

Assessment of Small Airway Disease By Impulse Oscillometry In Relation to Asthma Control and Bronchial Hyperresponsiveness In Children

Thesis

*Submitted for Partial Fulfillment of Master
Degree in Pediatrics*

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2016



Acknowledgement

My greatest gratitude is to **ALLAH** whose guidance and support were the main motive behind accomplishing this work.

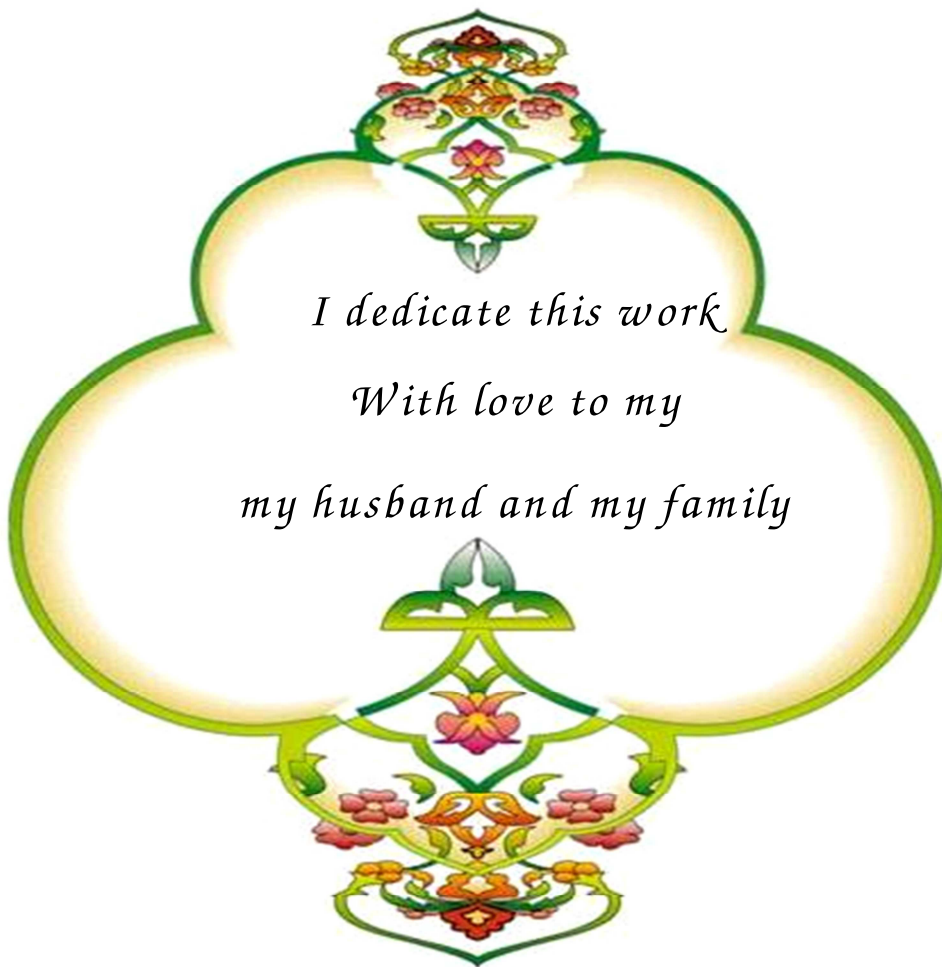
*I would like to express my profound gratitude and sincere appreciation to **Prof. Dr. Eman Ahmed Zaki**, Professor of Pediatrics, Faculty of Medicine, Ain Shams University, for her great help and support and gentle guidance and insistence. Without her help, this work would never been accomplished.*

*I would also like to express my appreciation to **Prof. Dr. Eman Mahmoud Fouda**, Pediatrics, Faculty of Medicine, Ain Shams University, Professor of for her continuous help, guidance and encouragement.*

*I would like to express my deep appreciation and gratitude to **Assistant. Prof. Dr. Terez Boshra Kamel**, Assistant Professor of Pediatrics, Faculty of Medicine, Ain Shams University for her generous infinite help, supervision and continuous guidance throughout the whole work. I will never forget her meticulous efforts and precise criticism.*

*Finally, I am so grateful and I am deeply indebted to **soul of my husband, my Great Mother** and to **my Dearest Father** for their kindness, trust, unfailing support and much needed encouragement throughout this work.*

Yasmin Swelam farhan



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List of abbreviation

Abbrev.	Full term
AAP:	Asthma action plan
ACQ :	Asthma control questionnaire
ACSS :	Asthma control scoring system
ACT :	Asthma control test
AHR :	Airway hyperresponsivness
ATAQ :	Asthma therapy assessment questionnaire
AX:	Reaction area
BMI :	Body mass index
COPD :	Chronic obustructive pulmonary diseases
CVA :	Cough variant asthma
EIA :	Exercise included asthma
ETS :	Environmental Tobacco smoking
FENO :	Fractional exhaled nitric oxide
FEV₁:	Forced expiratory volumein first second
FVC :	Forced volume capacity

Abbrev.	Full term
GINA :	Global Initiative National institution of Asthma
HRCT :	High resolution computed tomography
HRQOL :	Health – related quality of life
HRV:	Human rhinovirus
ICS :	Inhaled corticosteroids
IGE :	Immunoglobulin E
IL₁₇ :	Interleukin ₁₇
IOS :	Impulse oscillometry
LASS :	Lara asthma symptom scale
MAQLQ :	Mini asthma quality of life questionnaire
MEF₂₅₋₇₅ :	Mid expiratory flow ₂₅₋₇₅
NSAI :	Non small airway impairment
PEF :	Peak expiratory flow
R₂₀ :	Resistance at 20Hz
R₅₋₂₀ :	Difference between R ₅ and R ₂₀ .
R5 :	Resistance at 5Hz
SAI:	Small airway impairment
SHS :	Second hand smoke

Abbrev.	Full term
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SPT : Skin prick test

SR : Steroid resistant

SS : Steroid sensitive

TH CELLS : T- helper cells

TNF : Tumor necrosis factor

Introduction

Asthma is a common chronic disorder of the airways that is characterized by the complex interaction of airway obstruction, bronchial hyperresponsiveness (BHR), and airway inflammation which leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing (*Manuyakorn et al., 2013*).

However, assessing asthma control in children is particularly challenging for many reasons including a discrepancy in perceived symptoms between the child and parents , and the poor correlation between symptoms and traditional objective tests such as spirometry . Therefore, the development of new, reliable, and non-invasive methods to assess of asthma control in children remains a priority and is essential for the effective treatment of asthma (*Carroll et al., 2011*).

Recent studies have suggested that abnormalities in the small airways can contribute to the clinical expression of asthma. The small airways can be affected by inflammation, remodeling, and changes in the surrounding tissues, all contributing to small-airways dysfunction. Many systematic reviews to investigate the association between small-airways dysfunction on one hand and

clinical signs and symptoms of asthma on the other hand were done (*Wiel et al., 2013*).

Impulse oscillometry (IOS) has been increasingly used as a non invasive method to assess airway resistance and reactance in children. IOS requires minimal patient cooperation, it is effort-independent, and separately quantifies the degree of obstruction in central and peripheral airways. IOS has been shown to be useful in the diagnosis of small airway impairment in children(*Shi et al., 2012*).

Aim of study

The current cross sectional study aimed at assessing small airways' function in asthmatic children and correlating such function with the level of disease control , bronchodilator response comparing pre and post bronchodilator status.