

THE OVERLAP SYNDROME OF ASTHMA & COPD

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ABSTRACT

The asthma-COPD overlap syndrome presents itself in patients where the asthma is not controlled despite seemingly appropriate measures or a patient who is a smoker and treated as COPD but also has asthmatic features. The asthma-COPD overlap syndrome is more common in the elderly. Such patients are of importance to diagnose because they have a high disease burden compared to asthma alone or COPD alone. Patients with both asthma and COPD should be identified earlier, as these patients have an increased risk for frequent exacerbations and therefore their treatment and follow-up should be optimised before hospital discharge. Also rehabilitation immediately after an exacerbation has been shown to be safe and effective to prevent further exacerbations requiring hospitalisation.

Keywords: high disease burden, frequent exacerbations, hospitalisation, mis-diagnosis

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INTRODUCTION

There is a group of patients where the “asthma” is not controlled despite seemingly appropriate measures. A common clinical scenario is an older former smoker with partially reversible or fixed airflow obstruction and evidence of atopy, demonstrating “overlap” features of asthma and COPD.

This asthma-COPD overlap syndrome becomes more prevalent with advancing age as patients respond less favourably to guideline-recommended drug therapy. These patients have similarities and differences in clinical characteristics between these disorders.

WHAT IS IT?

The asthma-COPD overlap syndrome (ACOS) is best envisaged as a clinical phenotype that has features of both the inflammatory conditions. (Athanasio, 2012; Carolan & Sutherland)^{1,2}

Both asthma and COPD results in airflow limitation but through different part of the airways:

- Asthma – causes reversible – bronchoconstriction – airway hyperactivity reaction (AHR)
- COPD – causes irreversible – small airway narrowing - small airway narrowing – alveolar destruction.

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Asthma as a disease of inflammation

- Affects all ages, including children
- Episodic course
- Inflammatory cells taking part in the reaction are: eosinophils, mast cells, CD4+ cells
- The inflammation is fully reversible.

COPD as a disease of inflammation

- Affects elderly, especially smokers
- Is slowly progressive
- Inflammatory cells taking part in the reaction are: neutrophils, macrophages, CD8+ cells
- Partially reversible.

Conceivably, the patient with Asthma-COPD Overlap “syndrome” has both the sets of reactions going on at the same time.

HOW BIG IS IT?

Overlap “syndrome” is common especially in the elderly. The overall prevalence is 17% in the US and 19% in UK. The prevalence rises from less than 10% in those under 50 years, 40% in those 60-69 years, and 60% in those 70-79 years. (Soriano et al, 2003)³.

WHY IS IT IMPORTANT?

The overlap “syndrome” is important because they are excluded from clinical trials of treatment. Clinically, they are either labelled as asthma or COPD and not its correct clinical phenotype of Asthma-COPD overlap syndrome (ACOS).

There is currently a controversy as to its pathogenesis:

- “British hypothesis” - 2 common (but distinct) conditions by chance overlapping.
- “Dutch hypothesis” - common risk factors leading from asthma to COPD which could be accelerated lung function decline in adulthood or incomplete lung growth during childhood.

The Dutch hypothesis further hypothesis that bronchial hyperactivity (BHR) may be a common risk factor for asthma and COPD.

- BHR is present in 10-20% of the population and the patients are frequently asymptomatic.
- BHR is associated with accelerated lung function decline in asthma.
- Asymptomatic BHR is a risk factor for development of respiratory symptoms & COPD

Bronchodilator reversibility testing

Preparation

- Tests should be performed when patients are clinically stable and free from respiratory infection.
- Patients should not have taken inhaled short-acting bronchodilators for 6 hours, long-acting bronchodilators for 12 hours, or sustained release theophylline for 24 hours prior to this test.

Spirometry

- FEV₁ should be measured before a bronchodilator is given.
- The bronchodilator should be given by metered dose inhaler through a spacer device or by nebuliser to be certain it has been inhaled.
- Possible dosage protocols are 400 mcg beta2-agonist, up to 160 mcg anticholinergic, or the two combined. FEV₁ should be measured again 10-15 minutes after a short-acting bronchodilator is given; 30-45 minutes after the combination.

Spirometry vs peak flow meter monitoring

- Spirometry can differentiate obstructive from restrictive lung disease.
- PEF_R does not correlate with FEV₁ very well (PEFR can be preserved till obstruction is very serious)
- PEF_R is more effort-dependent than FEV₁.

Other tests to differentiate asthma and COPD

- High resolution CT scan of the lungs.
- Diffusing capacity (DLCO).
- Evaluation of airway inflammation via induced sputum examination or tests of exhaled gas and vapours.
- Endobronchial biopsies.

HOW TO DEAL WITH IT?

Distinguishing between asthma and COPD: Does it matter?

Yes – for prognosis – patients with overlap “syndrome” have high hospital burden compared to asthma alone, or COPD alone. (Andersen et al, 2013, Zeki et al, 2011)^{4,5}.

Yes – for treatment – Patients with both asthma and COPD should be identified earlier, as these patients have an increased risk for frequent exacerbations and therefore their treatment and follow-up should be optimised before hospital discharge. Also rehabilitation immediately after an exacerbation has been shown to be safe and effective to prevent further exacerbations requiring hospitalisation. (Andersen et al, 2013, Zeki et al, 2011)^{4,5}.

CONCLUSION

- The asthma & COPD “overlap” is a definable entity that is common in the elderly.
- No standardisation of definition, pathogenesis & treatment yet.
- We should try to distinguish bronchial asthma from COPD & the overlap “syndrome”.

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LEARNING POINTS

- **The asthma-COPD overlap syndrome has both the features of asthma and COPD.**
- **The asthma-COPD overlap syndrome is more common in the elderly.**
- **Such patients have a high disease burden compared to asthma alone or COPD alone. Patients with both asthma and COPD should be identified earlier.**
- **Treatment and follow-up of such patients should be optimised before hospital discharge.**
- **Rehabilitation immediately after an exacerbation has been shown to be safe and effective to prevent further exacerbations requiring hospitalisation.**