

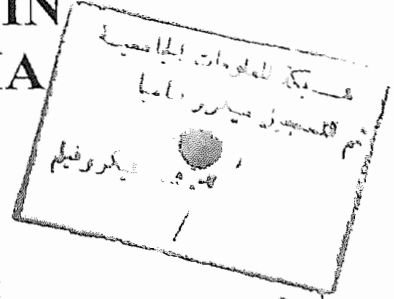
# SERUM MYOGLOBIN IN CHILDHOOD ASTHMA

*Thesis*

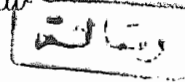
Submitted in the Partial Fulfillment  
of the Master Degree in Pediatrics

*By*

Osama Yassin Abdel-Wahab  
M. B., B.ch.



1994/2/28  
د. محمد عبد الوهاب



30333

618.92238

O. Y.

Under the Supervision of

Prof. Dr. Yehia Mohammad El-Damal

Professor of Pediatrics

& Head of the Pediatric Allergy and Immunology Unit  
Ain Shams University

Y. El-Damal  
1994/2/28

Dr. Elham Mohammad Hossny

Lecturer of Pediatrics  
Ain Shams University

Handwritten signature

Dr. Manal Zaghloul Mahran

Lecturer of Clinical Pathology  
Ain Shams University

1994/2/28

Faculty of Medicine  
Ain Shams University  
Cairo-Egypt  
1994

Handwritten signature  
19/2/94



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

" قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا  
إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ "

سورة البقرة (٣٢).



# **The Perforating Dermatoses**

Essay submitted for partial fulfillment of M.S. degree  
in dermatology and venereology.

by



**Dr. Ahmed EL-Sayed Mohamed Ghattas**

52944

Supervised by

**Prof. Dr. Aly Mohamed Abd EL-Fatah**

Prof. of Dermatology and Venereology

Ain Shams University

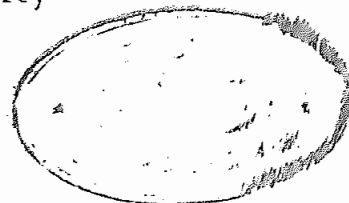
616.5

A.S

**Dr. Mahira Hamdy EL-Sayed**

Assist.Prof. of Dermatology and Venereology

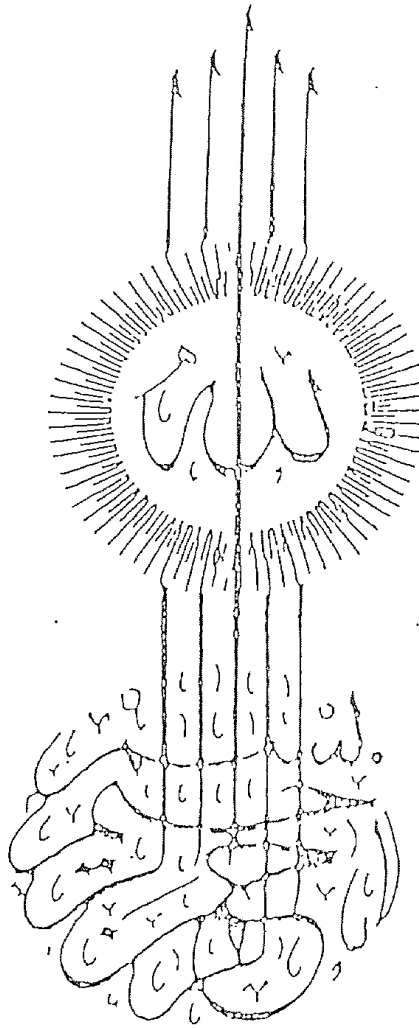
Ain Shams University



Faculty of Medicine

Ain Shams University

1995



**TO:**

**MY PARENTS**

**AND**

**MY WIFE**

## Acknowledgement

I wish to express my deepest gratitude and appreciation to Prof. YEHIA EL GAMAL, Professor of Pediatrics and Head of the Pediatric Allergy and Immunology Unit of Ain Shams University, who gave me the honour of working under his meticulous supervision. I admire so much the way he drives his team towards proper and honest medical service for the children.

No words can describe the effort and help of Dr. ELHAM HOSSENY, Lecturer of Pediatrics - Ain Shams University, to whom I am truly indebted. Her enthusiasm and scientific assistance made the achievement of this work possible.

I do appreciate the kind and active participation of Dr. MANAL ZAKHLOUL MAHRAN, Lecturer of Clinical Pathology - Ain Shams University, in the Laboratory part of the work.

I sincerely acknowledge the help and encouragement from every member of the Pediatric Allergy and Immunology team.

Finally, I am truly grateful to the children and their parents for their kind cooperation in accomplishing my thesis.

Osama Yassin

## CONTENTS

|                                                                   |    |
|-------------------------------------------------------------------|----|
| INTRODUCTION AND AIM OF THE WORK.....                             | 1  |
| REVIEW OF LITERATURE                                              |    |
| BRONCHIAL ASTHMA                                                  |    |
| SOME RISK FACTORS IN THE PATHOGENESIS OF<br>CHILDHOOD ASTHMA..... | 3  |
| PATHOGENESIS OF ASTHMA.....                                       | 6  |
| CLINICAL MANIFESTATIONS OF CHILDHOOD ASTHMA.....                  | 23 |
| SOME COMPLICATIONS OF BRONCHIAL ASTHMA.....                       | 27 |
| ANTI-ASTHMA DRUGS .....                                           | 31 |
| RHABDOMYOLYSIS .....                                              | 36 |
| SUBJECTS AND METHODS .....                                        | 44 |
| RESULTS.....                                                      | 49 |
| DISCUSSION .....                                                  | 64 |
| RECOMMENDATIONS .....                                             | 72 |
| SUMMARY .....                                                     | 73 |
| REFERENCES.....                                                   | 75 |
| ARABIC SUMMARY                                                    |    |

## Abbreviations

|              |                                        |
|--------------|----------------------------------------|
| <b>AEC</b>   | Absolute eosinophil count              |
| <b>AMP</b>   | Adenosine mono-phosphate               |
| <b>ATP</b>   | Adenosine tri-phosphate                |
| <b>CPK</b>   | Creatine phospho-kinase                |
| <b>ECG</b>   | Electrocardiogram                      |
| <b>ELISA</b> | Enzyme Linked Immunosorbent Assay      |
| <b>FEV1</b>  | Forced expiratory volume in one second |
| <b>Fig</b>   | Figure                                 |
| <b>IgE</b>   | Immunoglobulin E                       |
| <b>IVIG</b>  | Intravenous Immunoglobulin             |
| <b>LT</b>    | Leukotrien                             |
| <b>NANC</b>  | Non-adrenergic-non-cholinergic         |
| <b>PAF</b>   | Platelet activating factor             |
| <b>PG</b>    | Prostaglandin                          |
| <b>RSV</b>   | Respiratory syncytial virus            |
| <b>SD</b>    | Standard deviation                     |
| <b>TX</b>    | Thromboxane                            |
| <b>VIP</b>   | Vasoactive intestinal peptide          |

## List of Figures

|                 |                                                                                                                                                                                       | page |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Figure 1</b> | Model of the ways in which allergen exposure contributes to asthma. (Duff and Platts-Mills, 1992).                                                                                    | 8    |
| <b>Figure 2</b> | Schematic representation of the response of lung function seen after inhalation of an allergen to which the asthmatic patient has prior sensitization. (Cockcroft and Murdock, 1987). | 10   |
| <b>Figure 3</b> | Asimplified arachidonic acid cascade, the important mediator products are shown. (Hill and Kamade, 1991).                                                                             | 17   |
| <b>Figure 4</b> | Mechanisms of death from asthma. (Bloomberg and strunk, 1992).                                                                                                                        | 30   |
| <b>Figure 5</b> | Age of asthmatic children versus the control group.                                                                                                                                   | 57   |
| <b>Figure 6</b> | Mean serum myoglobin values in the studied groups versus the control value.                                                                                                           | 60   |
| <b>Figure 7</b> | Serum myoglobin in asthmatic children with stunted growth versus those with normal growth charts.                                                                                     | 61   |
| <b>Figure 8</b> | Serum myoglobin in severely asthmatic children with hyperinflated versus well-proportionated chest cage.                                                                              | 62   |

# List of Tables

## • I- Tables of Review of Literature.

|                |                                                                                                                                                                | page |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Table 1</b> | Recent guidlines for classification of asthma severity in children prior to pharmacological Intervention (USA National Heart, Lung and Blood Institute, 1991). | 24   |
| <b>Table 2</b> | Selected causes of rhabdomyolysis (Brumback et al, 1992).                                                                                                      | 39   |
| <b>Table 3</b> | Supportive treatment for severe rhabdomyolysis (Brumback et al, 1992).                                                                                         | 43   |

## • II- Tables of Results

|                |                                                                                                                                                    |    |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Table 4</b> | Clinical and Laboratory data of the control group.                                                                                                 | 50 |
| <b>Table 5</b> | Clinical and laboratory data of the mildly asthmatic children.                                                                                     | 52 |
| <b>Table 6</b> | Clinical and laboratory data of the moderately asthmatic children.                                                                                 | 54 |
| <b>Table 7</b> | Clinical and laboratory data of the severely asthmatic children.                                                                                   | 56 |
| <b>Table 8</b> | Sex distribution in the studied subjects.                                                                                                          | 57 |
| <b>Table 9</b> | Comparison between mildly, moderately and severely asthmatic childrens in the duration of illness, absolute eosinophil count and total serum IgE%. | 58 |

**INTRODUCTION**

**AND**

**AIM OF THE WORK**

## INTRODUCTION

### AND AIM OF THE WORK

Asthma is a leading cause of chronic illness in childhood, responsible for a significant proportion of school days lost. Children graded as having severe asthma frequently have poor exercise tolerance and easy fatiguability (*Sly, 1992*).

In a 3-year retrospective study on the etiology of rhabdomyolysis/myoglobinuria in children, exertion related episodes represented a good percentage of cases (*chamberlain, 1991*). Thus, respiratory muscle exertion which takes place in acute severe asthma may be a cause of rhabdomyolysis and muscle weakness. More important, is the exploration of the effect of anti-asthma therapy on the skeletal muscles of the growing asthmatic children. Several investigators published episodes of rhabdomyolysis and myopathy in adult patients with acute severe asthma on infusion of theophylline or corticosteroids (*William et al, 1988; Aoshima et al, 1991*).

This study is aimed to evaluate the serum myoglobin status as a specific measure of rhabdomyolysis in asthmatic children in relation to disease activity and medication received.