Medical Department

High versus low dose adrenocorticotrophic hormone (ACTH) for evaluation of adrenocortical function in healthy, septic and respiratory distressed newborns

Summary of Thesis
Submitted for Fulfillment of Ph.D.
In Childhood Studies

By
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MBBCh, Master of Pediatrics

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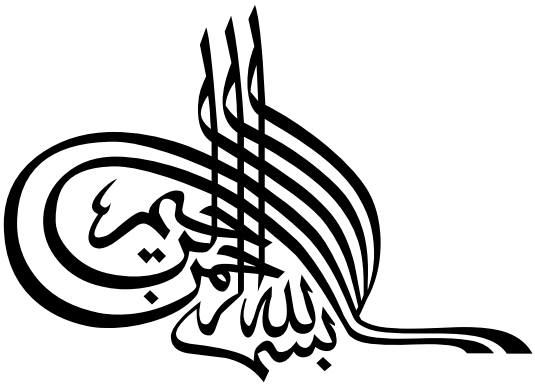
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(وقل رب زدني
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To the spirit of my father I dedicate this work.

LIST OF CONTENTS

List of abbreviations

ABG	Arterial blood gas
ACTH	Adrenocorticotrophic hormone
ADH	Antiduretic hormone
AI	Adrenal insufficiency
ALD	Adrenoleukodystrophy
ANS	Autonomic nervous system
APS	Autoimmune polyglandular syndrome
AVP	Argenine vasopressin
3β-HSD	3β-hydroxysterid-dehydrogenase
CBC	Complete blood count
CBG	Corticosteroid – binding globulin
CNS	Central nervus system
CRH	Corticotrophin releasing hormone
CRP	C-reactive protein
CSF	Cerebrospinal fluid
DHEA	Dehydroepiandrosterone
DHEA-S	Dehydroepiandrosterone sulphate
DOC	Deoxycorticosterone
DXM	Dexamethasone
ECF	Extracellular fluid
GC	Glucocorticoid
GH	Growth hormone
GM-CSF	Granulocyte monocyte colony – stimulating factor
GR	Glucocorticoid receptor
GRE	Glucocorticoid receptor element
HDL	High density lipoprotein
HDT	High dose test

HMG-COA	Hydroxyl – methylglutaryl coenzyme A
HPA axis	Hypothalamo – pituitary – adrenal axis
HSP	Heat shock protein
IFN	Interferon
IIH	Insulin induced hypoglycemia
IL	Interleukin
ITT	Insulin tolerance test
LDL	Low density lipoprotein
L/S	Lecithin / Sphyngomyelin
LDT	Low dose test
MR	Mineralocorticoid receptor
NK cell	Natural killer cell
17-OHCS	17-hydroxycorticosteroids
OMT	Overnight metyrapone test
PMN	Polymophonuclear
PNMT	Phenylalanine – N – methyltransferase
PRA	Plasma renin activity
PVN	Parvocellular paraventricular nuclei
RANTES	Regulated on activation normal T cell expressed and secreted
RD	Respiratory disress
RDS	Respiratory distress syndrome
RIA	Radioimmunoassay
TGF-β	Transferring growth factor β
TLC	Total leukocytic count
TNF	Tumour necrosis factor
TTN	Transient tachypnea of newborn
VIP	Vasoactive intestinal peptide

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INTRODUCTION

The first month of age is the most critical period in the human life. This neonatal period, being a transition from a totally dependent intrauterine to a totally independent extrauterine life, imposes a significant stressful impact upon the neonate. Numerous physiologic and may be pathologic stressful situations occur by that time, which if not dealt with properly, might jeopardize the outcome **(*Rose et al, 1998).***

In the last decade, the understanding of fetal and neonatal hypothalamopituitary adrenal (HPA) axis physiology has revolutionized the management of many conditions of prematurity, septicemia and respiratory distress. Successful adaptation of the newborns to extrauterine life mainly depends on the steroidogenic compartment of the fetal adrenal cortex, its adequate development and production of sufficient endogenous cortisol for perinatal survival towards the end of gestation **(*Rose et al, 1998).***

Regulation of fetal HPA axis is a highly complicated process and is under the control of positive and negative feedback circuits, placental hormones and local autocrine / paracrine mediators or growth factors. **(*Rose et al, 1998*)** The primary aims of this complex system are to insure appropriate coordination of tissue growth and differentiation, orderly maturation of vital organ systems, and ultimately to act together with the placenta to determine the exact timing of parturition most suitable for transition from intrauterine to extrauterine life. Cortisol is important in maintaining intrauterine homeostasis. It also influences the structural and functional development of a wide variety of fetal tissue, and is essential for the antepartum maturation of organ systems including the lungs,