Nosocomial Infections in the Neonatal Intensive Care Unit of Obstetrics and Gynecology Hospital, Ain Shams University: Incidence and Risk Factors

Thesis

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in Pediatrics

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List of Abbreviations

AAP ····· American Academy of Pediatrics
ALT ····· Alanine transaminare
APIC ····· Association for professionals in infection
APIC ····· Association for Professionals in Infection Control and Epidemiology
AST ····· Asparte transaminare
BPD ····· Bronchopulmonary dysplasia
BUN ····· Blood urea nitrogen
BW ····· Birth weight
CBC ····· Complete blood count
CDC ····· Centers for disease central
CHG ····· Chlarhexidine gluconate
CMV ····· Cytomegalovirus
CNS ····· Central nervous system
CONS ····· Coagulare-negative staphylococci
CS ····· Cesarean section
CSF ····· Cerebrospinal fluid
CT ····· Computed tomography
ELBW ····· Extremely low birth weight
EOS ····· Early onset sepsis
FFP ····· Fresh frozen plasma
GA ····· Gestational age
GBS ····· Group B streptococci
G-CSF ····· Granulocyte colony stimulating factor
GIT ····· Gastrointestinal tract
Gm-CSF ····· Granulocyte macrophage colony stimulating factor
HAIs ····· Hospital acquired infections
HCWs ····· Healthcare workers
HIV ····· Human immunodeficiency virus
HWS ····· Hand wash scoring

List of Abbreviations (Cont.)

IgA ····· Immunoglobulin-A
IgE ····· Immunoglobulin-E
IgG ····· Immunoglobulin-6
IgM ····· Immunoglobulin M
IVIG ····· Intravenous immunoglobulin
LOS ····· Late onset sepsis
LP ····· Lumbar puncture
MPV ····· Mean platelet volume
MRSA ····· Methicillin-resistant staphylococcus aureus
NBT ····· Nitroblue tetrazalium
NEC ····· Nectrotiging enterocalitis
NICU ····· Neonatal intensive care unit
NIs ····· Nosocomial infections
NK ····· Natural killer
PCR ····· Polymerase chain reaction
PDW ····· Platelet distribution width
PMN ····· Polymorphonuclear
PPHN ····· Persistent pulmonary hypertension of the newborn
PROM ····· Premature rupture of membrane
PT ····· Prothrombin time
PTT ····· Partial thromboplastin time
RDS ····· Respiratory distress syndrome
RSV ····· Respiratory syncytial virus
TPN ····· Total parentral nutrition
U/S ····· Ultrasonography
UTI ····· Urinary tract infection
V.D. ····· Vaginal delivery
VLBL ····· Very low birth weight
VRE ····· Vancomycin resistant enterococci
WBC ····· White blood cell

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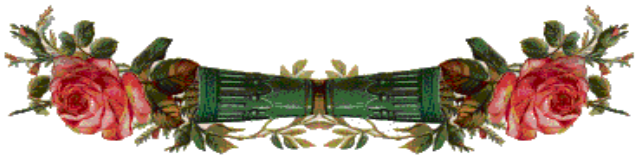
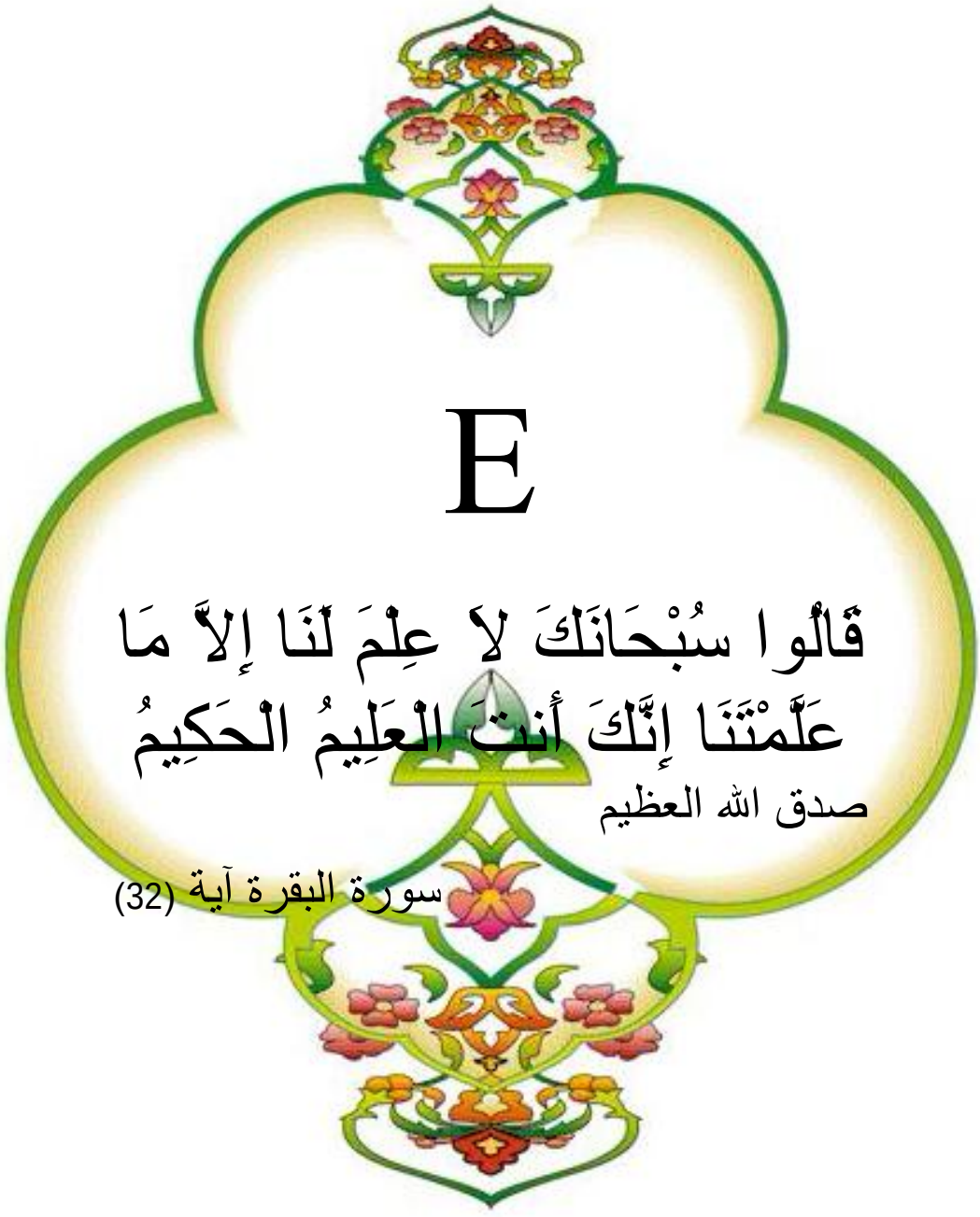
2007





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قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا
عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

سورة البقرة آية (32)

Introduction

To define a single infection we will use the same criteria described in the previous multicenter studies conducted in Italy, and the recommendations of the Center for Disease Control (CDC), Atlanta ***(Stolfi et al., 1999 and Garner et al., 1988)***. Occurrence of positive symptoms and cultures within 48 hrs after birth was defined as infections transmitted vertically from the mother to the fetus or the newborn (perinatal infections). Infections that are manifested with suggestive clinical symptoms and/or positive culture 48 hrs after birth or more were defined as infections acquired by horizontal transmission. In these latter cases, if the patient has positive symptoms and/or bacteriologic cultures at least 48 hrs after admission to the Neonatal Intensive Care Unit (NICU), the infections is defined as Hospital Acquired Infections (HAIs) or Nosocomial Infections (NIs). When a horizontal infection develops within 48 hrs of admission to the NICU, it is defined as infection acquired at home or in an another hospital. The rate of nosocomial infections varies from one **NICU** to another ***(Craft et al., 2001 and Zafar et al., 2001)*** according to many factors. The risk factors ***(Gotoff, 2004 and Yancey et al., 1996)*** for nosocomial infections in NICU include: neonatal factors such as (prematurity, low birth weight, resuscitation at birth particularly with the use of endotracheal intubation and umbilical vessel catheterization, presence of coexisting diseases, congenital defects such as meningo-myelocele, prolonged use of broad spectrum antibiotics, and

presence of congenital immune defects or asplenia), maternal factors such as difficult or traumatic delivery, and personnel and equipment factors such as (doctors and nurses risk factors, improper hand washing techniques, the use of mechanical ventilators, oro/nasogastric tubes, central venous catheters, and umbilical catheters).

Aim of the Work

The aim of this study is to determine the incidence rate and the risk factors associated with the development of nosocomial infections in the neonatal intensive care unit of Obstetrics and Gynecology Hospital, Ain Shams University.

Nosocomial Infections

Definitions:

(1) The problem of acquired infection in the NICU is an ongoing concern for neonatologists and other caregivers. Definitions have been established by the Centers for Disease Control and Prevention. These require a positive culture at more than 48 h of life and/or clinical signs or symptoms of infection. Such infections cause increased mortality and morbidity, such as necrotizing enterocolitis (NEC) and bronchopulmonary dysplasia, and increase hospital costs ***(Suara et al., 2000)***.

(2) The United States Department of health and Human Services Centers for Disease Control and Prevention defines nosocomial infection as an infection during hospitalization that was not present or incubating at the time of admission ***(Lopez et al., 2002)***. Most authors describing neonatal infection find it convenient to use the term "early-onset" and "late-onset" infection. Early-onset infections are confirmed infections in the first three days of life, whereas late-onset infections occur after the third day. Nosocomial infection is equivalent to late-onset, or infection after the first 72 hours of life ***(Craft and Finer, 2001)***.