بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

MONA MAGHRABY

Sensitization to Ragweed in Egyptian Children with Respiratory Allergy

Thesis

Submitted for Partial Fulfillment of
Master Degree in ***Pediatrics***

By

Ruqaya Hamada Mohammad Mansour
M.B.B.Ch, 2015, Faculty of Medicine,
Misr University for Science and Technology

Under Supervision of

Prof. Elham Mohammad Hossny
Professor of Pediatrics
Faculty of Medicine - Ain Shams University

Dr. Ghada Abdel Haleem Shousha
Lecturer of Pediatrics
Faculty of Medicine - Ain Shams University

Dr. Mohamed Salah El Din Abd El Kader
Lecturer of Pediatrics
Faculty of Medicine - Misr University for Science and Technology

Faculty of Medicine – Ain Shams University
2020

سورة البقرة الآية: ٣٢

Acknowledgments

First and foremost, I feel always indebted to ***Allah*** *the Most Beneficent and Merciful.*

I wish to express my deepest thanks, gratitude and appreciation to ***Prof. Elham Mohammad Hossny****, Professor of Pediatrics, Faculty of Medicine, Ain Shams University, for her meticulous supervision, valuable instructions and generous help.*

Special thanks are due to ***Dr. Ghada Abdel Haleem Shousha****, Lecturer of Pediatrics, Faculty of Medicine, Ain Shams University, for her sincere efforts, fruitful encouragement.*

I am deeply thankful to ***Dr. Mohamed Salah El Din Abd El Kader****, Lecturer of Pediatrics, Faculty of Medicine, Misr University for Science and Technology, for his great help, outstanding support, active participation and guidance.*

I would like to express my hearty thanks to all my family for their support till this work was completed and to the enrolled children and parents for their kind cooperation.

Ruqaya Hamada Mohammad Mansour

List of Contents

List of Abbreviations

Abb.	Full term
AAAAI	*American Academy of Allergy, Asthma and Immunology*
ACE	*Angiotensin converting enzyme*
AD	*Atopic Dermatitis*
AR	*Allergic Rhinitis*
ARIA	*Allergic Rhinitis and its Impact on Asthma*
BAT	*Basophil Activation Test*
BAU	*Bioequivalent Allergen Unit*
BLG	*Beta-LactoGlobulin*
BU	*Biological Unit*
CAP	*Community-Acquired Pneumonia*
CAST	*Cellular Antigen Stimulation Test*
CD	*Cluster of Differentiation*
CFU	*Colony- Forming Unit*
CSPT	*Commercial Skin Prick Test*
DBPCFC	*Double-blind placebo controlled food challenge*
Der P	*Dermatophagoides Pteronyssinus*
EAACI	*European Academy of Allergy and Clinical Immunology*
ELISA	*Enzyme – Linked Immunosorbent Assay*
ER	*Emergency Room*
ETAC	*Early Treatment of the Atopic Child*
FA	*Food Allergy*
FcγR	*Fc Gamma Receptor*
FFSPT	*Fresh Fruit Skin Prick Test*
GINA	*Global Initiative for Asthma*
ICs	*Inhaled Corticosteroids*
IDT	*Intradermal Test*
Ig	*Immunoglobulin*
IL	*InterLeukin*
KSA	*Kingdom of Saudi Arabia*
LABA	*Long Acting Beta Agonist*

List of Abbreviations cont...

Abb.	Full term
LPR	*Late-Phase Reaction*
LTPs	*Lipid Transfer Proteins*
LTRA	*Leukotriene Receptor Antagonist*
MV	*Mechanical Ventilation*
NADPH	*Nicotinamide Adenine Dinucleotide Phosphate*
OAS	*Oral Allergy Syndrome*
OVA	*Ovalbumin*
PICU	*Pediateric Intensive Care Unit*
PPV	*Positive Predictive Value*
PR	*Pathogen Response*
PUVA	*Psoralen and Ultraviolet A*
RAST	*Radio-AllergoSorbent Test*
SCIT	*Subcutaneous Immunotherapy*
SD	*Standard Deviation*
SPSS	*Statistical Program for Social Science*
SPT	*Skin Prick Test*
Th2	*T helper type 2*
TLPs	*Thaumatin like Proteins*
UAE	*United Arab Emirates*
UK	*United Kingdom*
USA	*United State of America*
UV	*Ultraviolet*
WAO	*World Allergy Organization*

List of Tables

List of Tables cont...

List of Figures

INTRODUCTION AND AIM OF THE WORK

Asthma is a heterogeneous lung disorder characterized by airway obstruction, inflammation and eosinophil infiltration into the lung. Asthma, typically begins in childhood and is the most common chronic disease of childhood, it has reached epidemic proportions. The symptoms of asthma include coughing, wheezing, shortness of breath, and even death ***(Meltzer, 2016).***

Ragweed has long been recognized as a major health problem. Allergic rhinitis (AR) and asthma are the main allergic diseases that have been associated with exposure to ragweed pollen, while skin allergic reactions are less common. In the 1930s ragweed was identified as the major cause of hay fever and asthma ***(Ihler and Canis, 2015).***

About 40 species are known and *Ambrosia artemisiifolia* (common or short ragweed) and *A. trifida* (giant ragweed) are the most common species ***(Essl et al., 2015)***. Among all Ambrosia species, *A. artemisiifolia* is the most prominent and invasive, being a major cause of allergy in late summer worldwide ***(Chen et al., 2018).***

Environmental factors such as temperature and CO2 concentrations have great influences on pollen production and therefore on the allergen amount. These two environmental

factors are increasing due to climate change and urbanization ***(Ghiani et al., 2016).***

The majority of the Middle East countries are generally known to be desert regions with low rainfall and very high temperatures. As such, weeds are one of the common inhabitants of the plant kingdom as they require less water and can survive under harsh conditions. Therefore, most of the countries in the region have weeds pollen prevalent in their environment ***(Babu et al., 2011).***

Ragweed pollen allergy represents a major health issue and this may be due to the high pollen production of the ragweed plant and the allergenic potency of the ragweed pollen itself. One single ragweed plant can release up to one billion pollen grains per season ***(Tosi et al., 2011).***

Exposure or the increase of pollen counts over a certain period of time leads to a strong increase of the sensitization rate and the occurrence of symptoms. It is important to underline that even low exposure, meaning as little as 10 pollen grains per cubic meter of air, can trigger an allergic reaction ***(DellaValle et al., 2012).***

Ragweed pollen grains can be transported several hundreds to thousands of kilometers by air and can cause allergy symptoms in areas where the ragweed plant is not widespread ***(Chen et al., 2018).***

Due to their high prevalence and severe symptoms, ragweed pollen-induced AR and asthma may significantly affect quality of life, with an impact on attendance and performance at school or the workplace, leading to considerable healthcare costs and a high economic burden ***(Larsen et al., 2016)***.

Aim of the Work

This study aimed at evaluating the frequency of ragweed sensitization among a group of atopic Egyptian children with physician-diagnosed respiratory allergies through SPT. The ultimate objective is to roughly estimate the contribution of this allergen as a trigger for respiratory allergy in the pediatric age group in Egypt.