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## Prevalence and demographical variation of asthma COPD overlap (ACO) in previously diagnosed chronic obstructive pulmonary disease patients of Southern Rajasthan: A cross sectional study

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### Abstract

**Background:** Asthma COPD overlap (ACO) is widely gaining recognition as separate phenotype of chronic obstructive airway disease with distinct treatment and prognosis. It is an important challenge of accurately diagnosing ACO.

**Aim:** To estimate the prevalence of ACO among patients previously diagnosed as COPD and compare their demographical profile.

**Methodology:** This was observational study of 351 patients with COPD visited at our center between 2018-2019. A detailed chart review including demographic, clinical, laboratory investigations, spirometry, and radiological findings were recorded in pre-structured proforma. The diagnosis of ACO was based on GINA/GOLD criteria 2019.

**Results:** Of the total (n=351), ACO was diagnosed in 109 (31.05%) patients. Female predominance 61 (55.96%) patients were observed. There was a significantly higher incidence of wheeze, nasal symptoms, family history of atopy, as compared to obstructive airway disease. There was no significant difference in radiological findings between two groups.

**Conclusion:** ACO represents a large proportion (31.05%) of bronchial asthma patients with female predominance, higher comorbidities. GINA/GOLD criteria 2019 are important questionnaire to differentiate ACO from COPD with limited role of chest imaging. The study results have implications for earlier identification and appropriate treatment of this distinct clinical phenotype.

**Keywords:** Asthma, COPD, ACO

### Introduction

COPD is common obstructive pulmonary diseases in clinical practice. Although asthma frequently represents with different clinical characteristics, significant overlap features are observed in bronchial asthma<sup>[1]</sup>. Among middle-aged and older adults with asthma or COPD 15%-45% have both conditions, referred to as the asthma-COPD overlap syndrome (ACOS)<sup>[2]</sup>. ACOS was proposed by Global Initiative for Asthma (GINA) and Global Initiative for Chronic Obstructive Lung Disease (GOLD)<sup>[3, 4]</sup>. However, definition of ACOS has never been completely standardized. ACOS is commonly defined as either the diagnosis of COPD in a patient with previously diagnosed asthma, or incompletely reversible airway obstruction in asthmatic patients. In addition, ACOS diagnosis depends on the patient's presentations and laboratory tests. Moreover, ACOS patients experience uncontrolled symptoms despite medical treatments, more frequent exacerbations in the 6th decade of life, and poorer prognosis when compared to COPD or asthma alone. Furthermore, ACOS was associated with higher risks for exacerbations, increased and worse global health status compared with those with COPD alone<sup>[5-6]</sup>.

Obstructive airway disease of the lung includes diseases in which there is increase in the resistance to airflow which can be due to airway obstruction or due to airway narrowing<sup>[4]</sup>. Bronchial Asthma is a chronic inflammatory disease of the lungs, variable episodes of airflow obstruction is the main characteristic, which is usually reversible. Whereas chronic obstructive pulmonary disease (COPD) is an obstructive airway disease which is

characterized by progressive limitation in airflow which is not fully reversible<sup>[4]</sup>.

**ASTHMA-COPD OVERLAP SYNDROME / ASTHMA-COPD OVERLAP:** Asthma and Chronic obstructive pulmonary disease (COPD) are the two most common obstructive pulmonary diseases. Although Asthma and COPD most often represent two distinct diseases, there is also significant overlap between these two diseases.

**Asthma-COPD Overlap (ACO):**

The term Asthma-COPD overlap syndrome (ACOS) does not describe a single disease entity. Therefore in order to avoid impression that this is a single disease, the term Asthma-COPD overlap syndrome (ACOS) is now no longer advised. In GOLD2018 the term now advised is Asthma-COPD overlap (ACO)<sup>[3]</sup>. In clinical practice Asthma-COPD overlap is defined by the features that it shares with both Asthma and COPD.

### Material and Methods

Patients presented to or referred by other departments to the Department of Respiratory Medicine in GMCH, Udaipur are taken for study. Cross sectional study performed during Jan 2019 to June 2020.

This was observational study of 351 patients with bronchial asthma visited at our center between 2018-2019. A detailed chart review including demographic, clinical, laboratory investigations, spirometry, and radiological findings were recorded in pre-structured proforma. The diagnosis of ACO was based on GINA/GOLD criteria 2019. The patients included in our study were spirometry proven obstructive airway disease and patients above the age of 18 years. Patients unwilling or unable to perform spirometry, patients with acute coronary syndrome, patients who are known case of CVA, hemodynamically unstable patients, and patients with terminal illness patients requiring intensive care unit were excluded.

### Result

Of the total (n=351), Asthma-COPD overlap was diagnosed in 109 (31.05%) patients. Female predominance 61 (55.96%) patients was observed. There was a significantly higher incidence of comorbidities and wheeze, nasal symptoms, family history of atopy, as compared to obstructive airway disease. There was no significant difference in radiological findings between two groups. (Figure1-3)

### Discussion

In our study we assessed 351 patients with COPD out of which 23.93% were already diagnosed case of COPD, while rest 76.07% were diagnosed in our institute as COPD. Out of the 351 enrolled patients of COPD, two hundred one (57.26%) were males and one fifty (42.73%) were females. (Figure-1). Of total enrolled patients, 208 (59.25%) were living in rural area and 143(40.74%) were living in urban area. (Figure-2). Among 351 Patients total patients of obstructive airway diseases, COPD were 242 (68.95%) and total patients of Asthma-COPD (ACO) overlap were 109 (31.05%). (Figure-3). In our study we observed that the prevalence of ACO is very high about 31% in population of obstructive airway disease. Similar outcome was observed in meta- analysis performed by Alshabanet *et al.* (2015) in which they found the prevalence of ACO in population of COPD patients was about 27% in and 28% prevalence in

hospital based population in USA. Whereas VazFragoso *et al.* (2017)<sup>[8]</sup> found that there is prevalence of ACO was 17.4% amongst previously COPD diagnosed patients. The study done by Cosio *et al.* (2016)<sup>[10]</sup> were evaluated 83% patient were suffering from COPD and found that there was 15% of patients were suffering from ACO among COPD patients population. Fu *et al.* (2014) studied the patient who were above 55 years of age, (n = 75patients), and observed that the prevalence of ACO was about 55.5%. Van Boven *et al.* (2016)<sup>[5]</sup> 156 performed retrospective study in large population of 68, 578 patients above 18 years of age where they found the prevalence of ACO inpatient who were diagnosed with obstructive airway disease was 7.40% where as in previously diagnosed as COPD patients the prevalence was 19.3%. Montes de OCA *et al.*<sup>[8]</sup> performed the cross sectional study in general population above the age of 40 years of age including 1743 patients in their study where the prevalence of ACO in general population was 5.8%, 35.7% in asthma patients and 32.7% in COPD patients respectively.

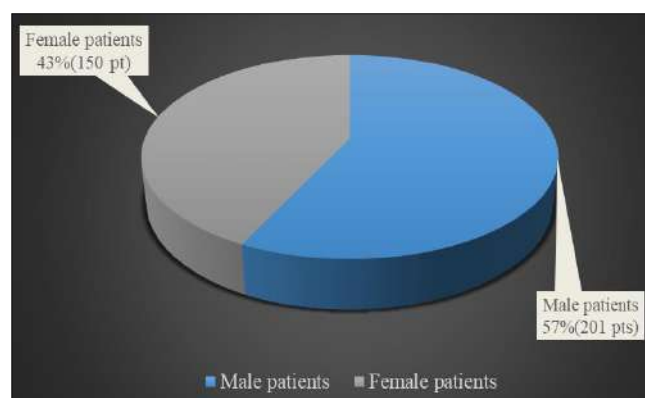


Fig 1: Female/Male

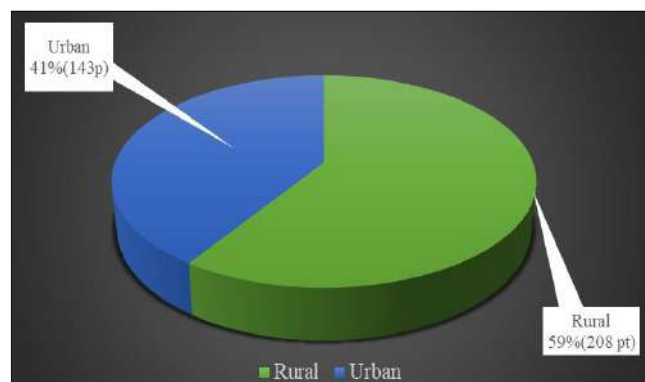


Fig 2: Rural/Urban

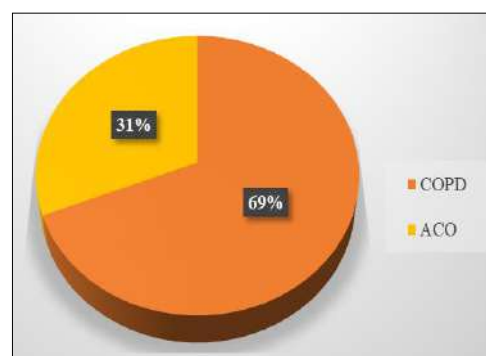


Fig 3: ACO & COPD

## Conclusion

ACO represents a large proportion (31.05%) of COPD patients with female predominance, higher comorbidities. GINA/GOLD criteria 2019 are important questionnaire to differentiate ACO from COPD with limited role of chest imaging. The study results have implications for earlier identification and appropriate treatment of this distinct clinical phenotype.

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