Impact of COPD on management and outcome of patients admitted to the Coronary Care Unit

Thesis

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List of Abbreviations

ABC .....Arterial Blood Gases

BB.....Beta Blocker

BMI.....Body Mass Index

CAD .....Coronary Artery Disease

CBC .....Complete Blood Count

CCU .....Coronary Care Unit

CHE.....Congenital Heart Failure

COPD.....Chronic Obstructive Pulmonary Disease

CRP .....C-Reactive Protein

CVD .....Coronary Vascular Disease

DLCO.....Diffusion Capacity of Lung for Carbon Monoxide

DM.....Diabetes Mellitus

ECG .....Electrocardiography

FEV_1 .....Forced Expiratory Volume in First Second

FVC .....Forced Vital Capacity

GOLD.....Global Initiative For Chronic Obstructive

HF .....Heart Failure

HTN .....Hypertension

IHD.....Ischemic Heart Disease

IL-8.....Interleukein-8

MI.....Myocardial Infarction

PCI .....Percutaneous Cardiac Intervention

PED4 .....Phosphodiesterose-4

STEMI .....ST Elevation Myocardial Infarction

TLC.....Total Lung Capacity

TNF-α .....Tumor Necrosis Factor Alpha

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Abstract

The study was conducted on 100 consecutive patients admitted for more than 24 hours to the Coronary Care Unit in Rail Way Hospital in Cairo.

The aim of this prospective study was to assess impact of COPD on the management and outcome of patients admitted to CCU.

Diagnosis of COPD was based on clinical, and radiological assessment according to GOLD, 2014. The spirometric criteria and ABGs findings were included when available.

The prevalence of COPD varies between countries and age groups but is estimated to be 9–10% in adults over 40 years of age.

COPD is currently the fourth leading cause of death worldwide but is expected to be the third leading cause in 2030 *(WHO, 2008)* in parallel with an expected global increase in tobacco smoking.

COPD is associated with a high frequency of multiple, chronic comorbidities. One such comorbidity that has a high propensity to coexist with COPD is cardiovascular disease (CVD).

Key word:

Complete Blood Count, Arterial Blood Gases, Diabetes Mellitus, Hypertension, Total Lung Capacity

INTRODUCTION

The prevalence of COPD varies between countries and age groups but is estimated to be 9–10% in adults over 40 years of age. ***(Halert et al., 2006)***

COPD is currently the fourth leading cause of death worldwide but is expected to be the third leading cause in 2030 ***(WHO, 2008)*** in parallel with an expected global increase in tobacco smoking**.** ***(Mackey et al., 2002)***

COPD is associated with a high frequency of multiple, chronic comorbidities. One such comorbidity that has a high propensity to coexist with COPD is cardiovascular disease (CVD). ***(Crisafulli et al., 2008) (Hernandez et al., 2009) (Holguin et al., 2005) , (Huiart et al., 2005) , (Liu, 2010) , (Macchia et al., 2007) , (Terzano et al., 2010)***

The association between COPD and CVDs arises from shared risk factors, most notably cigarette smoking, advancing age, systemic inflammation as well as contributing factors, such as use of cardiostimulatory drugs like β-agonists, respiratory failure, hyperventilation leading to respiratory alkalosis, and the recently hypothesized concept of autonomic dysfunction. ***(Sin et al., 2004) , (Tukek et al., 2003)***

As regard effect of drugs and treatment for COPD on cardiac function, Long acting β2-agonists (LABAs) may

have adverse effects on the myocardium ***(Cazzola et al., 1998).*** In patients who have pre-existing CAD, LABAs increase the risk of non-fatal ischaemic events ***(Martin et al., 1998).*** Lowest possible doses of short acting β2-agonists (SABAs) should be used, preferably by a metered dose inhaler or a dry powder system, on an as-needed basis. The LABAs will continue to be used until the question of their long-term safety is addressed in coexistent COPD-HF. No short-term or long-term adverse cardiac effects have been noted with anticholinergics, either ipratropium or tiotropium, in patients with COPD with coexistent HF. However, corticosteroids have the potential to cause water retention that can worsen HF as well as lead to metabolic complications, such as hypokalemia and metabolic alkalosis. Theophyllines are seldom used in COPD in most developed countries but are frequently prescribed in developing nations as a low cost, oral alternative to inhaled drugs. Theophyllines are cardiotoxic if serum levels exceed 20mg/L. Palpitations and arrythmias, especially multifocal atrial tachycardia and ectopics are commonly seen ***(Martin et al., 1998)***

AIM OF THE WORK

The aim of this prospective study is to assess impact of COPD on the management and outcome of 100 patients admitted to CCU in Rail Way Hospital in Cairo.

Over view on COPD

Introduction

Chronic obstructive pulmonary disease (COPD) is a major and increasing global health problem, which at present is poorly treated as there are no drugs that significantly suppress the underlying disease process and therefore reduce the progression or mortality of the disease ***(Barnes, 2000).***

The Global Initiative on Obstructive Lung Disease defines COPD as a typical preventable and treatable infection which described by persistent airflow limitation that is generally progressive and connected with an enhanced inflammatory reaction in the airway and lung to toxic particles or gasses. Intensifications and comorbidities add to the general seriousness in individual patients. This definition stresses the progressive nature of COPD which encompasses the idea that it is a chronic inflammatory disease and emphasizes that exacerbations are an important component and that COPD is frequently associated with comorbid diseases ***(Vestbo et al., 2013).***

Epidemiology and Burden of Disease

COPD is common throughout the world and affects approximately10% of people over the age of 40years, although there are wide variations between countries ***(Mannino and Buist, 2007).*** COPD was previously much