

REVIEW ARTICLE

ACO (Asthma COPD Overlap)

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Abstract:

Asthma-COPD overlap (ACO), which was previously called asthma-COPD overlap syndrome, happens when the patient has symptoms of both asthma and chronic obstructive pulmonary disease (COPD). The worldwide prevalence of ACO has been markedly increased over last few decades and it is associated with increased morbidity and mortality than Asthma or COPD alone. There have been several criteria and hypotheses proposed regarding diagnosis of ACO. Among them "Spanish Criteria" is most notable. Till now the treatment strategy remains same for ACO as for Asthma and COPD. As this is quite an up to the minute concept so further research and experiments are gravely needed to build a formidable management guideline to fight against ACO.

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Introduction:

ACO is a new term and new scientific concept in the practice of Respiratory medicine. It means Asthma-COPD overlap. In our day to day practice we find some patients who have the features of asthma as well as the features of COPD. Asthma is often confused with COPD when present in individuals with significant smoking history over the age of 40 (GINA, 2019). So those patients who have features of both asthma and COPD are called ACO (Asthma COPD overlap). Previously it was called "ACOS" or Asthma COPD overlap syndrome.

The syndrome was first described in 2014, when the Global Initiative for Asthma (GINA) and Global Initiative for Chronic Obstructive Lung Disease (GOLD) committee released a common document on the Asthma-COPD Overlap (ACO)¹. But since 2017, it has been called "ACO."

The "Global Initiative for Asthma (GINA)" has recommended use of the term "ACO" rather than "ACOS", to avoid giving the impression that this is a single disease and the term "syndrome" suggests a condition of unknown origin in which the clinical

symptoms and/or laboratory findings indicate a common patho-physiologic mechanism.

Definition:

If we want to study a disease we must define it. Unfortunately there is no formal definition of ACO. This is simply a description because there has no consensus been made among various groups and authors so far. So it is not properly defined yet. But as a whole, when a patient has both the features of asthma and COPD it can be defined as ACO. This is none but a working definition. Both GINA and GOLD (Global Initiative for Obstructive Lung disease) are trying to formulate a definition but till now no subjective or quantitative definition has been proposed. Also the approach previously stated by the GINA and GOLD which was a stepwise approach; it is not advised or followed now. So, various respiratory societies all over the world are following their own practical experience to tackle this disease.

Why ACO?

It is very important to have a sound knowledge about ACO as because:

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1. ACO is associated with increased morbidity and mortality than Asthma or COPD alone.
2. Increased number of exacerbation and hospitalization.
3. Very few randomized control trials (RCT) are available as in asthma trials, smokers are excluded and in COPD trials, asthmatics are excluded.

Every medical personnel should know about this condition to deliver better healthcare. Hence, it is essential to diagnose and treat ACO at an early stage.²

Worldwide prevalence:

Most estimates prevalence of ACO among asthma patients appears to be slightly higher, with estimates ranging 27.1%–38%, whereas estimates of ACO among COPD patients appear to be slightly lower, ranging mostly from 13%–28.6%.³

Bangladesh Perspective:

A study conducted by DG health and Biostatistics department showed that 22% adult people aged more than 40 years are suffering from obstructive lung disease who fill the category of ACO. The prevalence of ACO was found 7.8% in rural areas of Matlab, Bangladesh. Exposure to biomass fuel smoke may be a contributing risk factor for this high prevalence).⁴

Dutch Hypothesis and British Hypothesis:

If we talk about ACO, interestingly we should consider two hypotheses; Dutch hypothesis and British hypothesis. In 1961 “Orie” reported that there are patients who have manifestations of bronchial asthma and chronic obstructive pulmonary disease and that common pathogenetic mechanisms may underlie disease pathogenesis in selected patients with those disease.⁵ But the British hypothesis denied it mentioning “asthma and COPD are different in clinical aspect and also in aetiology” Now the enchanting fact following those two hypotheses, ACO finally brings asthma and COPD to the same point.

How to Diagnose?

Patients with ACO are characterized by increased reversibility of airflow obstruction, eosinophilic bronchial and systemic inflammation, and increased response to inhaled corticosteroids,

compared with the patients with COPD alone.⁶ It is pretty much difficult as well as intricate to diagnose ACO as there is no clear cut criteria; specially when this diagnosis is done much more on experience basis. In the year 2012, The Spanish Respiratory Society first tried to formulate a guideline defining some major and some minor criteria which later became familiar as “Spanish criteria.” These criteria include:

Major criteria:

- Documented history of asthma before 40 years of age
- Sputum Eosinophilia
- Post bronchodilator reversibility of FEV₁ is more than 15% from baseline values and 400 mL

Minor criteria:

- Documented history of Atopy
- Post bronchodilator reversibility of FEV₁ ≥200 mL and 12% from baseline values on 2 or more visits
- Elevated total IgE level

However, these criteria are neither sensitive nor specific. Recently all the respiratory societies of the world have recommended diagnosing of ACO on the basis of history, clinical features and a few investigations. These history and clinical features include patient’s age >40 years, asthma patients with longstanding history of smoking or smoking equivalents like indoor or outdoor air pollution, clinical features of asthma or COPD like shortness of breath, cough with sputum production, wheeze or chest tightness, COPD patients with history of allergic manifestations or atopy like rhinitis or eczema etc. Also we can perform some investigations in these patients before labeling it as ACO, such as: Chest x-ray to see any hyperinflation, CT scan of chest will provide further detailed information regarding lung parenchymal changes, Diffusing capacity of the lungs for carbon monoxide (DLCO) to see how much oxygen travels from the alveoli of the lungs to the blood stream in COPD. Spirometry is a must to do investigation. Post bronchodilator FEV₁ and FVC ratio less than 70% and increase of FEV₁ more than 15% and 400 mL will go more in favour of ACO. We can also perform other investigations like sputum and

peripheral blood Eosinophil, Fractional exhaled Nitric Oxide test (FENO) in sputum and some bronchoprovocation and bronchial reversibility tests. So meticulous history taking, clinical features and some relevant investigations are the prerequisite to diagnose ACO accurately. In a country like Bangladesh there are many patients who cannot afford those costly investigations. For them we should put our focus more on clinical features and some preliminary investigations. In a nutshell; if a patient visits us whose age is more than 40 years, smoker for a long time, have features of COPD and also have features of atopy or allergy should be diagnosed as ACO rather than asthma or COPD alone.

Treatment:

Basically ACO should be treated promptly because it causes more morbidity and exacerbation than asthma or COPD alone. The treatment is same as for asthma or COPD. That means for asthma the choice of treatment is corticosteroids and for COPD the choice of treatment is bronchodilators. In ACO we should give both corticosteroids and bronchodilators. Long acting bronchial agonists (LABA) and inhaled corticosteroids (ICS) combination is the key in treating ACO in addition to antihistamines. Adjunctive treatments such as leukotriene receptor antagonists, 5-lipoxygenase inhibitors, methylxanthines, or omalizumab deserve further study and should be administered by pulmonary or allergy subspecialists.⁸ Other management options include smoking cessations, regular exercise, vaccination, pulmonary rehabilitation. These are also important as a part of treatment as well as reducing the number of exacerbations in ACO patients. Sound knowledge of the disease, detailed information regarding the drugs used in ACO, early diagnosis and prompt treatment are the mainstay of ACO management. The major disadvantage is that it groups patients with very different characteristics under the ACO's umbrella. In view of this heterogeneity, we recommend a strategy of defining specific and measurable therapeutic objectives for every single patient and identifying the traits that can be treated to achieve those objectives.⁹

Prognosis:

Prognosis of ACO is relatively better than COPD or persistent asthma if we treat this condition

effectively and also according to the consensus. In our country we do have good support system and also we have available drugs to treat this condition properly.

Future Development:

As this a new terminology, we need more research to unveil further patho-physiology, genetic and host factors, specific investigations and drugs related to ACO. The ideal study would be a longitudinal prospective population study that follows anyone with respiratory symptoms, involving the whole spectrum of future disease. Such a study would then involve robust measurements like spirometry with reversibility, body box, small airway function, AHR, blood cells and constituents, DNA and nasal epithelial cells for (epi)genetic assessments as easy accessible tools separately from bronchoscopies that are more invasive, and computed tomography, to dissect the different subsets of airway and parenchymal diseases.¹⁰ Especially our new generation can initiate it but our pharmaceutical companies should come forward to provide logistical and financial support to aid this research to find out more information, remedies and also for the better management of this condition.

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