# Assessment of Vocal fold Changes and their Correlation with Pulmonary Functions in Asthmatic Children

*Thesis*
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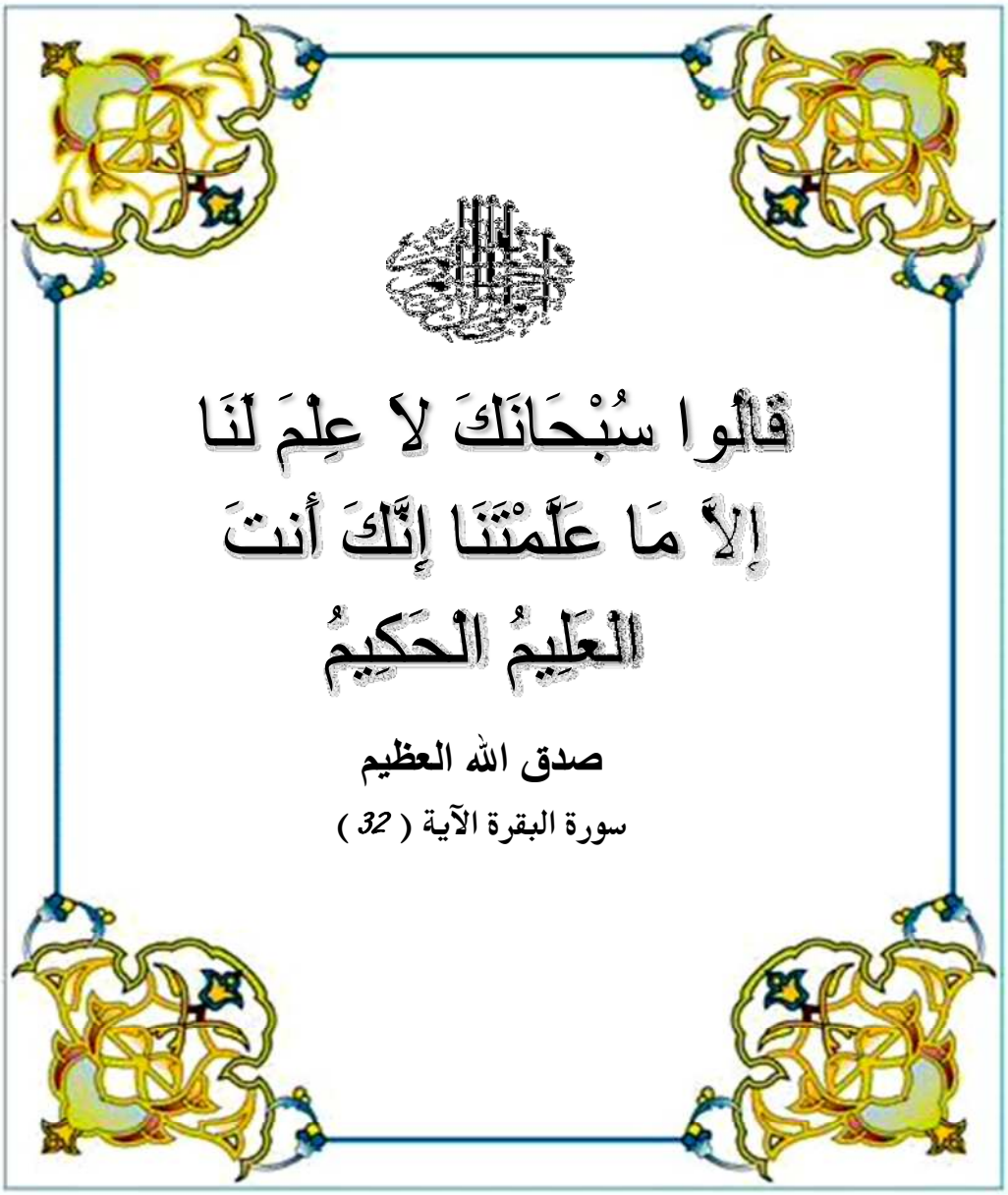

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ
الْعَلِيمُ الْحَكِيمُ

**صدق الله العظيم**

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# List of Abbreviations

| | |
|---|---|
| **A Jitt** | Absolut Jitter |
| **ABAS** | Allergic Bronchopulmonary Aspergillosis. |
| **B.D** | Bronchodilator |
| **BMI** | Body Mass Index |
| **B2-receptor** | Beta 2- receptor |
| **COPD** | Chronic Obstructive Pulmonary Disease |
| **COX** | inducible Cyclo-Oxygenase |
| **ECM** | Extra Cellular Matrix |
| **EDTA** | Ethylene-Diamine-Tetra-Acetic acid |
| **EERD** | Extra Esophageal Reflux Disease |
| **ETS** | Environmental Tobacco Smoke |
| **FDA** | Food, Drug Associations |
| **FEF25-75%** | Forced Expiratory Flow rate over 25-75% part of FVC |
| **FEFR** | Forced Expiratory Flow Rate |
| **FEV1** | Forced Expiratory Volume in first second |
| **Fo** | The Average Fundamental frequency |
| **FVC** | Forced Vital Capacity |
| **GCRβ** | Glucocorticoid Receptor Beta |
| **GERD** | Gastro-Esophageal Reflux Disease |
| **GINA** | Global Initiative for Asthma |
| **GM-CSF** | Granulocyte-Macrophage Colony Stimulating Factor |
| **GR** | Glucocorticoid Receptors |
| **HA** | Hyaluronic Acid |
| **HDAC2** | Histone De ACetylase-2 |
| **HDM** | House Dust Mites |
| **ICAM** | Inter Cellular Adhesion Molecule |

# List of Abbreviations contu.

| | |
|---|---|
| **ICS** | Inhaled Corticosteroid |
| **IgA** | Immunoglobulin A |
| **IgE** | Immunoglobulin E |
| **IGL** | Immune Globulin |
| **IL** | Interleukin |
| **IL6R** | Interleukin-6 Receptor |
| **iNkT** | invariant Natural killer T cells |
| **iNOS** | Inducible Nitric Oxide Synthase |
| **iPLA2** | inducible Phospho-Lipase A2 |
| **IQR** | Inter Quartile Range |
| **IU** | International Unit |
| **IκB-α** | inhibitor of NF-κB |
| **Jitt %** | Jitter Precent |
| **LABA** | Long Acting B2 Agonist |
| **LES** | Lower Esophageal Sphincter |
| **LLN** | Lower Limit of Normal |
| **LPR** | Laryngopharyngeal Reflux |
| **LTRA** | Leukotriene Receptor Antagonists |
| **MDC** | Macrophage-Derived chemokines |
| **MDVP** | Multi Dimensional Voice Program |
| **MFo** | Mean Fundamental Frequency |
| **MKP-1** | Mitogen-activated protein kinase Phosphatase-1 |
| **MMEF** | Mean Mid Expiratory Flow |
| **mRNA** | Messenger RNA |
| **N** | Normal |
| **NFkB** | Nuclear Factor Kappa B |
| **NHLBI** | National Heart, Lung, and Blood Institute |
| **NHR** | Noise to Hormonic Ratio |

# List of Abbreviations contu.

| | |
|---|---|
| **NK** | Natural Killer cells |
| **NK1** | Neurokinin |
| **NO** | Nitric Oxide |
| **O3** | Ozone |
| **OSA** | Obstructive Sleep Apnea |
| **PBMCs** | Polymorph Mononuclear Cells |
| **Pco2** | Pressure of carbon dioxide |
| **PEF** | Peak Expiratory Flow |
| **PEFR** | Peak Expiratory Flow Rate |
| **PFTs** | Pulmonary Function Tests |
| **PMDI** | Pressurised Meter-Dose Inhaler |
| **RSV** | Respiratory Syncytial Viruse |
| **SABA** | Short Actining B2 Agonist |
| **SD** | Standered Deviation |
| **Sh (dB)** | Shimmer decibel |
| **Shim%** | Shimmer Precent |
| **SO2** | Sulpher dioxide |
| **TARC** | Thymus and Activation Regulated Chemokines |
| **Th1** | T- Helper 1 Lymphocytes |
| **Th2** | T- Helper 2 Lymphocytes |
| **TIF** | Transoral Incisionless Fundoplication |
| **TIM1** | T-cell Immunoglobulin Mucin 1 |
| **TNF-α** | Tumor Necrosis Factor-alpha |
| **UK** | United Kingdom |
| **VC** | Vital Capacity |
| **VFD** | Vocal Fold Dysfunction |
| **VF** | Vocal Fold |
| **WHO** | World Health Organization |

# INTRODUCTION

Asthma is a chronic inflammatory disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person ***(WHO, 2010).*** Cellular inflammation of airway with eosinophils and neutrophils is a characteristic feature of asthma and is considered relevant to the pathogenesis of the disease ***(Fahy, 2009).***

Asthma is a serious global health problem. People of all ages in countries throughout the world are affected by this chronic airway disorder that, when uncontrolled, can place severe limits on daily life and is sometimes fatal. The prevalence of asthma is increasing in most countries, especially among children. Asthma is a significant burden, not only in terms of health care costs but also of lost productivity and reduced participation in family life ***(GINA , 2008).***

Vocal fold dysfunction (VFD), also commonly known as paradoxical vocal fold motion, can be characterized as an abnormal adduction of the vocal folds during the respiratory cycle (especially during the inspiratory phase) that produces airflow obstruction at the level of the larynx. VFD frequently