Original Article

Asthma and COPD

Frequency of Asthma Chronic Obstructive Pulmonary Disease Overlap Syndrome in Patients of Chronic Obstructive Pulmonary Disease

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ABSTRACT

Objective: To find frequency of asthma chronic obstructive pulmonary disease overlap syndrome in patients with chronic obstructive pulmonary disease.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Medicine, Avicenna Medical & Dental College, Lahore from November 2019 to April 2020.

Materials and Methods: Two hundred patients of both genders presented with chronic obstructive pulmonary disease were taken. The name, age, and gender, contact details and BMI were recorded. Five ml of venous blood was drawn for IgG and CBC and bronchodilator response was assessed on spirometry. All clinical diagnosis and procedures were made by senior consultant.

Results: The mean age of all cases was 51.63±7.17 years with minimum and maximum age as 40 and 64 years. There were 115(57.5%) male and 85(42.5%) female cases. The mean weight, height and body mass index were 93.19±18.05, 1.83±0.18 and 27.90±4.10 respectively. A total of 70 (35%) cases were obese and 130 (65%) cases were non-obese in this study. According to operational definition the frequency of ACOS was noted in 39(19.5%) and 161(80.5%) cases did not have ACOS. When data was stratified, the frequency of ACOS was statistically same in both age groups, gender, obese and non-obese and regardless of duration of COPD, p-value > 0.05.

Conclusion: The frequency of ACOS was diagnosed 19.5% of cases that is higher percentage. So cases with COPD must be diagnosed ACOS and should be managed by prescribing more appropriate medication such as inhaled corticosteroids early in the course of the disease. Through early intervention we can reduce the related complications and mortality.

Key Words: Obstructive lung diseases, Airway hyper responsiveness, Wheeze, Respiratory function tests, Differential diagnosis, ACOS

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INTRODUCTION

The COPD is a chronic respiratory condition with time-limited decreases in lung function followed by respiratory symptoms, mainly dyspnea, cough and sputum.[1] COPD is a highly heterogenogeneous disease, although the clinical appearance and prediction can vary for all patients with chronic, non-full reversible airflow restrictions.[2,3]

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COPD is frequently related to a tobacco history and is the major contributor to chronic lower-respiratory mortality and has been one of the third leading causes of death.[3] The prevalence of COPD varies from 0.2%-37%, but is significantly different across countries and communities and across methods for diagnosing and classifying COPDs. In men and women aged 75 years and older, prevalence and incidence was highest.[1]

Furthermore, both chronic conditions are asthma and COPD, which are very common for people in general. These airway obstruction diseases have a persistent inflammatory effect that affects the entire respiratory tract. Obstructions in asthma are normally sporadic and reversible, but are gradual and irreverent in COPD. Asthma and COPD can overlap and converge particularly in older people [Overlap Obstructive Pulmonary Disease Overlap Syndrome (ACOS).[4] Asthma COPD (ACOS) is characterized in association with an incompletely reversible airflow obstruction as symptoms of increased variability of airfield.[5]

A recent study found that the prevalence of ACOS in PDC patients was 15%[6], whereas the general prevalence of ACOS in PDC patients was reported by another study at approximately 17.4%. ACOS has risen with age in prevalence.[7]

The explanation for the present study is to classify ACOS frequency in COPD Patients as asthma and COPD are often considered to be mutually exclusive diseases primarily due to the inclusion in therapeutic clinical trials only of typical cases of asthma or COPD. However, in a large number of patients, doctors can not differentiate the two disorders, which can be referred to as "asthmic-COPD overlap syndrome." This agency should be noted because patients with an overlap of asthma-COPD are more symptomatic, lower in quality of life and more exacerbated than those of either asthma or COPD alone.

MATERIALS AND METHODS

This cross-sectional study was conducted at hospital Medicine Department of Avicenna Medical & Dental College, Lahore during from 1st November 2019 to 30th April 2020. A total of 200 patients of both genders presented with COPD were taken. The demographical data (name, age, and gender), contact details and BMI were obtained. Patient's ages were ranging from 40 to 65 years. Patients with severe chronic respiratory disease (cystic fibrosis, pulmonary fibrosis, active neoplasm) on medical record were excluded. Five ml of venous blood was drawn for IgG and CBC and bronchodilator response was assessed on spirometry. ACOS was defined if patients have history of asthma and a bronchodilator response to albuterol higher than 15% and 400 mL, IgE >100 IU, a percentage of blood eosinophils >5%. All clinical diagnosis and procedures was made by senior consultant having more than 5 years of experience to avoid any bias. All data was collected by researcher himself. SPSS version 20 was used to collect and analyze data. Chi-square test was applied considering p-value ≤ 0.05 as significant.

RESULTS

There were 115 (57.5%) male and 85 (42.5%) female cases. 125 (62.5%) cases were 40-54 years old and 75 (37.5%) cases were 55-64 years old. Mean BMI was 27.90±4.10. Seventy (35%) cases were obese and 130 (65%) cases were non-obese. Duration of disease was also noted and there were 127 (63.5%) cases had COPD since 6-12 months and 73 (36.5%) cases had COPD from >12 months (Table 1). According to operational definition the frequency of ACOS was noted in 39 (19.5%) and 161 (80.5%) cases did not have ACOS (Fig. 1).

In 40-54 years and 55-64 years of age the frequency of ACOS was seen in 27 (21.6%) and 12 (16%) of the cases[p->0.05] (Table 2). When we stratified with gender we found that in male and female cases the frequency of ACOS was also statistically same, i.e. 17.4% versus 22.4%, p-value > 0.05. (Table 3).

Table No.1: Demographics of all the patients

Variable	No.	%
Gender		
Male	115	57.5
Female	85	42.5
Age (years)		
40 – 54	125	62.5
55 – 65	75	37.5
Obesity	70	35
Mean BMI (kg/m^2)	27.90±4.10	
Disease duration (month)		
6 to 12	127	63.5
>12	73	36.5

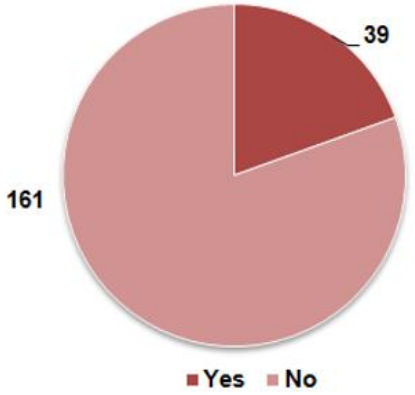

Figure No.1: Frequency of ACOS

Table No.2: Comparison of age according to ACOS

Age (years)	ACOS		Total
	Yes	No	
40-54	27(21.6%)	98(78.4%)	125(100.0%)
55-64	12(16.0%)	63(84.0%)	75(100.0%)
Total	39(19.5%)	161(80.5%)	200(100.0%)

P-value 0.333

Table No.3: Comparison of gender according to ACOS

Gender	ACOS		Total
	Yes	No	
Male	20(17.4%)	95(82.6%)	115(100%)
Female	19(22.4%)	66(77.6%)	85(100%)
Total	39(19.5%)	161(80.5%)	200(100.0%)

P-value 0.333

DISCUSSION

Asthma is a disease which frequently develops during infancy but can also be diagnosed during the life of adults. It is characterized by an airway hyper-responsiveness (AHR) which results in an airway obstruction that is intermittent and normally reversible, and COPD is a chronic respiratory disease usually linked to tobacco, which typically occurs in individuals

over the age of 40 and is characterized by progressive and irreversible airway obstruction.[8,9]

Asthma chronic obstructive pulmonary disease overlap syndrome was recently identified as a condition characterized by persistent airflow restrictions with several features typically associated with asthma and several features typically linked to COPD[10], as a recent document produced by the scientific committee both of the Global Asthma Initiative (GINAs) and the Global Initiative of Chrons' Chronic Obstruction Lung Disease (GOLDs). The overlap makes it difficult to distinguish COPD from asthma with persistent airflow limits, particularly among smokers and seniors.[11]

The mean age was 51.63±7.17 years in the current study with the minimum and maximum age at the age of 40 and 64. 115 males (57.5%) and 85 (42.5%) female cases occurred. The majority of patients were males (93.0 percent), a mean age 73.5±8.3 years (110) reported a study in 2017. These results are close to our analysis. The occurrence of ACOS in 39 (19.5%) and 161 (80.0%) cases were not reported under operational description. ACOS was not reported in 161 (80.5%). A recent study found that the prevalence of ACOS in PDC patients was 15%[12], whereas the general prevalence of ACOS in PDC patients was reported by another study at approximately 17.4%. ACOS prevalence is increasing with age.[13] Thus, in the current analysis, the frequency of the ACOS was greater than both. In 2015, a systematic analysis was also performed of a total of nineteen studies, in which it was found that the overlap prevalence of COPD among population-based research populations and clinical trials was 27% (95% CI: 0.16-0.38%, p<0.000) and 28% (95 % CI: 0.09-0.47%, p=0.0032). ACOS is therefore a common disorder in a large number of COPD subjects. ACOS is a distinct clinical phenotype with more frequent aggravation, admission, reduced quality of life related to health, and higher health costs than any single disorder. The management and treatment of this syndrome must be better defined.[14]

In various age groups and genders, we found no superiority of ACOS. In a further trial, patients receiving inhaled corticoids (63.2%) with ACOS were mainly male (81.6%) with symptomatic mild to moderate diseases (67%).[15]

CONCLUSION

The frequency of ACOS was diagnosed 19.5% of cases that is higher percentage. So cases with COPD must be diagnosed ACOS and should be managed by prescribing more appropriate medication such as inhaled corticosteroids early in the course of the disease. Through early intervention we can reduce the related complications and mortality.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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