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PREVALENCE OF PULMONARY HYPERTENSION IN COPD PATIENTS

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Abstract:

According to WHO data in 2002, COPD was the fifth leading cause of death. The prevalence of disease is rising among males and females equally because of increasing trends of tobacco usage. Deaths will increase by more than 30% in the next 10years as predicted by the data. Many such reports have been published in different populations around the world. Very few studies sheds light in the local population and this study is intended to study the same.

Keywords: Pulmonary Hypertension, Prevalence, COPD.

Introduction

The leading cause of mortality and morbidity all over the world is Chronic obstructive pulmonary disease and the major cause for it is its complications. The most prevalent complication being Pulmonary Hypertension. According to WHO data in 2002, COPD was the fifth leading cause of death. The prevalence of disease is rising among males and females equally because of increasing trends of tobacco usage. Deaths will increase by more than 30% in the next 10years as predicted by the data. In 2030, the third leading cause of death will occur due to COPD. (katiyar) It has also been observed non smoking females in rural population also suffer from COPD due to biomass smoke exposure at the time of cooking.(Sertogullarindan) Definition ofChronic obstructive pulmonary disease (COPD): it is an airflow obstruction resulting from an inflammatory process, which affects the parenchyma of lungs and airways. The presenting features are respiratory symptoms, which are confirmed by spirometry.The changes are not only limited to airways affects pulmonary vessels (Barbera)GOLD and BOLD are the two terms related to COPD. The Global initiative for Chronic Obstructive Lung disease (GOLD) has defined COPD as post-bronchodilator forced expiratory volume in one second (FEV1)/forced vital capacity (FVC) 70.5. The disease is further classified into four stages based on calculated FEV1. Burden of obstructive disease initiative (BOLD) reported 10.1% as prevalence of COPD stage II or higher.Among GOLD's important objectives are to increase awareness of COPD and to help the thousands of people who suffer from this disease and die prematurely from COPD or its complications.(PAUWELS) GOLD aims to improve prevention and management of COPD through a concerted worldwide effort of people involved in all facets of health care and health care policy, and to encourage a renewed research interest in this extremely prevalent disease.(Vikas) Pulmonary hypertension (PH) is a well-known predictor of increased morbidity

and mortality in COPD.)Definition of PH:Right ventricular systolic pressure (RVSP) was measured using the modified Bernoulli equation: RVSP = 4(TRV)2 ? RAP. Right atrial pressure (RAP) was estimated bydegree of inferior vena cava collapse on inspiration(RAP = 5 mmHg if complete, 10 mmHg if partial, and15 mmHg if there was no collapse on inspiration) as previouslyDescribed. .(STONE)

Pulmonary hypertension (PH) is the hemodynamic manifestation of various pathological processes that result in elevated pulmonary artery pressures (PAP).1,2 The current hemodynamic definition of PH is a mean PAP 25 mm Hg with a pulmonary capillary wedge pressure (PCWP), left atrial pressure or left ventricular end-diastolic pressure 15 mm Hg and pulmonary vascular resistance (PVR) 3 Wood units. These criteria define PH associated with multiple other disease processes including chronic obstructive pulmonary disease (COPD).(safdar) Hypoxia induced pulmonary vasoconstriction is a protective response to keep ventilation-perfusion ratio optimum by shunting blood away from the hypoxemic areas. The traditional hypoxic model of PH is based on the hypothesis that chronic hypoxia initiates vascular remodeling leading to permanent changes in pulmonary vasculature. Studies performed *in vitro* elucidated the mechanisms underlying hypoxia driven vascular changes.

Aims and Objectives:

To study the Prevalence of Pulmonary Hypertension in COPD Patients

Materials and Methods:

This study was done in the Department of General Medicine, Malabar Medical College, Modakallur, Calicut, Kerala.

The study was done using the data in MRD section of the hospital. The study was done from November 20th 2020 and data collection was done within 10 days.

The patients sample size was 100.

All the patients' files were selected from MRD. Detailed history of the patients was studied and then follow up history of the same patients were studied and reported.

Inclusion Criteria:

- The history of the patients should include a follow up sheet at 3rd and 6th month.

Exclusion criteria:

- Patients on immunodeficiency, steroid therapy or immune modulator drugs.
- Without complete follow up history.

Results:

Table 1: Mean age of the Subjects:

Mean Age	Std deviation
59±34 years	± 9.35years

Table 2: Sex Distribution:

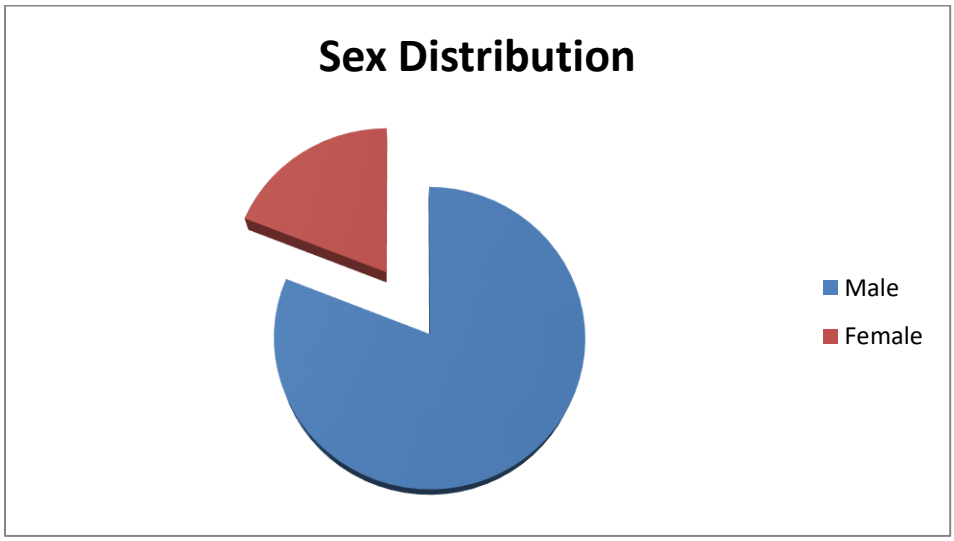

Table 3: Prevalence of pulmonary hypertension as by echocardiography

Total patients	Pulmonary hypertension prevalence	Percentage
100	21	21 percent

Table 4: Prevalence of pulmonary hypertension (gender specific)

Total patients	Pulmonary hypertension prevalence	Percentage
100	21	21%
81 males	17	20.9%
19 females	04	21.05%

Table 5: Mean age of Prevalence of pulmonary hypertension

Pulmonary hypertension prevalence age	Standard deviation
64.56 years	±2.9

Table 6: Gender specific age of Prevalence of pulmonary hypertension

Gender	Pulmonary hypertension prevalence age	Percentage
Total	**64.56 years**	**±2.9**
Male	**66.25 years**	**±2.18**
Female	**62.87 years**	**±3.74**

Table 7: Mean FEV1

Total	Mean FEV1
100	**48.65**

DISCUSSION:

The estimated worldwide prevalence of 10% in adults is seen for Chronic obstructive pulmonary disease (COPD),The prevention and treatment cost remain a challenge. The main vascular complication of the disease is Pulmonary hypertension (PH) which is defined as a resting meanpulmonary artery pressure (mPAP) _ 25 mm Hg. According to World Health Organization (WHO) classification it is classified ingroup III when associated with COPD. (Andersen) Studies available in relation to pulmonary hypertension in COPD are very less. Safdar et al concluded that mild PH is seen in COPD. If PH is 40mmHg, then one should look for others etiologies of PH. But they have also found severe PH in moderate cases of COPD and it was found associated with poor prognosis(safdar).Andersen et al stated the inverse correlation of PH with the prognosis.

PH is associated with poor survival of the diseased. And in case of lung transplantation in COPD, the role of PH becomes zero.(Andersen) The frequency of COPD was found to be higher in females due to biomass smoke and males due to tobacco smoke by Sertogullarindan et al. The influence of FVC % on the risk of a person having PH increased with increasing COPD level.(Sertogullarindan) Kessler et al suggested the predictive factors of acute episode of COPD for hospitalization. The predictive factors are namely chronic hypercapnic respiratory insufficiency andpulmonary hypertension.(Kessler)Gupta et al found out the prevalence of PAH to be high in COPD (gupta).

Conclusion:

This study was successful to study the prevalence of pulmonary hypertension in COPD patients. This would be a boon to the practising physicians and is intended to help the budding general practitioners.

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