EFFECT OF POSTURAL CHANGES AND DIURNAL VARIATIONS ON LUNG FUNCTIONS IN ASTHMATIC CHILDREN

THESIS

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M.Sc. In Pediatrics

By

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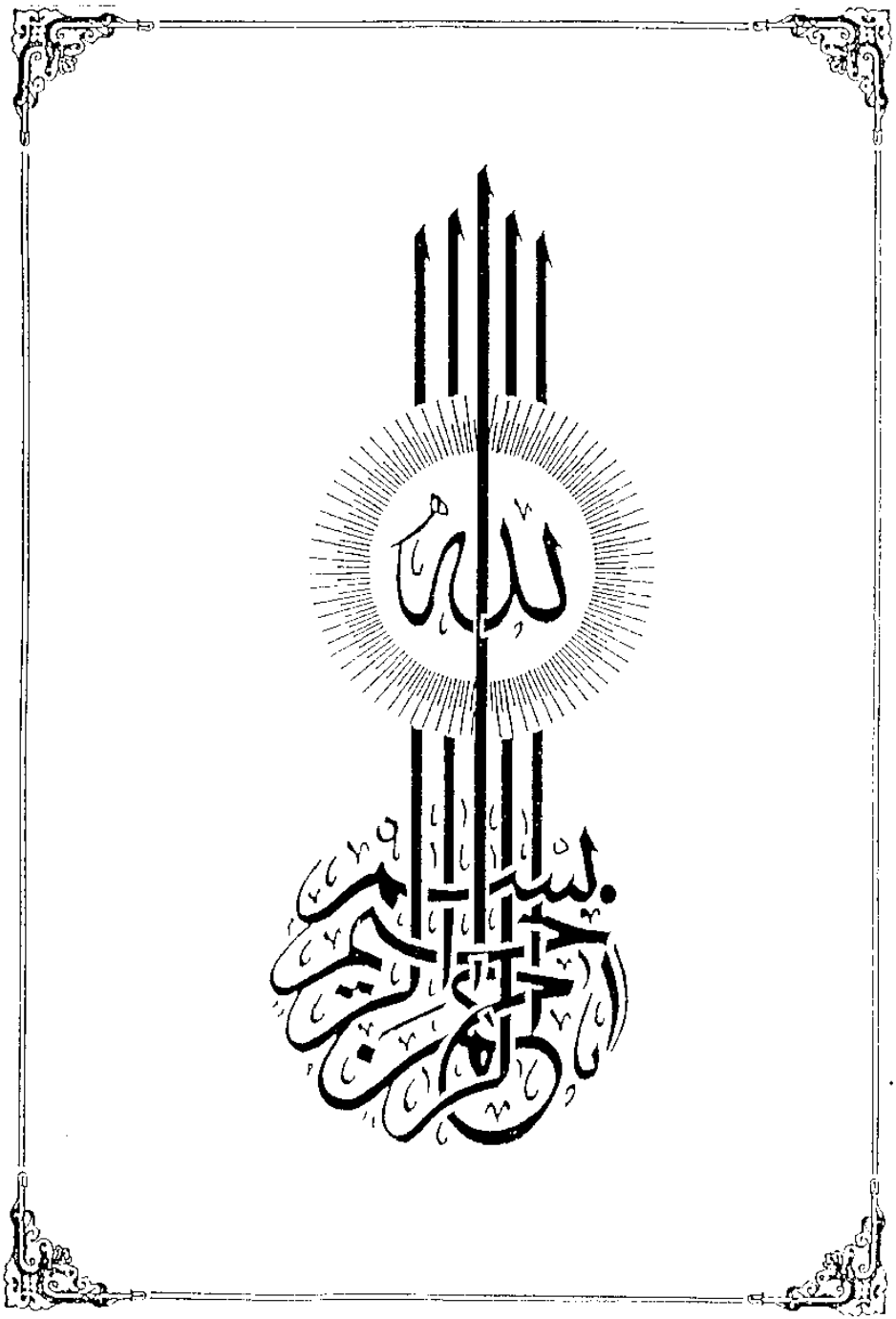

TO...

MY MOTHER

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The Candidate

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

A.M.	: Ante meridiem (before midday).
A.T.S	: American Thoracic Society
BHR	: Bronchial hyperresponsiveness.
CBC	: Complete Blood Count
CCHeD	: Closed-circuit helium dilution method
CO_2	: Carbon dioxide
EIA	: Exercise Induced Asthma
EpDRF	: A putative epithelial derived relaxant factor
ERV	: Expiratory reserve volume
$FEF_{75-85\%}$	: Forced expiratory flow over the end portion of the curve.
FEV_1	: Forced expiratory volume within one second.
FEV_T	: Forced expiratory volume during a given time.
$FEV_T\%$	: The ratio of FEV_T to FVC expressed as a percentage.
FMEF ($FEF_{25\%-75\%}$)	: Forced expiratory flow over the mid portion of the curve.
FMEFT	: Forced mid expiratory flow time.
FRC	: Functional Residual Capacity
FVC	: Forced vital capacity
GER	: Gastroesophegeal Reflux
HLA	: Human Leucocytic Antigen
IC	: Inspiratory capacity
IgE	: Immunoglobulin E
IRV	: Inspiratory reserve volume
m^2	: square meter
MET	: Mid expiratory time
mm	: millimeter
MMEFR	: Maximal mid expiratory flow rate
mmHg	: millimeter mercury
ms	: millisecond
MVV	: Maximum voluntary ventilation
O_2	: Oxygen
p	: pressure
P.M.	: Post meridiem (after midday).

PEFR : Peak expiratory flow rate
RAST : Radioallergosorbent test
RRP : Resting Respiratory Position
RSV : Respiratory Syncytial Virus
RV : Residual volume
S.D. : Standard deviation
SVC : Slow vital capacity
TAV : Trapped Air Volume
TB : Tuberculosis
TGV (V_{TG}): Thoracic gas volume
TLC : Total lung capacity
TV(V_T) : Tidal volume
VC : Vital capacity
$V_{max\ 50}$: Maximal expiratory flow at 50% of vital capacity.
$V_{max\ 75}$: Maximal expiratory flow at 75% of vital capacity.

Introduction And Aim Of The Work

INTRODUCTION AND AIM OF THE WORK

Asthma is the most common chronic lung disease in children and is a leading cause of emergency room visits, hospital admissions, and school absenteeism **(Canny et al., 1991).**

Assessment of lung function in children is important, not only for the evaluation of functional changes with acute pulmonary disorders but also for longtudinal studies of the prolonged pulmonary effects of respiratory illnesses in early childhood **(Darman, 1984).**

At least 70% of asthmatic children have their attacks at night. Several mechanisms have been postulated but nocturnal asthma is still not fully understood **(Greenough et al., 1991).**

A small but detectable diurnal variation in bronchomotor tone is found in normal people **(Kerr, 1973).** This normal circadian rhythm, that occurs in absence of external stimuli, has a daylight maximum and night-time minimum and the amplitude (maximum - minimum) of this rhythm is significantly greater in asthmatics **(Lebowitz et al., 1987).**

So, nocturnal asthma probably represents an exaggeration of the normal circadian rhythm of airway calibre **(Hetzel and Clark, 1980).**

A variety of factors may contribute to nocturnal exacerbations of asthma.

On lying down, healthy subjects have a small fall in PEF while asthmatic subjects show a greater fall. So, supine posture may predispose to asthma occuring at night **(Haffejee, 1988).**

This is confirmed by **Greenough et al., in 1991,** who found a significant fall of PEF on adoption of the supine position in asthmatic children.

Aim of The Work:

The aim of this work is to determine the effect of change of posture and diurnal variation on lung function in asthmatic children.