



## ASTHMA COPD OVERLAP SYNDROME [ACOS]

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### LETTER TO THE EDITOR

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The most common obstructive airway diseases are asthma and chronic obstructive pulmonary disease [COPD], which affect 10% of the population. Asthma and COPD are heterogeneous conditions characterized by airway obstruction. Asthma is a heterogeneous condition usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness, and cough that vary over time and in intensity, together with variable expiratory flow limitation, [GINA 2020].

COPD includes chronic bronchitis and emphysema. Chronic obstructive pulmonary disease is a common, preventable, and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and alveolar abnormalities usually caused by significant exposure to noxious particles or gases influenced by host factors including abnormal lung development, [GOLD 2020].<sup>2</sup>

A subset of patients has features of both asthma and COPD, they are described as ACOS. According to Dutch Hypothesis, asthma and airway hyperresponsiveness predispose to COPD later in life, asthma and

COPD are different expressions of a single disease.<sup>3</sup>

Asthma-COPD overlap and [asthma + COPD] are terms used to collectively describe patients who have persistent airflow limitation together with clinical features that are consistent with asthma and COPD. This is not a definition by a single disease entity, but a descriptive term used for clinical use that includes several different clinical phenotypes, reflecting different underlying mechanism<sup>1</sup>, however, a clear definition of ACOS is lacking and it is a challenge to diagnosis the diseases.

According to a population-based meta-analysis study, 2% of the global population is affected by ACOS<sup>4</sup>. Some studies show that ACOS affects 11% to 61% in asthma patients and 4.2% to 61% in COPD patients. According to the study, the patient with ACOS is older when compared to asthma patients and younger than COPD patients. The prevalence of ACOS increases with age. The ACOS predominantly affects males according to study. Patients with ACOS are more risk for frequent exacerbation, hospitalization, and worse health status when compare to asthma and COPD<sup>5</sup>. According to GINA2020, the prevalence rate of ACOS varies between 9%

and 55% of those with either diagnosis, but it varies by age and gender

The risk factors are the history of smoking, exposure to toxic substance and biofuel, older age and male sex, history of allergy from childhood, family history and history of asthma.<sup>6</sup>

The clinical features of ACOS may be intermittent or episodic, onset of symptoms occurs after or before 40 years of age. The symptoms of ACOS will be progressive and symptoms are partly or significantly reduced by treatment. People diagnosed with ACOS typically experience symptoms more frequently than people with asthma or COPD. Symptoms include are difficulty in breathing, frequent cough with expectoration, wheezing, and frequent shortness of breath. The exacerbations and flare-up of ACOS are more when compare to COPD or asthma. The symptoms may be aggravated by exercise, allergy, and dust.

There is no widely clear cut definition for ACOS. The diagnosis mainly depends on the history of patients, physical examination, and Investigation [spirometry, sputum examination, CT scan, and X ray]. In blood examination, there is increased eosinophil in blood and elevated IgE immunoglobulin level in the blood. In sputum examination, eosinophil and neutrophil are found in the sputum. In a chest x-ray, there may be found such as hyperinflation of the lung, air wall thickening, air trapping, bullae, or hyperlucency.

In spirometry, there is persistent airflow limitation and airflow limitation are not fully reversible. The post -BD [bronchodilator]  $FEV_1/FVC < 0.7$  are usually present in ACOS, In mild ACOS,  $FEV_1 > 80\%$  predicted, In severe ACOS,  $FEV_1 < 80\%$  predicted. In ACOS, there is a post-bronchodilator increase in  $FEV_1 > 12\%$  and 400 ml from the baseline [marked reversible airflow limitation]

The management includes treatment of modifiable risk factors like smoking cessation. It plays an important role in the progression of the disease. It includes E cigar rates, drugs like Varenicline, Bupropion, and Nortriptyline, and nicotine replacement products such as nicotine gum, nicotine inhaler, transdermal nicotine patch, sublingual nicotine tablet, and nicotine lozenges. Vaccination such as pneumococcal and influenza vaccination is useful in reducing the incidence of ACOS.

The pharmacological therapy includes Inhaled corticosteroid [ICS] should be used initially in a low or medium dose depending on the level of symptoms. The inhaled corticosteroids are beclometasone, budesonide, mometasone, and fluticasone. Along with ICS, add on therapy of long-acting beta2 agonist [LABA] should be given to provide symptoms control. The LABA is formoterol, Salmeterol, and Indacaterol. Along with ICS, add on therapy of long-acting muscarinic antagonists [LAMA] should be given to provide symptoms control. The LAMA are glycopyrronium bromide, tiotropium, and umeclidinium. The non -pharmacological treatment includes physical activity and pulmonary rehabilitation. The role of biologics such as omalizumab and IL5 antagonist is still being in studies in ACOS treatment.<sup>7</sup> and regular follow up

Patients with ACOS have a lower quality of life and suffer from more complications than those affected by either disease alone. The diagnosis of ACOS is difficult because of clinical similarities between the two diseases and the various phenotype that comprise the syndrome.

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