Asthma-COPD Overlap Syndrome (ACOS)

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Definition: ACOS

- 1 in 12 people worldwide affected by asthma or COPD
- 2 separate conditions, now heterogeneous

“Clinical conditioning with clinical features of both asthma and COPD”

- Prevalence rate: 15-55%
## Current Definitions

<table>
<thead>
<tr>
<th><strong>ASTHMA</strong>: GINA 2015</th>
<th><strong>COPD</strong>: GOLD 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Heterogenous disease, chronic airway inflammation</td>
<td>- Common preventable and treatable disease</td>
</tr>
<tr>
<td>- History of wheezes, chest tightness, cough</td>
<td>- ...characterized by persistent airflow limitation</td>
</tr>
<tr>
<td>- ...that vary over time &amp; intensity ..</td>
<td>- ..progressive</td>
</tr>
<tr>
<td>- Together with variable expiratory airflow limitation</td>
<td>- ..associated with enhanced chronic inflammatory response in the airway and lungs to noxious particles or gases ...</td>
</tr>
</tbody>
</table>
Asthma-COPD overlap Syndrome (ACOS) : Description for clinical use

- Characterized by
  - Persistent airflow limitation
  - Some features from asthma
  - Some features from COPD

- NO SPECIFIC DEFINITION (NEED more evidence of clinical phenotypes and mechanism)
ACOS

- DOES NOT represent single disease ... heterogenous

- Mechanism largely unknown

- No of phenotypes will be known in the future

- Clinical, pathophysiological, genetic identifiers
Objective of GINA and GOLD for ACOS

- Identify
- Distinguish asthma from COPD and ACOS
- Decide on initial treatment
- Stimulate the research into ACOS
Diagnosis of ACOS

- **History**
- **Physical examination**
- **Investigations** :
  - Spirometry : ESSENTIAL
  - Peak flow
  - CXR / CT Chest
  - IgE
**Table 1. Four Examples of Patients with Obstructive Airway Disease.***

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Patient with “Easy” Asthma</th>
<th>Patient with “Easy” COPD</th>
<th>Patient with ACOS Stemming from Asthma</th>
<th>Patient with ACOS Stemming from COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td>21</td>
<td>65</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Atopy</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Current smoker</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Pack-years</td>
<td>0</td>
<td>95</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>Recurrent</td>
<td>Chronic</td>
<td>Chronic with flares</td>
<td>Chronic with flares</td>
</tr>
<tr>
<td>Wheezing</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reversible airway obstruction</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Bronchial hyperresponsiveness</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes or no</td>
</tr>
</tbody>
</table>

*“Easy” asthma and “easy” COPD are the easily recognized extremes of asthma and COPD. The two patients with the asthma–COPD overlap syndrome (ACOS) have a similar age, and both have atopy. Despite not being a smoker, the patient with ACOS stemming from asthma has irreversible airway obstruction, which is accompanied by chronic dyspnea and flare-ups of wheezing and bronchial hyperresponsiveness. The patient with ACOS stemming from COPD has some reversibility of airway obstruction after bronchodilator use, chronic dyspnea, and flare-ups of wheezing, which may or may not be accompanied by hyperresponsiveness. In the two patients with ACOS, whether the syndrome stems from asthma or from COPD cannot be easily distinguished by their phenotype.*
INFLUENCE OF ENVIRONMENT AND AGING ON SEVERITY AND CHRONICITY OF DISEASE

Risks
- Genetic patterns
- Maternal smoking
- Childhood diseases
- Allergy
- IgE
- Eosinophilia
- Exhaled nitric oxide
- Th2-related inflammation
- Rhinitis

Outcomes

Asthma
- Low lung function
- Episodic wheezing
- Nocturnal symptoms
- BHR
- Eosinophilia
- GERD

ACOS
- Limited reversibility of airway obstruction
- Hyperinflation
- Abnormal body composition
- Coexisting cardiac conditions
- Infections
- Dyspnea

COPD
- Genetic patterns
- Aging
- Smoking
- Maternal smoking
- Exposure to smoke from biomass fuels
- Occupational hazards
- Poor nutrition
- BHR
- Emphysema
- BPD
Importance of diagnosis ACOS?

- Outcomes of ACOS
  - Worse than Asthma or COPD alone
  - FREQUENT EXACERBATION
  - Poor quality of life
  - Rapid decline of lung function
  - HIGH MORTALITY
  - More use of health care resources

- Treatment approach and algorithm different
Treatment as per GINA / GOLD

**Asthma diagnosis**
- Inhaled corticosteroid (ICS)
- +
- Long acting b2 agonist (LABA)
- And / or
- Long acting muscarinic antagonist (LAMA)

**COPD diagnosis**
- Bronchodilators (LABA and or LAMA)
- Add +
- ICS

**BUT NO LABA monotherapy**

**BUT NO ICS alone as monotherapy**
ACOS Treatment

- START with “asthma treatment”
  - ICS (low or moderate dose depending on the symptoms): main priority
  - Add +
  - LABA and/or LAMA
  - (Continue LABA and/or LAMA with ICS)

- If features of asthma: NO LABA monotherapy
Other treatment for all patients for COPD and Asthma

- Treatment of modifiable risk factors: smoking cessation
- Treatment of comorbidities
- Pulmonary Rehab
- Vaccination
- Self management strategies
- Regular follow up
Referral for specialized investigations if necessary

- Persistent symptoms despite treatment
- Diagnostic uncertainties
- Atypical symptoms: hemoptysis, significant wt loss, fever, night sweats, signs of bronchiectasis
Specialized investigations

- PFT
  - DLCO
  - ABG
  - AHR
- HRCT
- Inflammatory biomarkers
  - IgE
  - FeNO
  - Blood and sputum eosinophil
Future research

- Urgent need of more research for better recognition and better treatment
Disclosure

- None
Reference

1. GOLD GINA joint project: consensus based documents for “Diagnosis of Chronic airflow limitation: Asthma, COPD and Asthma–COPD overlap Syndrome (ACOS) Updated 2015


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