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Invited Review Article

Definition and diagnosis of asthma–COPD overlap (ACO)

Satoru Yanagisawa, Masakazu Ichinose*

Department of Respiratory Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan

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Abbreviations:
ACO, Asthma–COPD overlap; COPD, Chronic Obstructive Pulmonary disease; FeNO, Fractional exhaled nitric oxide; GINA, Global Initiative for Asthma; GOLD, Global Initiative for Chronic Obstructive Lung Disease; ICS, Inhaled corticosteroids; LABA, Long-acting beta-2 agonists; LAMA, Long-acting muscarinic antagonists

ABSTRACT

It is now widely recognized that asthma and COPD can coexist as asthma–COPD overlap (ACO), but the preliminary attempts at providing universal guidelines for the diagnosis of ACO still need to be improved. We believe that a case can be made for devising guidelines for the diagnosis of this increasingly common disease that are specific to Japan. In this paper, we present our consensus-based description of ACO which we believe is realistic for use in our country. In addition, we cite the scientific evidence for our own "objective" features used to develop the criteria for COPD and asthma diagnosis. We acknowledge that they will need to be validated and updated over time, but hope the results will encourage further research on the characteristics and treatment of this commonly encountered clinical problem.

Introduction

Asthma and COPD are the pulmonary diseases most frequently encountered in clinical practice. Usually, each disease is caused by a different etiology and shows a different clinical picture and course. However, these two diseases sometime present within the same patient, and it is now recognized that asthma and COPD can coexist as asthma–COPD overlap (ACO),[1–5] which is clinically important for several reasons. First, it is estimated that the number of patients with ACO will increase significantly together with the recent increase in numbers of patients with asthma and COPD. Secondly, patients with ACO are prone to experience more frequent and severe exacerbations. For example, patients who have asthma with a COPD component tend to present with severe hypoxia because of irreversible/fixed airway obstruction and impairment of the alveolar diffusion capacity by emphysematous changes. In contrast, patients with COPD who have an asthma component not only have exertional dyspnea but also develop paroxysmal wheezing or dyspnea at night or in the early morning. Thirdly, evidence-based effective treatments for ACO have yet to be identified. There have been many clinical trials performed in patients with bronchial asthma and in those with COPD, but not in patients with ACO, mainly because no definitive inclusion criteria have been developed for patients with coexisting asthma and COPD. In this review, we describe ACO definitions and recommendations for the diagnosis in recent literature and introduce a part of new definitions and diagnostic criteria of ACO published by the Japanese Respiratory Society.[6]

Definition of ACO in recent literature

The Global Initiative for Asthma (GINA) and the Global Initiative for Chronic Obstructive Lung Disease (GOLD) initially proposed guidelines for "asthma and COPD overlap syndrome (ACOS)",[7] in which they recommended that the condition be defined in two steps (Table 1). Using these guidelines, the first step is the identification of a history of chronic airway disease, i.e., chronic or recurrent cough,

* Corresponding author. Department of Respiratory Medicine, Tohoku University Graduate School of Medicine, 1-1 Seiryo-machi, Aoba-ku, Sendai 980-8574, Japan.
E-mail address: ichinose@rm.med.tohoku.ac.jp (M. Ichinose).
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Table 1
Summary of syndromic approach to diseases of chronic airway limitation.[7]

STEP 1 DIAGNOSE CHRONIC AIRWAYS DISEASE
Do symptoms suggest chronic airways disease?

Yes → **STEP 2**

No → Consider other diseases first

STEP 2 SYNDROMIC DIAGNOSIS IN ADULTS
(i) Assemble the features for asthma and for COPD that best describe the patient.
(ii) Compare number of features in favour diagnosis and select a diagnosis.

Feature: if present suggest	ASTHMA	COPD
Age of onset	☐ Before age 20 years	☐ After age 40 years
Pattern of symptoms	☐ Variation over minutes, hours or days ☐ Worse during the night or early morning ☐ Triggered by exercise, emotions including laughter, dust or exposure to allergens	☐ Persistent despite treatment ☐ Good and bad days but always daily symptoms and exertional dyspnea ☐ Chronic cough & sputum preceded onset of dyspnea, unrelated to triggers
Lung function	☐ Record of variable airflow limitation (spirometry or peak flow)	☐ Record of persistent airflow limitation (FEV1/FVC < 0.7 post-BD)
Lung function between symptpms	☐ Normal	☐ Abnormal
Past history or family history	☐ Previous doctor diagnosis of asthma ☐ Family history of asthma, and other allergic conditions (allergic rhinitis or eczema)	☐ Previous doctor diagnosis of COPD, chronic bronchitis or emphysema ☐ Heavy exposure to risk factor: tobacco smoke, biomass fuels
Time course	☐ No worsening of symptoms over time. Variation in symptoms either seasonally, or from year to year ☐ May improve spontaneously or have an immediate response to bronchodilators or to ICS over weeks	☐ Symptoms slowly worsening over time (progressive course over years) ☐ Rapid-acting bronchodilator treatment provides only limited relief
Chest X-ray	☐ Normal	☐ Sever hyperinflation

NOTE: These features best distinguish between asthma and COPD. Several positive features (3 or more) for either asthma or COPD suggest that diagnosis. If there are a similar number for both asthma and COPD, consider diagnosis of ACOS

DIAGNOSIS	ASTHMA	Some features of asthma	Features of both	Some features of COPD	COPD
CONFIDENCE IN DIAGNOSIS	ASTHMA	Possible asthma	Could be ACOS	Possibly COPD	COPD

STEP 3 PERFORM SPIROMETRY

Marked Reversible airflow limitation (pre-post bronchodilator) or other proof of variable aieflow limitation

FEV1/FVC < 0.7 post-BD

STEP 4 INITIAL TREATMENT*

Asthma drugs No LABA monotherapy	Asthma drugs No LABA monotherapy	ICS and consider LABA +/or LAMA	COPD drugs	COPD drugs

*Consult GINA and GOLD documents for recommended treatments.

STEP 5 SPECIALISED INVESTIGATIONS Or REFER IF:

- Persistent symptoms and/or exacerbations despite treatment.
- Diagnostic uncertainly (e.g. suspected pulmonary hypertension, cardiovascular diseases and other causes of respiratory symptoms).
- Suspected asthma or COPD with atypical or additional symptoms or signs (e.g. haemoptysis, weight loss, night sweats, fever, signs of bronchiectasis or other structural lung disease).
- Few features of either asthma or COPD.
- Comorbidities present.
- Reasons for referral for either diagnosis as outlined in GINA and COPD strategy reports.

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