DIAGNOSIS AND TREATMENT OF THE ASTHMA-COPD OVERLAP SYNDROME

Asthma and COPD are both common inflammatory airway diseases with distinct guidelines for treatment. A definitive diagnosis is often difficult because patients may present with signs and symptoms of both asthma and COPD. Asthma-COPD Overlap Syndrome (ACOS) is an emerging inflammatory airway diagnosis for patients who exhibit features of both asthma and COPD. Currently, diagnosis and treatment is aimed at identifying which disease features predominate and selecting therapy accordingly. No studies have been conducted on the appropriate therapy for ACOS. This issue of CLIPS briefly summarizes an article that outlines clinical features of ACOS, challenges to diagnosis, and evaluation of treatment options. If you need further information, please contact the Center for Healthcare Innovation and Patient Outcomes Research (CHIPOR) at (205) 726-2659.


Introduction
- Asthma-COPD overlap syndrome (ACOS) is defined by the clinical manifestations of both asthma and COPD.
- Asthma is usually diagnosed in childhood and is characterized by recurrent dyspnea, wheezing, bronchial hyperresponsiveness and reversible airway obstruction.
- COPD is usually diagnosed in older adults and is associated with smoking, air pollutant exposure, chronic dyspnea, phlegm, wheezing, and loss of lung elastic recoil.
- Eosinophils and type 2 helper T (Th2) lymphocytes are the primary source of inflammation in asthma.
- Neutrophils and CD8 lymphocytes are the primary source of inflammation in COPD.
- Over time, patients with asthma or COPD can develop clinical features of the other disease.
- Incidence of ACOS increases with age and may be present in 15-45% of patients with COPD or asthma.
- Diagnosis is based on prevalent features. If three or more features of asthma or COPD are present, the diagnosis should correspond to those features. A diagnosis of ACOS should be considered if equal features of asthma and COPD are present.

Progressive Airway Obstruction
- Lung function naturally declines with age (25-50 mL/year).
- Decline in lung function is accelerated in both asthma (80 mL/year) and COPD (150 mL/year).
- The forced expiratory volume in one second (FEV1) measures lung function, but there is no way to diagnose asthma or COPD based on FEV1 decline.

Bronchial Hyperresponsiveness
- Bronchial hyperresponsiveness is associated with asthma, but is not a good diagnostic tool because it can occur in response to both specific and nonspecific stimulants (i.e., specific allergens or cold, dry air).
- Reports indicate there is a 60% prevalence of bronchial hyperresponsiveness in COPD.
- In COPD bronchial hyperresponsiveness is associated with increased hyperinflation and inflammation.
- Studies show that patients with COPD and bronchial hyperresponsiveness have accelerated declines in FEV1.
- In asthma and COPD, the presence of bronchial hyperresponsiveness indicates more severe disease.

Reversibility of Airway Obstruction
- One of the defining characteristics of asthma is reversible airway obstruction with bronchodilators; however, the degree of reversibility can diminish as the disease progresses.
Reversibility of Airway Obstruction (continued)

- Studies indicated up to 44% and 50% airway obstruction reversibility in COPD although COPD is traditionally characterized by irreversible airway obstruction.
- In COPD reversibility does not decrease the risk for exacerbation, hospitalization, or death.

Atopy in Asthma and COPD

- Atopy is an allergic syndrome characterized by eczema, allergic rhinitis, and/or allergic asthma.
- Atopy is a risk factor for both asthma and COPD.
- The European Respiratory Society Study on Chronic Obstructive Pulmonary Disease (EUROSCOPE) showed that up to 18% of patients with COPD had atopy and that atopic patients suffered more from cough and phlegm. Patients with atopy who were given an inhaled corticosteroid were less symptomatic.
- The Evaluation of COPD Longitudinally to Identify Predictive Surrogate Endpoints (ECLIPSE) study showed that up to 30% of patients with COPD had atopy and that these patients tended to be younger, male, and have higher body mass indexes.

Airway Inflammation in Asthma and COPD

- Eosinophils are the primary source of inflammation in asthma, but inflammation from neutrophils and CD8 lymphocytes may be present in asthmatics who smoke or have severe disease.
- In asthma, eosinophilic inflammation responds to inhaled corticosteroids (ICSs) and lack of response may result from multiple inflammation pathways other than the usual Th2 cytokine pathway.
- Neutrophils are the primary source of inflammation in COPD; however, the prevalence of eosinophilic inflammation in COPD is 15 to 40%.
- In COPD, eosinophilic inflammation is a marker of more severe disease and is associated with exacerbation.
  Interestingly, there is an inverse relationship between eosinophilia and FEV1.
- Both patients with asthma and COPD who have eosinophilic inflammation respond to ICS.

Exhaled Nitric Oxide in Asthma and COPD

- Exhaled nitric oxide (FeNO) indicates airway inflammation in asthma.
- FeNO is not a good diagnostic maker for asthma because smokers tend to have less FeNO than non-smokers.
- Typically, FeNO levels decrease with ICS, but in some patients FeNO remains persistent despite treatment.

Relevance of ACOS in Clinical Practice

- There is currently no standard definition for ACOS from either the Global Initiative for Asthma (GINA) or the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines.
- An ACOS diagnosis is difficult to treat because current studies that evaluate therapy are few and investigators must apply their own definition of ACOS in selecting the study population.

Current Treatment of Asthma and COPD

- GINA clearly outlines a stepwise treatment for asthma. Primary treatment is with an ICS in combination with short-acting beta-agonists (SABAs). Long-acting beta-agonists (LABAs) are added as the disease progresses.
- GOLD clearly outlines a stepwise treatment for COPD. Therapy typically includes smoking cessation, LABAs, and long-acting muscarinic antagonists (LAMAs). The use of ICSs in COPD and is restricted to severe disease.
- In patients with a primary diagnosis of asthma and signs of COPD, ICSs should be continued. Leukotriene Receptor Antagonists (LTRAs) can be added if atopy is present. Combination therapy with a LAMA and LABA is an option for severe cases.
- In patients with a primary diagnosis of COPD and signs of asthma, there may be further benefits from the addition of an ICS; however, more studies need to be conducted.

Conclusions

- According to the literature reviewed, additional research is needed to define ACOS and optimal treatment.

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