



# Characteristics of Asthma-COPD Overlap According to Various Criteria

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Asthma and chronic obstructive pulmonary disease (COPD) have been traditionally considered distinct clinical entities, but they are frequently diagnosed as respiratory ailments. About 15%–20% of patients with either asthma or COPD manifest overlapping features.

Asthma and COPD overlap (ACO) is an umbrella term of multiple subphenotypes that include patients who have predominant asthma with some COPD features and others with predominant COPD with some asthma features<sup>1,2</sup>. Most studies on ACO have demonstrated a higher overall burden of exacerbations or healthcare utilization than that with either asthma or COPD alone<sup>3,4</sup>.

The prevalence of ACO has been reported to be up to one-third of asthma patients and one-quarter of COPD patients<sup>5</sup>. This wide range is due to the various definitions used to identify ACO. Sin et al.<sup>6</sup> proposed a case definition of ACO that may help clinicians to diagnose patients with ACO more accurately and researchers to design therapeutic and clinical studies. However, various diagnostic algorithms have been reported in different countries, indicating that no single universally accepted definition of ACO has emerged<sup>7-9</sup>.

Lim et al.<sup>10</sup> compared clinical presentations and the appropriateness of four different sets of criteria for diagnosing ACO in a cohort of Korean COPD patients. Those authors also investigated which criteria are most applicable to a Korean ACO

population<sup>10</sup>. Four different sets of criteria include the American Thoracic Society (ATS) roundtable criteria, the modified Spanish Society of Pneumology and Thoracic Surgery (SEPAR) criteria, the Global Initiative for Asthma (GINA)/Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria, and specialists' diagnoses<sup>6,11,12</sup>. The prevalence of ACO was 24.4% according to specialists' diagnoses, followed by 16.0%, 13.6%, and 2.2% according to the GINA/GOLD, SEPAR, and ATS Roundtable criteria. The clinical characteristics between ACO and non-ACO patients vary according to the different sets of criteria. However, a greater decline in forced expiratory volume in 1 second (FEV<sub>1</sub>) was observed during 3 years of follow-up in an ACO group than in a non-ACO group according to the SEPAR criteria and specialists' diagnoses; this was also nearly the case according to the ATS Roundtable criteria (p=0.093). If more patients in the ACO group were compared with those in the non-ACO group, a significant decline in FEV<sub>1</sub> would have been observed. Moreover, the decline in forced vital capacity (FVC) was also more significant in the ACO group than in the non-ACO group according to the ATS Roundtable criteria and the specialists' diagnosis, although a small number of patients were categorized in the ACO group according to the ATS Roundtable criteria.

However, Park et al.<sup>13</sup> reported that patients with ACO exhibit a slower annual decline in FEV<sub>1</sub> than COPD patients without ACO over a median follow-up of 5.8 years. A change in lung function over the follow-up period would depend on baseline lung function because low baseline lung function may result in a smaller change. Lim et al.<sup>10</sup> showed a higher FEV<sub>1</sub> and FVC in an ACO group than a non-ACO group, which may result in a larger decline over 3 years. Moreover, the authors' used mean delta values between baseline and year 3 to evaluate the changes in FEV<sub>1</sub> and FVC. This statistical method resulted in only a small number of patients included in the analysis. If those authors had conducted a linear mixed analysis, more patients would have been included. In addition, a description of the proportion of ACO patients who met all four or fewer criteria would help to assess the diagnostic scope of each criterion. Despite several limitations of the study, the authors found disparities in the clinical presentation and longitudinal outcomes in the different criteria of the ACO definitions.

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They also reported that the ATS Roundtable criteria may not be appropriate for clinical use in Korea and that clinical diagnosis by specialists is more comprehensive and practical<sup>10</sup>.

The ATS Roundtable and SEPAR criteria include blood eosinophil count but not fractional exhaled nitric oxide (FeNO). There is no well-established FeNO cutoff value that defines an “asthmatic” phenotype among smokers with an airflow limitation. Some studies have suggested a cutoff value of 35 parts per billion (ppb), while others have recommended a 50 ppb threshold<sup>12,14</sup>. Few studies have investigated the role and utility of FeNO in Korean COPD patients<sup>15,16</sup>. Ahn et al.<sup>16</sup> reported various FeNO levels in COPD patients. Asthma history, blood eosinophil percentage >3%, and a positive bronchodilator response were independent risk factors for FeNO level<sup>16</sup>. Jo et al.<sup>15</sup> reported that increased FeNO is associated with a history of asthma regardless of wheezing. However, in real-world clinics, FeNO seems to play a subsidiary role in the use of inhaled corticosteroids-containing inhalers<sup>15</sup>.

ACO is not a single entity or a syndrome, but a collection of clinical features. Recognizing patients with features of both diseases is important to guide clinical care. Although a universally accepted consensus on its definition and diagnostic and clinical features are required, it may not be uniformly defined for different ethnicities.

## Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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