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ANALYSIS OF METABOLIC SYNDROME IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AMONG LOCAL POPULATION OF PAKISTAN

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Abstract:
Introduction: *Chronic bronchitis is defined as a chronic productive cough for three months in each of two successive years in a patient in whom other causes of chronic cough (eg, bronchiectasis) have been excluded. It may precede or follow development of airflow limitation.* ***Objectives of the study:*** *The basic aim of the study is to find the analysis of metabolic syndrome in patients with Chronic Obstructive Pulmonary Disease in Pakistan.* ***Methodology of the study:*** *The present study was conducted at Shahida Islam Medical College, Lodhran, from 2017 to 2018. This was basically a cross sectional study and sample size was 148. After approval from ethical committee all the parents were informed for the purpose of the study and a written informed consent was taken from the patients.* ***Results:*** *From 148 patients, it was observed that the minimum age was 36 years and maximum age was 65 years with mean and standard deviation of the age was 52.44 ± 7.83 years. The minimum glucose level was 80 mg/dL and maximum was 115 mg/dL with mean and standard deviation was 94.05 ± 11.15 mg/dL. The minimum triglyceride level was 100 mg/dL and maximum was 370 mg/dL with mean and standard deviation was 181.70 ± 88.03 mg/dL. The minimum High Density Lipoprotein level was 30 mg/dL and maximum was 58 mg/dL with mean and standard deviation was 46.22 ± 9.03 mg/dL.* ***Conclusion:*** *The frequency of metabolic syndrome was found in 43.9% patients with chronic obstructive pulmonary disease. All effect modifiers have significant influence.*

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INTRODUCTION:

Chronic bronchitis is defined as a chronic productive cough for three months in each of two successive years in a patient in whom other causes of chronic cough (eg, bronchiectasis) have been excluded. It may precede or follow development of airflow limitation. Chronic obstructive pulmonary disease (COPD) is a common respiratory condition involving the airways and characterized by airflow limitation [1]. It affects more than 5 percent of the population and is associated with high morbidity and mortality [2]. It is the third-ranked cause of death in the United States, killing more than 120,000 individuals each year. As a consequence of its high prevalence and chronicity, COPD causes high resource utilization with frequent clinician office visits, frequent hospitalizations due to acute exacerbations, and the need for chronic therapy (eg, supplemental oxygen therapy, medication) [3]. Correct diagnosis of COPD is important because appropriate management can decrease symptoms (especially dyspnea), reduce the frequency and severity of exacerbations, improve health status, improve exercise capacity, and prolong survival [4]. The definition of COPD and its subtypes (emphysema, chronic bronchitis, and chronic obstructive asthma) and the interrelationships between the closely related disorders that cause airflow limitation provide a foundation for understanding the spectrum of patient presentations. The predominant pathologic changes of COPD are found in the airways, but changes are also seen in the lung parenchyma and pulmonary vasculature. In an individual, the pattern of pathologic changes depends on the underlying disease (eg, chronic bronchitis, emphysema, alpha-1 antitrypsin deficiency), possibly individual susceptibility, and disease severity [5].

The most important risk factor for COPD is cigarette smoking and the amount and duration of smoking contribute to disease severity. Thus, a key step in the evaluation of patients with suspected COPD is to ascertain the number of pack years smoked (packs of cigarettes per day multiplied by the number of years), as the majority (80 percent) of patients with COPD have a history of cigarette smoking [6]. The critical weakness of the current metabolic syndrome construct is that treatment of the syndrome is no different than treatment for each of its components. Virtually all agree clustering of risk factors for diabetes and cardiovascular disease is a real phenomenon. All agree that the presence of one component of the metabolic syndrome should lead to evaluation for other risk factors.

Objectives of the study

The basic aim of the study is to find the analysis of metabolic syndrome in patients with Chronic Obstructive Pulmonary Disease in Pakistan.

METHODOLOGY OF THE STUDY:

The present study was conducted at Shahida Islam Medical College, Lodhran, from 2017 to 2018. This was basically a cross sectional study and sample size was 148.

Data Collection

148 patients, who were presented with COPD in the Hospital, were included in the study. After approval from ethical committee all the parents were informed for the purpose of the study and a written informed consent was taken from the patients. Their Waist Circumference, Glucose Level (mg/dL), Triglyceride level (mg/dL), High Density Lipoprotein level (mg/dL), Systolic & diastolic blood pressure was measured for the diagnosis of metabolic syndrome. Effect modifiers like age, gender and BMI were addressed through stratification of data. All the data was collected through a well-defined Performa. (Attached)

Statistical analysis

All the collected data was entered into SPSS version 16. Numerical variables i-e age, Waist Circumference, Glucose Level (mg/dL), Triglyceride level (mg/dL), High Density Lipoprotein level (mg/dL), were presented by mean ±SD. Categorical variables i-e gender, metabolic syndrome were presented as frequency and percentage.

RESULTS:

From 148 patients, it was observed that the minimum age was 36 years and maximum age was 65 years with mean and standard deviation of the age was 52.44 ± 7.83 years. The minimum glucose level was 80 mg/dL and maximum was 115 mg/dL with mean and standard deviation was 94.05 ± 11.15 mg/dL. The minimum triglyceride level was 100 mg/dL and maximum was 370 mg/dL with mean and standard deviation was 181.70 ± 88.03 mg/dL. The minimum High Density Lipoprotein level was 30 mg/dL and maximum was 58 mg/dL with mean and standard deviation was 46.22 ± 9.03 mg/dL (table 01).

Table 01: Distribution of Metabolic Syndrome

Metabolic Syndrome	Frequency	Percent
Yes	65	43.9%
No	83	56.1%
Total	148	100.0

By using chi-square test it was found that presence of metabolic syndrome was significantly associated with age group with p-value = 0.005. Significant association was found between the presence of metabolic syndrome and gender with p-value = 0.001 (table 02).

Table 02: Stratification with respect to Age (n = 148)

Age	Metabolic Syndrome		Total	P-value
	Yes	No		
≤ 40 years	6	0	6	0.005
> 40 years	59	83	142	
Total	65	83	148	

Chi-square test was applied

DISCUSSION:

From 148 patients, it was observed that the minimum age was 36 years and maximum age was 65 years with mean and standard deviation of the age was 52.44 ± 7.83 years. The minimum waist circumference was 70 cm and maximum was 114 cm with mean and standard deviation was 90.24 ± 13.80cm. The minimum glucose level was 80 mg/dL and maximum was 115 mg/dL with mean and standard deviation was 94.05 ± 11.15 mg/dL.

In a previous study, compared to the non-COPD people, COPD patients were at increased risk for cardiovascular events [ischemic heart disease (6.9% in the general population vs. 13.6% in COPD patients), cardiac arrhythmia (6.6% in the general population vs. 15.9% in COPD patients), heart failure (2.0% in the general population vs. 7.9% in COPD patients), and other forms of heart disease (10.7% in the general population vs. 23.1% in COPD patients); with a higher impact of COPD in the elderly]; non-psychotic mental disorders, including depressive disorders (29.1% in the general population vs. 41.6% in COPD patients; with a higher impact of COPD on women aged <75 years); diabetes mellitus (10.5% in the general population vs. 18.7% in COPD patients); osteoporosis (10.8% in the general population vs. 14.8% in COPD patients), with a higher impact of COPD on women aged <75 years, and malignant pulmonary neoplasms (0.4% in the general population vs. 1.9% in COPD patients) [7,8].

MetS was present in 37.8 % COPD patients. The frequencies of MetS in patients with GOLD stages I, II, III, and IV were 33.3 %, 48.8 %, 31.6 %, and 23.1 %, respectively. MetS frequencies were not significantly different between GOLD stages. The multivariate logistic regression analysis revealed leukocyte count and CRP level as significant independent predictors of the presence of Mets in COPD patients (OR =1.321, 95%CI: 1.007-1.628, p =0.009 and OR =1.184, 95%CI: 1.020-1.376, p =0.027 respectively) [9].

The presence of MS was 38.3% of the COPD patients ($p<0.05$). The presence of MS is associated with significantly worse cough, sleep and mood ($p<0.02$) and higher total CAT score ($p=0.035$). Average BMI is 28.17. There is a correlation between the presence of MS and exacerbations of COPD last two years ($p=0.02$) and no correlation between the pulmonary function presence of the metabolic syndrome [10].

CONCLUSION:

The frequency of metabolic syndrome was found in 43.9% patients with chronic obstructive pulmonary disease. All effect modifiers have significant influence.

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