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Prevalence of asthma COPD overlap (ACO) in COPD patients

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Abstract
Background: Asthma and COPD are the most common chronic respiratory diseases, affecting over 500 million people globally and resulting in enormous morbidity and rising health-care costs. These disorders are often encountered in clinical practise and frequently coexist.
Objectives: To study the occurrence of Asthma COPD overlap in COPD patients.
Methods: Significant reversibility was seen in 18% of the cases, No reversibility was seen in 32% of the cases and no significant reversibility was seen in 50% of the cases. Around 50 patients with COPD with included. A detailed clinical history was obtained which included demographic, Past history and Symptomology. The PFT, Chest X-ray and Absolute eosinophil count was obtained.
Results: Significant reversibility was seen in 18% of the cases, No reversibility was seen in 32% of the cases and no significant reversibility was seen in 50% of the cases. Exacerbator with emphysema was seen in 30% of the cases, exacerbator with chronic bronchitis and Asthma with COPD overlap was seen in 24% of the cases.
Conclusion: When compared to asthma and COPD alone, ACO has a rapid deterioration in lung function, more frequent exacerbations, increased health-care resource usage, a deteriorating quality of life, and a higher mortality rate. By changing the line of care and diagnosing ACO early on, one can avoid exacerbation and morbidity.

Keywords: COPD, ACO, asthma, FEV1, exacerbations

Introduction
Chronic obstructive pulmonary disease (COPD) is a prevalent, preventable, and curable condition defined by persistent respiratory symptoms and airflow restriction caused by airway and/or alveolar abnormalities, which are typically induced by considerable exposure to noxious particles or gases [1].
Asthma is a multifaceted illness defined by chronic airway inflammation, a history of respiratory symptoms such as wheezing, shortness of breath, chest tightness, and coughing that varies in duration and severity, and variable expiratory airflow restriction [2].
Asthma has an early onset with sporadic symptoms, responds well to inhaled medication, and is frequently associated with other allergic illnesses [3]. Unlike COPD, which has a late onset, slowly progressing symptoms, a poor response to inhaled medication, and is typically associated with long-term smoking, Patients can, however, exhibit symptoms of both diseases at times, a condition known as asthma-COPD overlap syndrome [4].
Asthma COPD overlap is defined by chronic airflow limitation with multiple symptoms that are often associated with both asthma and COPD; hence, it is characterised in clinical practise by traits that share both asthma and COPD [5]. Asthma and COPD are the most common chronic respiratory diseases, affecting over 500 million people globally and resulting in enormous morbidity and rising health-care costs [6]. It is not unexpected, however, that these disorders are often encountered in clinical practise and frequently coexist. Both are quite common, and it is very likely that they will coexist in some people. Over the last decade, there has been an increase in interest in this phenomenon, now termed as Asthma–COPD overlap (ACO).

Materials and Methods
Type of Study: It is a Random Cross-Sectional Study
Sample size: 50 patients with COPD

A detailed clinical history was obtained which included demographic, Past history and Symptomology. The PFT, Chest X-ray and Absolute eosinophil count was obtained. Chest X-ray was done to exclude other causes the Pulmonary Function Test was done to rule out airflow limitation 400 ml in FEV1 then Peripheral eosinophilia (≥300 eosinophils/micro litre) was taken into consideration.

Inclusion Criteria
- Patients with asthma >40 yrs. of Age
- Known cases of COPD

Exclusion Criteria
- Patients <40 yrs of age
- Patients with other comorbidites.
- Not willing to provide informed consent

Statistical Analysis: The SPPS 22 software was used to do the statistical analysis and the data was presented in the form of tables with percentages.

Observation and Results
A total of 50 patients with COPD were included in the study

Table 1: Distribution based on Age group

Age Group (in yrs)	Frequency	Percentage
41 to 50	19	38%
51 to 60	22	44%
61 to 70	7	14%
>70	2	4%
Total	50	100%

Majority of the patients belonged to the age group of 51 to 60 yrs with incidence of 44%, followed by 41 to 50 yrs with 38%, 14% belonged to the age group of 61 to 70 yrs and the least belonged to the age group of >70 yrs with 4%.

Table 2: Distribution based on COPD phenotypes

COPD phenotypes	Frequency	Percentage
No exacerbator	11	22%
Asthma COPD overlap	12	24%
Exacerbator with chronic bronchitis	12	24%
Exacerbator with emphysema	15	30%

Exacerbator with emphysema was seen in 30% of the cases, exacerbator with chronic bronchitis was seen in 24% of the cases, Asthma with COPD overlap was seen in 20% of the cases, No exacerbator was seen in 22% of the cases.

Table 3: Distribution based on Atopy and AEC

Atopy	Frequency	Percentage
Yes	23	46%
No	27	54%
Absolute Eosinophil Count (AEC)		
<300	14	28%
>300	36	72%
Total	50	100%

Atopy was present in 46% of the cases. Elevated Absolute Eosinophil Count was seen in 72% of the cases.

Table 4: Distribution based on Pulmonary Function Test (PFT)

Pulmonary Function Test (PFT)	Frequency	Percentage
No reversibility	16	32%
No significant reversibility	25	50%
Significant reversibility	9	18%
Total	50	100%

Significant reversibility was seen in 18% of the cases, No reversibility was seen in 32% of the cases and no significant reversibility was seen in 50% of the cases.

Table 5: Distribution based on Asthma COPD overlap Asthma COPD overlap was seen in 24% of the cases

COPD	Frequency	Percentage
Asthma COPD overlap	12	24%
COPD	38	76%
Total	50	100%

Discussion
ACO is a newly identified condition with an apparent high incidence and clearly varied traits that is associated with a substantial illness burden. Patients who have ACO may have poorer results than those who merely have asthma or COPD. Despite its high incidence, few population-based research have studied the prevalence of ACO, rendering the epidemiology of this disorder largely unexplored [7, 8].
ACO included a significant criterion for a history of childhood or adult-onset asthma. Because the prevalence of COPD increases beyond the age of 40, a 40-year age limit is appropriate to enhance diagnostic accuracy, however, that asthma can occur in people above the age of 40. Despite the fact that COPD patients might have a substantial BDR, it is usually less than 400 mL. This criterion can thus be fulfilled in persons without a documented history of asthma before the age of 40 by exhibiting a BDR of >400 mL [9]. While substantial BDRs have long been associated with asthma, it is now widely recognised that some COPD patients see considerable FEV1 improvements after using bronchodilators. In individuals with COPD, however, BDRs are often modest in magnitude and relatively variable, in contrast to asthma, where BDRs are typically larger and more robust.
Although many asthma patients have a history of atopy and/or rhinitis, many persons who have atopy and/or rhinitis do not have or acquire asthma. As a result, having a history of atopy and rhinitis should not be a primary ACOS factor. The presence of a history of atopy was shown to be associated with the diagnosis of ACO in this study.
In the general population, the total prevalence of ACO is 2.0%. Prior research has indicated heterogeneity [10]. Differences in definitions, diagnostic criteria, disease ascertainment techniques, geographical area, demographic characteristics (e.g., age and smoking), research design, and inherent biases associated with observational studies may explain this variation.
In earlier research, the prevalence of ACO among COPD patients ranged from 12.6 to 55.7%, with a pooled frequency of 29.6% [11]. In this study the prevalence of ACO was 24%. In ACO, the number of hospital admissions for any cause or for illness exacerbation was found to be greater

than in asthma and COPD alone. This finding is consistent with a previous meta-analysis, which assessed the ACO prevalence among COPD patients in population-based studies to be 27.0% [12]. In ACO, the number of hospital admissions for any cause or for illness exacerbation was found to be greater than in asthma and COPD alone.

Conclusion

When compared to asthma and COPD alone, ACO is related with a rapid deterioration in lung function, more frequent exacerbations, increased health-care resource usage, a deteriorating quality of life, and a higher mortality rate. By changing the line of care and diagnosing ACO early on, one can avoid exacerbation and morbidity.

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