Prevalence Of Asthma-Chronic Obstructive Pulmonary Disease Overlap Syndrome (ACOS) In Embaba Chest Hospital

Thesis

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In Chest Disease and Tuberculosis

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LIST OF ABBREVIATIONS

6WMD .....6 walk minute distance

ACE.....Angiotensin converting-enzyme

ACOS.....Asthma-COPD overlap syndrome

AECOPD .....Acute exacerbation of chronic obstructive pulmonary disease

AHR.....Airway hyper-responsiveness

AO.....Airway obstruction

ATS .....American Thoracic Society

B cells.....B lymphocytes

BAL.....Bronchoalveolar lavage

BHR .....Bronchial hyper-responsiveness

BODE index.Body-mass index, airflow Obstruction, Dyspnea, and Exercise

CD3+.....Cluster of differentiation 3

CD_4+.....cluster of differentiation 4

CD8+.....Cluster of differentiation 8

CO.....Carbon monoxide

COPD.....Chronic obstructive pulmonary disease

Cox-1.....Cyclo-oxygenase-1

CT .....Computed tomography

DLCO.....Diffusion capacity of the lung to carbon monoxide

ELISA .....Enzyme-linked immune-sorbent assay

FEV1 .....Forced expiratory volume in the first second.

FEV1/FVC ...The percentage of the vital capacity which is expired in the first second of maximal expiration

FVC.....Forced vital capacity

GERD.....Gastro-esophageal reflux disease

GINA.....Global Initiative for Asthma

GM-CSF .....Granulocyte macrophage colony stimulating factor

GOLD .....Global Initiative for Chronic obstructive lung disease

H_2O_2 .....Hydrogen peroxide

HRQoL .....Health-related quality of life

ICAM-1.....Intercellular adhesion molecule

ICS .....Inhaled corticosteroids

IFN-γ.....Interferon-γ

IgA.....Immunoglobulin A

IgE.....Immuno-globulin E

IL-4 .....Interleukin 4

LABA.....Long-acting beta2-agonist

LAMA.....Long-acting muscarinic antagonists

MCP-1.....Monocyte Chemoattractant Protein-1

MHC .....Major histocompatibility complex

MIP .....Macrophage inflammatory protein

mMRC .....Modified Medical Research Council.

mRNA .....Messenger Ribonucleic acid

NAEPP EPR-3 National Asthma Educationand Prevention Program Expert Panel Report 3

NIPPV.....Non invasive positive pressure ventilation

NO .....Nitric oxide

NOD .....Non-obstructive disease

NOS.....Nitric oxide synthase

NPV.....Negative pressure ventilation

O_2- .....Super oxide anions

OADs.....Obstructive airway diseases

OH.....Hydroxyl radicals

$PaCO_2$ .....Partial pressure of carbon dioxide in arterial blood

PAF .....Platelet-activating factor

PaO_2 .....Partial pressure of oxygen in arterial blood

PDGF .....Platelet derived growth factor

PEF.....Peak expiratory flow.

PGD_2 .....Prostaglandins D_2

PGE_2.....Prostaglandins E_2

ROI .....Reactive oxygen intermediate

RSV .....Respiratory synctial virus

SaO_2 .....Oxygen saturation in arterial blood

SRH.....Self-rated health

T cells.....T lymphocytes

TGF-β .....Transforming growth factor beta

TH0 cells.....Naïve T-cells

TH1 cells.....T helper type 1

TH2 cells.....T helper type 2

Th-2.....T-helper 2 cells

TMB.....Tetra-methyl-benzidine

TNF .....Tumor necrosis factor

TNF-α.....Tumor necrosis factor-α

VCAM-1 .....Vascular cellular adhesion molecule

VCD .....Vocal cord dysfunction

VIP .....Vaso-active intestinal peptide

VLA-4 .....very late antigen-4

WHO.....World Health Organization

YLDS .....Years of living disabilities

INTRODUCTION

Asthma and chronic obstructive pulmonary disease (COPD) are a major public health problem because of their high and still rising prevalence, their associated morbidity, mortality and socioeconomic costs **(Bahadori et al., 2009; GOLD, 2011)**.

Asthma is recognised as an allergic disease that develops in childhood, characterised physiologically by reversible airflow obstruction, and has an episodic course with a generally favourable prognosis, responding well to anti-inflammatory treatment. In contrast, COPD is typically caused by tobacco smoking, develops in mid to later life and is characterised by incompletely reversible airflow limitation that results in a progressive decline in lung function leading to premature death **(Gibson and Simpson, 2009)**.

Although asthma and COPD are different diseases, differential diagnosis is sometimes difficult and may be impossible in some older patients **(Guerra, 2004)**.

Furthermore, asthma and COPD may coexist: more than 40% of patients with COPD report a history of asthma, and asthma has been recognized to be a risk factor for developing COPD. Patients who have both COPD and asthma (overlap syndrome) have a more rapid disease progression, a worse

health-related quality of life, more frequent respiratory exacerbations, increased co-morbidities and health care utilization than those with either disease alone **(Roberto de Marco et al., 2013)**.

Overlap syndrome is recognized by the coexistence of increased variability of airflow in a patient with incompletely reversible airway obstruction. Patients typically have inflammatory features that resemble COPD, with increased airway neutrophilia, as well as features of airway wall remodeling. Overlap syndrome can develop when there is accelerated decline in lung function, or incomplete lung growth, or both. The risk factors for these events are shared, such that increasing age, bronchial hyper-responsiveness, tobacco smoke exposure, asthma and lower respiratory infections/exacerbations are significant risk factors for both incomplete lung growth and accelerated loss of lung function. Studying these events may offer new insights into the mechanisms and treatment of obstructive airway diseases **(Gibson and Simpson, 2008)**.

AIM OF THE WORK

To evaluate the prevalence of asthma- chronic obstructive pulmonary disease (overlap syndrome) in Embaba Chest Hospital.

Chapter (1):

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Definitions:

COPD is a preventable and treatable disease state characterized by airflow limitation which is progressive, not fully reversible, associated with airway inflammation, hyper responsiveness and systemic manifestations including skeletal muscle dysfunction, cachexia, cardiovascular and osteo-skeletal alteration. The airflow obstruction is generally due to chronic bronchitis or emphysema **(ATS, 2007)**.

Chronic obstructive pulmonary disease (COPD) is a preventable and treatable disease with some significant extra pulmonary effects that may contribute to the severity in individual patients. Its pulmonary component is characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and associated with an abnormal inflammatory response of the lung to noxious particles or gases **(GOLD, 2010)**.

This definition does not use the terms chronic bronchitis and emphysema and excludes asthma (reversible airflow limitation).