

Study of Clinical Profile of Patients with Asthma COPD OverlapShivangi Goswami¹, Nishant Srivastava², Parag Sharma³, Lokendra Dave⁴¹PG Resident, Department of Respiratory Medicine, Gandhi Medical College, Bhopal²Professor, Department of Respiratory Medicine, Gandhi Medical College, Bhopal³Associate Professor, Department of Respiratory Medicine, Gandhi Medical College, Bhopal⁴Head and Professor, Department of Respiratory Medicine, Gandhi Medical College, Bhopal

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Conflict of interest: Nil

Abstract:**Background:** This study was done to observe Clinical characteristics of patients with Asthma COPD overlap.**Methodology:** This study was done in Department of Respiratory Medicine, Gandhi medical college Bhopal. 108 patients with Asthma COPD overlap patients with more than 40 years of age who had documented history of asthma in past were considered for study. Patients with any other respiratory illness and those who did not give consent were excluded from the study.**Results:** Out of 108 patients, 55.6% were males and 44.4% were females. 54.6% were of age group 41 to 50 years followed by 25% in 51 to 60 years of age group. Most common clinical features were breathlessness was present in 90% cases, chest tightness in 46% of patients. Among different exposures, 51.8% patients had history of smoking and 44.4% patients had history of biomass fuel exposure. Smoking was found to be statistically significant (p value<0.05) for the development of ACO in asthmatic patients.**Conclusion:** In this study, it was found that smoking exposure was significantly associated with development of ACO in asthmatic patients. But no significant association was found with development of ACO in patients with allergic rhinitis along with asthma or those who had family history of asthma.**Keywords:** Asthma, COPD, ACO.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Asthma and Chronic obstructive pulmonary disease (COPD) are common obstructive airway diseases frequently seen. A subset of patients with asthma and COPD has characteristics of both disorders and are described clinically as having asthma-COPD overlap (ACO). Patients with ACO have a higher burden of disease and healthcare utilization and increasing recognition of this condition is critical[1]. In India, studies reported the prevalence of ACO in the northern part has been reported to be 21.8%, while in southern is reported to be 27%. [2] Asthma-COPD overlap is defined as persistent airflow limitation with several features usually associated with asthma as well as several features usually associated with COPD. Asthma-COPD overlap includes several different clinical phenotypes and there are likely to be several different underlying mechanisms. ACO is usually seen at >40 years of age, but may have had symptoms in childhood or early adulthood. Exertional dyspnea is persistent but variability may be prominent. Airflow limitation is not fully reversible, but often with current or historical variability. Lung function in ACO patients shows Persistent airflow limitation[3].

A history of doctor-diagnosed asthma, allergies and

a family history of asthma, and/or a history of noxious exposure is seen in ACO. Symptoms are significantly reduced by treatment. Patients with ACO appear to have higher wheezing and mucus production than those with asthma or COPD in terms of symptoms. [4]. Menezes *et al*, discovered that even after controlling for factors such as age, sex, BMI, education, comorbidity score, pack-years, and reported use of any inhaled medication (including bronchodilators and inhaled corticosteroids), the overlap syndrome was still linked to a higher risk for exacerbations.[5,6]

This study is done to study characteristics of Asthma COPD overlap in patients with documented history of asthma in past.

Materials and Methods

After receiving approval from Institutional ethical committee, a prospective observational study was performed at Department of Respiratory Medicine, Regional Institute of Respiratory diseases, Gandhi Medical College, Bhopal from January 2021 to June 2022. Patients of ACO with documented history of asthma in past were identified by applying ATS criteria.[7]

Inclusion criteria:

- a) Patients having features included in ATS roundtable criteria.
- b) Patients who are hemodynamically stable.
- c) patients having documented history of asthma.
- d) patients giving consent for study.

Exclusion criteria:

- a) Age less than 40 yrs.
- b) Patients who are hemodynamically unstable.
- c) Other pulmonary morbidities such as Bronchiectasis, Pulmonary tuberculosis and sequelae, Lung malignancy, Interstitial Lung disease, pulmonary arterial hypertension, recent MI/ haemoptysis
- d) Patients with a known diagnosis of other ILDs like connectivetissue related ILD, sarcoidosis, pneumoconiosis, or infection related DPLD.
- e) Non willing or non-co-operative patient.

Demographic data and detailed clinical history was taken with the help of predesigned questionnaire.

Results

In our study, patients with past history of asthma having Asthma COPD Overlap were 108. Among 108 patients, 60 (55.6%) were males and 48 (44.4%) were females. 54.6 % patients belonged to age group of 41 to 50 years followed by 25% in 51 to 60 years, 22% between 61 to 70 years with mean age of 51.6±0.69 years. Majority of patients, 40.7% patients had normal range body mass index of 18.5 to 24.9 kg/m² followed by 34.2% patients having BMI of 25 to 29.9 kg/m². 21.2% patients were obese (BMI 30-35) and 3.7% were underweight (BMI < 18.5%). The mean BMI was found to be 25.5±4.56 Kg/m².

Among clinical symptoms breathlessness was present in 90% cases, chest tightness in 46% and cough in 40% cases (Figure 1).

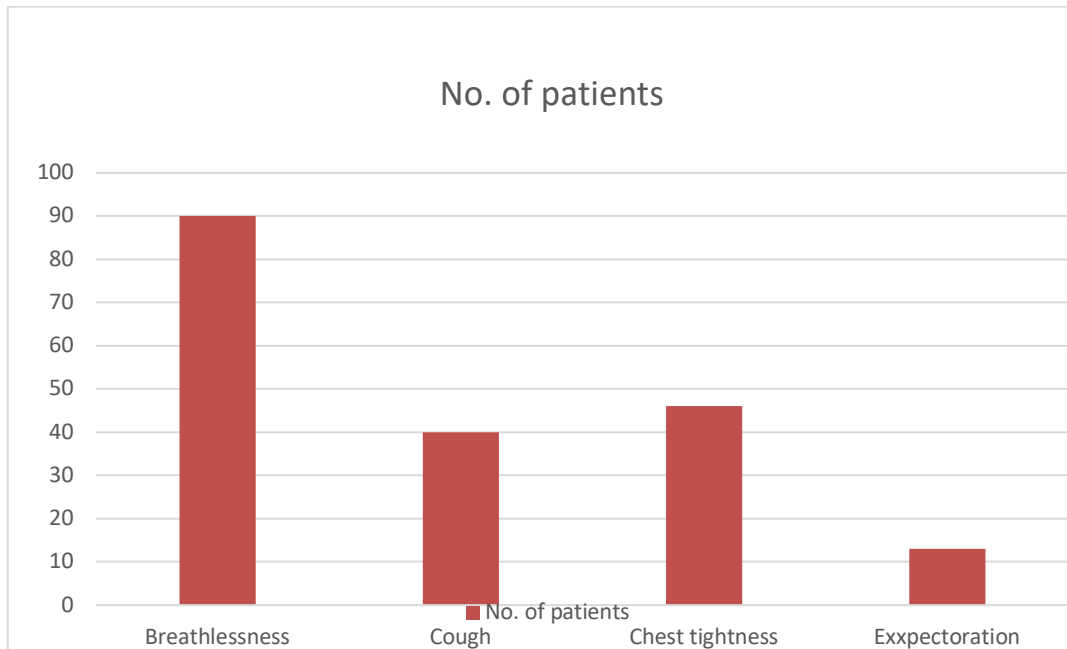


Figure 1: No. of patients

Among different exposures, 56 patients had history of smoking, 4 patients had history of smoking along with occupational exposure and 48 patients had history of biomass fuel exposure. (Table 1)

Table 1: Distribution of ACO Cases According To Different Exposures

Exposure	Frequency (N)	Percentage (%)	P value
Smoking	56	51.8	<0.05
Smoking And Occupational Dust Exposure	4	3.7	
Chulha Smoke/Biomass Fuel Exposure	48	44.5	
Total	108		

Among smokers, 46.3% patients had history of smoking of 10 to 20 pack years and 9.2% had 20 to 30 pack years of smoking. Smoking was found to be a statistically significant (p value<0.05) risk factor.

Majority of patients had no comorbidity, the most common comorbidity found was allergic rhinitis in 28 patients, hypertension in 12 patients, followed by diabetes mellitus in 11 patients and chronic kidney disease in 1 patient. Out of 108 cases of ACO, 18

cases had family history of asthma. All cases with positive family history of asthma had documented history of asthma.

Discussion

Among 108 ACO patients of our study, with documented history of asthma, 55.6% patients were males. Patients in the ACO group with severe asthma were more likely to be male. Similarly in a study, the overall prevalence of ACO was 20% among which, 60% men[8]. In a study where no significant gender differences were found in ACO patients (51.3 vs 48.7, p value 0.77)[9].

In our study, 54.6% patients belonged to age group of 41 to 50 years followed by 25% in 51 to 60 years with mean age of 51.6 ± 0.69 years which was similar to a US Study between 2007 to 2012, in which mean age of ACO patients was 58.38 ± 2.03 [10]. Majority of patients, 40.7% patients had normal range body mass index of 18.5 to 24.9 kg/m² followed by 34.2% patients having BMI of 25 to 29.9 kg/m² with mean BMI was found to be 25.5 ± 4.56 Kg/m². A meta-analysis study also showed that ACO patients had higher BMI[11]. BMI of 26.2 ± 5.7 in ACO as compared to 25.5 ± 4.6 in COPD[12].

Most patients with ACO presented with complaints of breathlessness (90%), followed by cough (44%). A study done by de Marco *et al* reported that overlap group were more likely to have cough (ACO 65%, COPD 54%, asthma 23%) and wheezing (ACO 79%, COPD 43%, asthma 43%)[13]. Cough and dyspnea were the more prevalent symptom followed by sputum production in patients with ACO[12].

We found that smoking was seen in 51.8% patients, chulha smoke exposure was present in 44.5% patients and smoking along with Occupational exposure was seen in 3.7% cases. Smoking was found to be statistically significant (p value < 0.05) for the development of ACO in asthmatic patients. In a study, 190 primary care asthma patients with no previous diagnosis of COPD, but who were either current or ex-smokers, with a smoking history of at least 10 pack-years, Fifty-two (27.4%) of the patients were found to have ACOS [14]. In patients with severe asthma, patients in the ACO group were more likely to ex- or current smokers (P < .001) compared with those in the non-ACO group[15]. Smoking is associated with the development of chronic airflow obstruction. Smoking interacts with asthma, increasing the risk of chronic airflow obstruction. Among those with onset of asthma after the age of 10 years, the association with adult airflow obstruction was stronger among current smokers (a 25-fold increase) than never-smokers (an 11-fold increase)[16].

Majority of patients had no comorbidity, the most common comorbidity found was allergic rhinitis in 28 patients, hypertension in 12 patients, followed by

diabetes mellitus in 11 patients and chronic kidney disease in 1 patient. In a study 85% of ACO patients had concomitant diseases. Most common was arterial hypertension (62.9%) followed by metabolic disorders (diabetes, obesity, metabolic syndrome 46.4% of patients), allergic rhinitis (35.7%), ischemic heart disease (28%) and heart failure (13.9%)[17]. In a study done by J.-W. Bai *et al*, history of allergic rhinitis was present in 21 patients out of 65 [18]. Out of 108 cases of ACO, 18 cases had family history of asthma. In a study done by J.W. Bai *et al*, 18 cases had family history of asthma out of 65 ACO patients[18].

Conclusion

In this study, ACO patients who had documented history of asthma were studied and it was found that smoking exposure was significantly associated with development of ACO in asthmatic patients. But no statistically significant association was found with development of ACO in patients with allergic rhinitis along with asthma or those who had family history of asthma. Hence asthmatic patients with associated risk factors should always be assessed for ACO on first visit. A detailed clinical history should be taken for early management, to prevent exacerbations and frequent hospitalization and providing better quality of life. Early identification followed by appropriate treatment can lead to better prognosis in future in patients with asthma COPD Overlap.

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