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Opinion Article

Applications of Asthma and Chronic Obstructive Pulmonary Disease

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DESCRIPTION

Chronic Obstructive Pulmonary Disease (COPD) and asthma are two distinct disease entities. They are both clinical diagnoses that can be distinguished from one another using diagnostic techniques. However, it seems increasingly challenging to distinguish between asthma and COPD, particularly in elderly individuals (>55 years). As a result, the term "Asthma COPD Overlap Syndrome (ACOS)" has been coined. However, because most research has employed participants with pre-existing diagnoses of asthma or COPD from trials with various definitions for ACOS, our understanding of ACOS is still relatively limited.

Most patients with persistent airflow restriction are found to have either asthma or Chronic Obstructive Pulmonary Disease (COPD). A persistent airflow restriction that is typically progressive and linked to an exacerbated chronic inflammatory response in the airways and lung to noxious particles or gases is what defines COPD. Comorbidities and exacerbations both add to a patient's overall severity. But asthma is a diverse illness with a history of respiratory symptoms such wheezing, shortness of breath, tightness in the chest, and cough, all of which can change over time and in severity, as well as variable expiratory airflow limitation and typically chronic airway inflammation.

Different aetiology ideas have been developed; some contend that asthma and COPD have a common aetiology, while others contend that they are distinct diseases. However, more recent research indicates that asthma and COPD do not have a common genetic component, supporting the idea that these conditions should be treated differently based on their pathophysiology. In clinical practise, some people exhibit symptoms from both diseases, making it challenging to determine if these patients have asthma or COPD.

Airway inflammation

Both asthma and COPD are characterized by airway inflammation, but as was already established, the latter is more characterized by an increase in neutrophils than the former. When compared to people with COPD (>20 pack years) who have fixed airflow obstruction and no previous variable airflow obstruction, older patients (>55 years) with asthma (5 pack years) who develop fixed airflow obstruction (postbronchodilator FEV1/FVC 0.7) have a higher percentage of eosinophils in the blood, sputum, Bronchoalveolar Lavage (BAL), and airways, respectively.

Additionally, there were more CD4+ cells in the BAL lymphocytes, and the CD4+/CD8+ ratio was greater. Finally, patients with asthma had higher levels of exhaled Nitric Oxide (NO) than patients with COPD. Only one out of every 27 COPD patients had sputum eosinophilia levels larger than 4.6%, while four out of every 27 patients (14.8%) had levels higher than 3%. In addition, patients with incompletely reversible airflow obstruction and asthma displayed elevated levels of exhaled NO and blood eosinophils in the absence of smoking.

Exacerbations

Exacerbations of asthma and COPD can hasten the loss of lung function and, as a result, cause blockage that is only partially reversible. When compared to patients with reversible airflow obstruction, those with fixed airflow obstruction experience a larger reduction in lung function and more exacerbations. Despite similar lung function and fewer years of smoking, patients with ACOS appear to experience more frequent exacerbations than those with COPD alone, as well as more severe exacerbations than those with asthma alone. However, one study found no difference in exacerbation frequency between patients with ACOS and those with COPD alone.

Treatment

Because this user base has been consistently excluded from both COPD and asthma pharmaceutical trials, information on the medical management of patients with ACOS is uncommon. As a result, nothing is known about how these patients react to the majority of the existing pharmacological therapy.

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