REVIEW OF LITERATURE ON « NEONATAL EMERGENCIES »

A THESIS

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By

NAGWA FATHI HAMDI

M.B., B. Ch.

SUPERVISED By :
ASSISTANT PROFESSOR :
DR. SAWSAN AMIN EL-SOKKARY
ASSISTANT PROFESSOR OF PEDIATRICS,
FACULTY OF MEDICINE,
AIN SHAMS UNIVERSITY.

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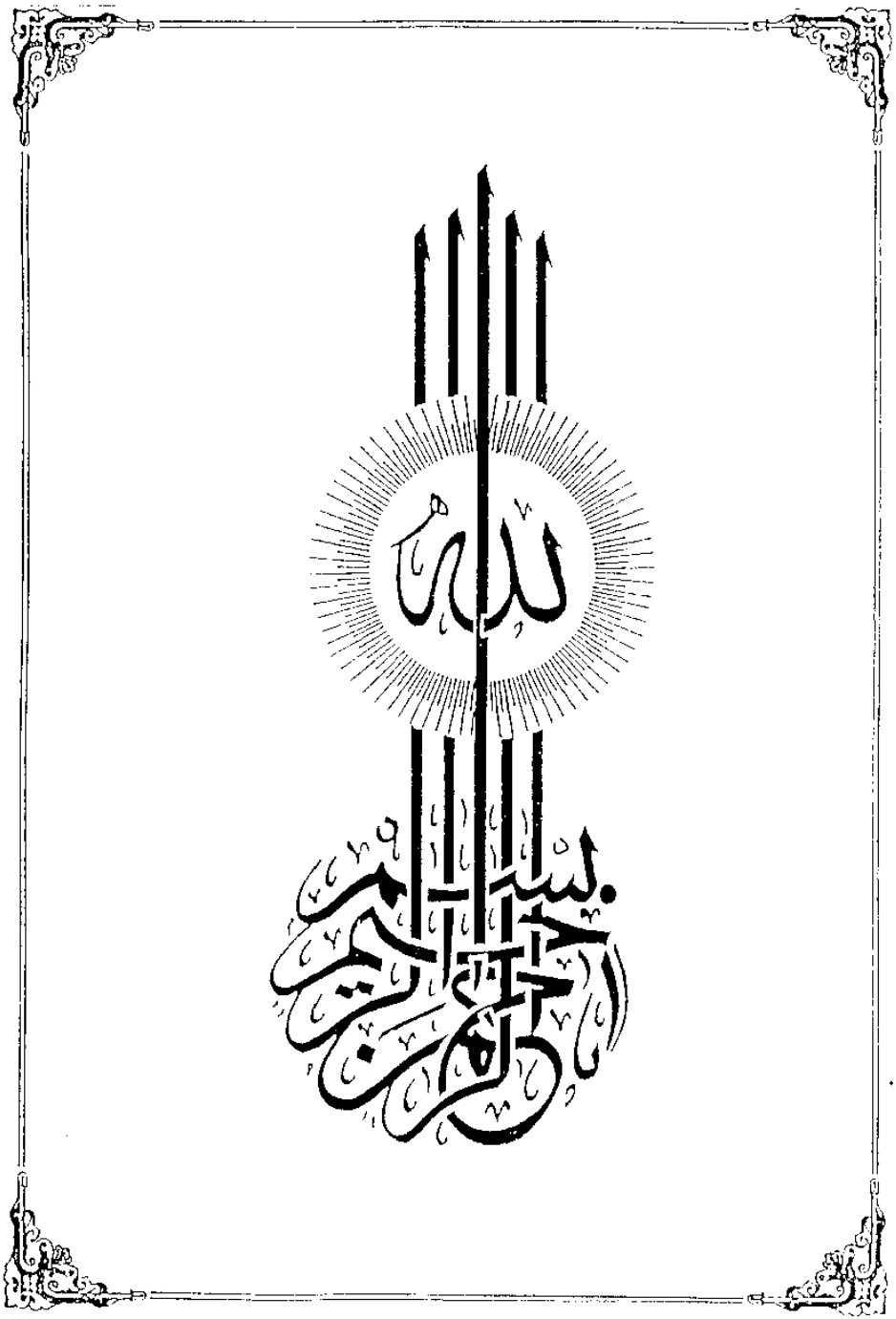

CONTENTS

INTRODUCTION	1
AIM OF THE REVIEW	3
RESPIRATORY EMERGENCIES	4
- Asphyxia and resuscitation	6
- Idiopathic Respiratory distress syndrome	13
- Partial Upper airway obstruction	19
- Congenital lobar emphysema	19
- Congenital cystic disease of the lung	20
- Pneumonia	20
- Pneumothorax	21
- Aspiration syndrome	23
- Transient tachypnea of the newborn	26
- Apneac spells	28
- Stridor	30
- Diaphragmatic hernia	31
- Diaphragmatic paralysis	32
CARDIOVASCULAR EMERGENCIES:	
- Cardiac arrythmia	33
- Congestive heart failure	35
- Neonatal shock	37
- Patent ductus arteriosus	40
METABOLIC EMERGENCIES:	
- Hypoglycemia	42
- Hypocalcemia and hypomagnesemia	45
- Pyridoxine dependency	48
- Hyperbilirubinemia	49
- Bilirubin encephalopathy	51

NEUROLOGIC EMERGENCIES

- Neonatal seizures 53
- Intracranial hemorrhage 63
- Hypoxic ischemic encephalopathy 67

GASTROINTESTINAL EMERGENCIES 73

- Oesophageal atresia and tracheo-oesophageal fistula. 74
- Intestinal obstruction 75
- Gastric volvulus 78
- Meconium ileus 80
- Meconium plug syndrome 81
- Imperforate anus 83
- Necrotizing enterocolitus 85
- Exomphalos and Gastroschisis 89
- Testicular Torsion 90

NEONATAL INFECTIONS

- Sepsis neonatorum 91
- Neonatal meningitis 98

HEMATOLOGIC EMERGENCIES

- Bleeding in the newborn 102
- Haemolytic disease of the newborn 106
- Neonatal polycythemia 107

SUMMARY AND CONCLUSION 109

REFERENCES 113

INTRODUCTION

INTRODUCTION

The "Perinatal period" is the period from the twelfth week of gestation through the twenty eight day after birth.

The "Neonatal period" is defined as the first four weeks of life (Behrman 1977). It is the period with the highest mortality during childhood and has its peak during the first 24-hours of life. Most frequently due to complications of pregnancy, labour, and delivery.

The high mortality and morbidity during this period is closely related to the fact that the neonatal period is partly a continuation of the fetal growth and development. Factors acting during gestation and delivery, as well as during the immediate postnatal period, have a major impact on the health of the newborn.

The high incidence of disease during the neonatal period and the excessive neonatal and perinatal death rates make it important to identify as early as possible those fetuses and infants who are at greatest risk. It is necessary to consider the active measures which may help to lower the mortality and the morbidity particularly for handicapped conditions such as mental retardation, cerebral palsy, sensory and cognotive disabilities. However, there is strong evidence that the early recognition of the high-risk pregnancy and the high-risk neonate together with the proper antenatal and intrapartum management along with the intensive neonatal care will help to reduce both the perinatal and neonatal mortality rates (Babson et al., 1975). Since a major portion of the perinatal mortality is related to maternal complications during pregnancy, labour and delivery, so in considering these factors it is of fundemental importance to be aware of those conditions that may cause a high-risk pregnancy.

Most infants are able to cope with the asphyxiating events of normal delivery. The physiological changes that occur at birth are usually affected with little if any difficulty; unfortunately some newborns may need help. Many neonatal physical signs are of great importance and suggestive of illness viz. dyspnea, cyanosis, jaundice, convulsions, abdominal distension, vomiting, etc. (Korones, 1980).

Depending on fetal growth rate and length of gestation, newborn infants may be mature or premature; small, large, or average for gestational age. Since several postnatal disorders depend on the birth weight gestational age relationships, they can be more easily recognised if the significance of abnormal fetal growth is appreciated. (Lubchenco, 1975).

Aim of the Study

This study provides an overview on the approach to the diagnosis and management of the emergency conditions faced with in the neonatal period based on the patho-physiology of these conditions and their predisposing factors. It throws light on the new concepts for the diagnosis and management of some of these critical situations to help the newborn infant to overcome his diseased state.

RESPIRATORY EMERGENCIES

Respiratory Emergencies

Observations on human fetuses in utero have shown that as much as eighty percent of a twenty-four hour period is occupied by fetal respiratory movements. These respiratory movements are phasic and interrupted by periods of rest (Boddy et al., 1973).

Thus strictly speaking the first breath is but a continuum of respiratory activity begun in utero. The major change is that respiration becomes continuous and not interrupted by periods of apnea. Dramatic changes and adjustments occur with the onset of respiration immediately after birth. The main obstacle to the survival of a newborn is an unsatisfactory adaptation of the cardiopulmonary functions. The newborn infant may have to face a number of difficult situations which can interfere with the onset and maintenance of respiration. Some of these difficulties may be encountered during the labour and delivery while others appear later within the next few hours after birth. (Behrmann, 1977). Pulmonary disorders are the main causes of death in the neonatal period. Five to ten percent of the newborn infants have some respiratory difficulties in the form of respiratory distress, the incidence being inversely related to the maturity of the newborn (Stern, 1972).

Some of the most common and life-threatening respiratory emergencies which are liable to endanger the intact survival of the newborn infant will be discussed.

A differential diagnosis of respiratory distress according to Boyle and Oh in 1978 is:

(A) Pulmonary causes of respiratory distress:

I. Asphyxia Neonatorum

II. Developmental:

a) Idiopathic respiratory distress syndrome
b) Choanal atresia
c) Congenital lobar emphysema
d) Congenital cystic disease of the lung
e) Congenital hypoplastic lungs (Potter's syndrome)
f) Laryngeo tracheomalacia

III. Infections:

a) Congenital viral or bacterial pneumonia
b) Early onset neonatal sepsis

IV. Aspiration Syndrome

V. Air leaks

Pneumothorax, pneumo mediastinum and pulmonary interstitial emphysema.

VI. Other pulmonary causes of respiratory distress

a) Transient tachypnea of the newborn
b) Apneac spells
c) Pulmonary hemorrhage
d) Congenital lymphangiectasia
e) Stridor

(B) Extrapulmonary causes

a) Congenital heart disease
b) Tracheo-oesophageal fistula
c) Diaphragmatic hernia and diaphragmatic paralysis
d) Cerebral edema
   Intracranial hemorrhage
e) Acidosis
   Hypoglycemia
   Hypothermia
f) Maternal medication
g) Myasthenia gravis
   Phrenic nerve palsy

The common conditions which affect the newborn and are met with frequently in clinical practice will be discussed.

Birth Asphyxia and Resuscitation

The term neonatal asphyxia is used to indicate the failure of the newborn infant to establish spontaneous respiration immediately after delivery. Mulligan et al., in 1980 defined birth asphyxia as a delay of more than one minute in onset of spontaneous respiration at birth. There are many opportunities throughout the birth process for the development of fetal asphyxia and later asphyxia of the newborn following delivery.

Asphyxia contributes greatly to perinatal and neonatal mortality and morbidity. Fetal asphyxia appeared to be the commonest single cause of death in the British Perinatal Mortality Survey undertaken in 1958.

Aetiology:

Birth asphyxia may take the form of failure to breath, failure to expand the lungs, or both. Initial failure to breath is more common than initial failure to expand the lungs, although it is obvious that one will lead to the other. In the great majority of cases the causes of neonatal asphyxia have been operating before birth. Commonly asphyxia may be caused by other conditions operating during the birth process itself. Infrequently it may appear for the first time after birth.

Accidental or iatrogenic blood loss during birth and the early neonatal period is more common than is generally realized, and such acute blood loss can interfere with early neonatal adaptation. Bleeding may have occurred into the mother's circulation (feto-maternal), into the uterus, into the placeuta or into a twin if there is no evidence of external blood loss at birth. Internal hemorrhage into the lungs, abdomen or skull, is an important cause of progressive anemia leading to shock after delivery.

Intra uterine growth retardation is associated with a higher incidence of asphyxia of both term and preterm infants (Mac Donald, 1980). Death from hyaline membrane disease is inversely proportional to gestational age at birth, and intrapartum asphyxia is widely believed to increase the risk of a preterm baby developing respiratory distress. Thus there is increase in the incidence of asphyxia with decreasing