

SPOTLIGHT ON DIFFERENT CAUSES OF RESPIRATORY DISTRESS IN INFANTS OF DIABETIC MOTHERS



Thesis

Submitted for partial fulfillment of
Master Degree in Pediatrics

618.9201
Z. I

By

Zeinab Ibrahim Ibrahim Ali
(M.B., B.Ch)

54012

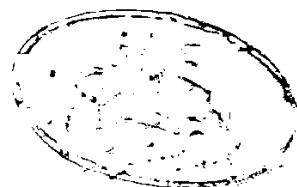
Under the supervision of

PROF.DR. MONA ABD EL-KADER SALEM
Professor of Pediatrics
Faculty of Medicine, Ain Shams University

DR. MONA MOUSTAFA EL-GANZOURY
Lecturer in Pediatrics
Faculty of Medicine, Ain Shams University

DR. HODA MOHAMMED EL-GINDI
Lecturer in Clinical Pathology
Faculty of Medicine, Ain Shams University

FACULTY OF MEDICINE
AIN SHAMS UNIVERSITY
1996







« قُلْ زِدْنِي عِلْمًا »

« صدره الشراء العظيم »

سورة طه : آية (١١٤)

ACKNOWLEDGEMENT

Thanks forever to God who supplies us with power to overcome problems.

I would like to express my deep gratitude and appreciation to Prof. Dr. Mona A.K. Salem, Professor of Pediatrics, Faculty of Medicine, Ain Shams University, for her great help, meticulous supervision, continuous guidance and encouragement as well as her moral support throughout the whole work.

I am indebted to Dr. Mona M. El-Ganzoury, Lecturer in Pediatrics, Faculty of Medicine, Ain Shams University as a supervisor of this work. I am deeply thankful to her, for her great help and kind advice.

I am also indebted to Dr. Hoda M. El-Gendy, Lecturer in Clinical Pathology, Faculty of Medicine, Ain Shams University for generous help, kind advice and efforts that were devoted by her for the supervision of this work.

In a few grateful words, I would like to express my greatest thanks to Dr. Omayma Hussein, Dr. Gohaier Kamal, Dr. Waleed Maamon and all my dear colleagues and nursing staff in the NICU, Ain Shams University for their continuous cooperation. Their favour is unforgettable.

ABBREVIATIONS

ADP	=	Adenosine diphosphate
ALEC	=	Artificial lung-expanding compound
cAMP	=	Cyclic adenosine monophosphate.
CLSE	=	Calf lung surfactant extract.
CNS	=	Central nervous system.
COP	=	Cardiac output.
CPAP	=	Continuous positive airway pressure.
CS	=	Cesarean section.
CVS	=	Cardiovascular system
DM	=	Diabetes mellitus
2,3 DPG	=	2,3, Diphosphoglycerate.
DPPC	=	Dipalmitoyl phosphatidyl choline.
EGF	=	Epithelial growth factor.
FNF	=	Fibroblast pneumocyte factor
GDM	=	Gestational diabetes mellitus.
HbA	=	Glycosylated hemoglobin.
HbA1c	=	Glycosylated hemoglobin fraction c.
HIV	=	Human immunodeficiency virus.
HMD	=	Hyaline membrane disease.
HPL	=	Human placental lactogen.
ICH	=	Intracranial hemorrhage.
IDDM	=	Insulin dependant diabetes mellitus.
IDM	=	Infant of diabetic mother
IGFI	=	Insulin growth factor I.
IGFII	=	Insulin growth factor II.
IPPV	=	Intermittent positive pressure ventilation
IUGR	=	Intrauterine growth retardation
IUFD	=	Intrauterine fetal death
LGA	=	Large for gestational age
L/S	=	Lecithin to sphingomyelin ratio
MA	=	Meconium aspiration
MgSO4	=	Magnesium sulphate

PA	=	Perinatal asphyxia
PaO ₂	=	Partial pressure of O ₂ (or arterial O ₂ tension).
PaCO ₂	=	Partial pressure of CO ₂ .
PC	=	Phosphotidyl choline.
PDA	=	Patent ductus arteriosus.
PEEP	=	positive end expiratory pressure.
P50	=	PO ₂ at 50% oxygen saturation.
PG	=	Phosphatidyl glycerol.
PI	=	Ponderal Index.
PIP	=	Positive inspiratory pressure.
PTH	=	Parathyroid hormone.
RD	=	Respiratory distress.
RDS	=	Respiratory distress syndrome.
ROP	=	Retinopathy of prematurity.
SAT	=	Arterial oxygen saturation.
SPC	=	Saturated phosphatidyl choline
T3	=	Tri-iodothyronine.
TIBC	=	Total iron binding capacity.
TNF	=	Tumour necrosis factor

LIST OF TABLES

Table (1):	(7)
White's classification of maternal diabetes.	
Table (2):	(53)
Malformations associated with maternal diabetes and their estimated risk ratio	
Table (3):	(67)
Causes of respiratory distress in IDMs	
Table (4):	(75)
Clinical significance of the results of L/S ratio	
Table (5):	(80)
RDS severity scoring system on radiographs	
Table (6):	(81)
Clinical respiratory distress scoring system (Downes scoring).	
Table (7):	(91)
Surfactant used in clinical studies	
Table (8):	(126)
Scoring of external criteria in Dubowitz score	

Table (9):	(131)
Clinical data of infants of good/fair controlled diabetic mothers (Group I):	
Table (10):	(133)
Clinical data of infants of poorly controlled diabetic mothers (Group II)	
Table (11):	(134)
Clinical data of the control group (Group III):	
Table (12):	(135)
Descriptive clinical data of good/fair controlled diabetic mothers (n=28):	
Table (13):	(135)
Descriptive clinical data of poor- controlled diabetic mothers (n=14):	
Table (14):	(136)
Descriptive clinical data of diabetic mothers who delivered neonates without picture of respiratory distress (mothers of group 1a), (n=19):	
Table (15):	(136)
Descriptive clinical data of diabetic mothers who delivered neonates with picture of respiratory distress (mothers of group 1b and II), (n= 23):	

Table (16):	(137)
Laboratory data of infants of good/fair controlled diabetic mothers (Group I):	
Table (17):	(140)
Laboratory data of infants of poor controlled diabetic mothers (Group II):	
Table (18):	(142)
Laboratory data of the control group (Group III):	
Table (19):	(144)
Descriptive laboratory data of good/fair-controlled diabetic mothers (n = 28) ($HbA_{1C} \leq 10\%$):	
Table (20):	(145)
Descriptive laboratory data of poor- controlled diabetic mothers (n=14), ($HbA_{1C} > 10\%$):	
Table (21):	(146)
Descriptive laboratory data of diabetic mothers of group Ia (IDMs without respiratory distress):	
Table (22):	(147)
Descriptive laboratory data of diabetic mothers of group Ib, II (IDMs with respiratory distress):	

Table (23):	(154)
Comparison between the three groups I, II, III regarding clinical data studied:	
Table (24):	(155)
Comparison between the three groups I, II and III regarding laboratory data studied:	
Table (25):	(157)
Comparison between group I (infants of good/fair controlled diabetic mothers) and group II (infants of poor controlled diabetic mothers) regarding clinical data studied:	
Table (26):	(158)
Comparison between group I (infants of good/fair controlled diabetic mothers) and group II (infants of poor controlled diabetic mothers) regarding laboratory data studied:	
Table (27):	(159)
Comparison between good/fairly controlled diabetic mothers (of group I) and poorly controlled diabetic mothers (of group II) regarding laboratory data studied:	
Table (28):	(160)
Comparison between group I and group II regarding prevalence of morbidity:	

Table (29):	(162)
Comparison between group Ia (IDMs without respiratory distress) and group Ib, II (IDMs with respiratory distress) regarding the clinical data studied:	
Table (30):	(163)
Comparison between group Ia (IDMs without RD) and group Ib, II (IDMs with RD) regarding laboratory data studied:	
Table (31):	(161)
Comparison between diabetic mothers delivered infants with picture of RD (group Ib,II) and diabetic mothers who delivered infants without picture of RD (group Ia):	
Table (32):	(165)
Percentage of respiratory distress among group I and group II infants of diabetic mothers:	
Table (33):	(166)
Different causes of respiratory distress among group Ib and group II	
Table (34):	(168)
Mode of delivery among IDMs:	

Table (35):(169)
Percentage of respiratory distress in
relation to each type of maternal
diabetes in all groups:

Table (36):(170)
Causes of mortalities among group I
and group II infants of diabetic
mothers: