symptoms and signs of sepsis become obvious, the risk of preventable mortality would be brought up ***(Weisman et al., 1992).***

Treatment of neonates with antibiotics presumptively on the basis of risk factors alone, is unlikely to result in over treatment ***(Jeffery et al., 1987).***

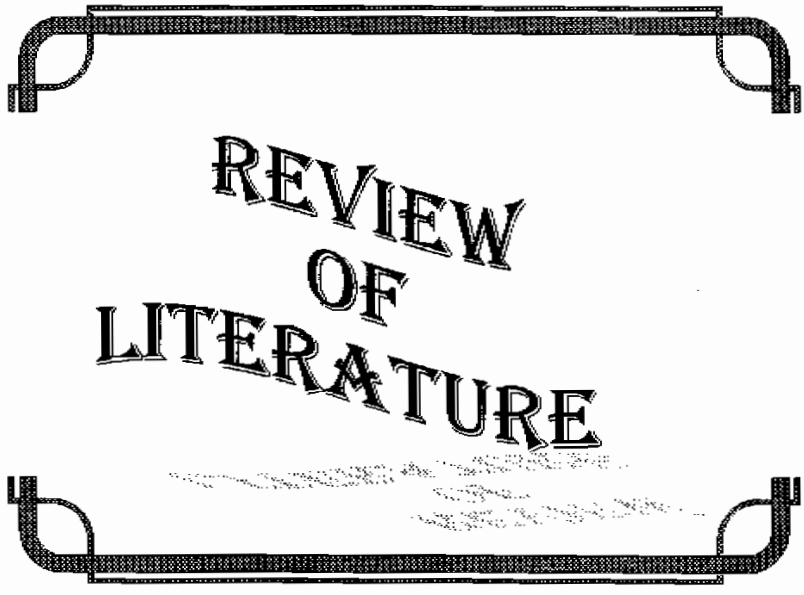
No single presumptive test including, white blood cell count, C - reactive protein, erythrocyte sedimentation rate, alpha-1 acid glycoprotein

or serum haptoglobin has proved sufficient to identify the newborn infant with early onset sepsis ***(Rodwell et al., 1988).***

Aim of the Essay :

Our aim is to write a review about sepsis neonatorum. Our essay will include :

- Etiology.
- Pathogenesis and predisposing factors.
- Clinical manifestations.
- Investigations.
- Treatment :
    * Antimicrobials.
    * Supportive therapy.
    * New modalities of treatment.
- Prevention.


REVIEW
OF
LITERATURE

ETIOLOGY

The syndrome of neonatal sepsis is caused by bacteria, viruses, fungi, or protozoa.

Our essay is going to deal with bacterial sepsis.

Bacteria :

The predominant bacterial causes of sepsis have changed over time and may vary from hospital to hospital ***(Gladstone et al., 1990).***

The micro-organisms causing early - onset sepsis, which is defined as sepsis within 7 days of birth, and those causing late - onset sepsis in babies on the neonatal unit are shown in Tables (1) and (2), respectively ***(Isaacs and Moxon, 1996 a).***

Table (1): Early-onset sepsis : cases of septicaemia or meningitis in the first 7 days after birth; Neonatal unit, Oxford 1984 -1989

Organism	Cases	Deaths
Group B streptococcus	19 (4) a	7 (2)
Listeria monocytogenes	8 (1)	1
Gram - negative bacilli (mainly E.coli)	6 (1)	1
Streptococcus pneumoniae	4	2
Haemophilus influenzae	3	1
Staphylococcus epidermidis	1	0
Total	41	12

a : Numbers in parentheses are cases of bacterial meningitis.

All serotypes of group B streptococci (GBS) and Escherichia coli account for approximately 75% of early onset sepsis.

The less virulent organisms such as coagulase negative staphylococci, α-haemolytic streptococci, and Haemophilus species have been repeatedly incriminated as neonatal pathogens and may produce sepsis ***(Zuerlein et al., 1990).***

Staphylococcus epidermidis, Gram - negative bacilli and faecal streptococci are the main causes of late - onset sepsis. Some organisms, such as group B streptococci and Listeria, can cause both early and late - onset sepsis but in these cases the clinical picture and pathogenesis are different ***(Isaacs and Moxon, 1996 a).***

Table (2): Late - onset sepsis : Organisms isolated from 77 cases of septicaemia or meningitis after 7 days of age; Neonatal unit, Oxford 1984 - 1989.

Organism	Cases
Staphylococcus epidermidis	23
Enterococci	16
Klebsiella oxytoca	16
Pseudomonas auerogenosa	12
Escherichia coli	8
Other Gram - negative bacilli	8
Staphylococcus aureus	3
Total	86

Coagulase - negative staphlococci are the major cause of nosocomial infections in children and account for 31% of all nosocomial infections in NICU patients ***(Jarvis et al., 1985).***