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History and Clinical Features of Asthmatic Exacerbations

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Perspective

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ABOUT THE STUDY

Exacerbations are important clinical features of asthma, especially in patients with severe disease. They are typically associated with increased symptoms and airway obstruction in addition they constitute a significant burden to patients, families and healthcare systems. The understanding of the mechanisms and pathogenesis of asthma morbidity and associated healthcosts are presented in this study. While obstruction in asthma has been viewed as reversible, many studies and clinical observations have clearly shown that a subset of asthma patients is left with less reversible or fixed airflow limitation. The exact aetiology of this process is not entirely clear but may be related to epithelial injury followed by an altered repair that manifests by increased deposition of collagen and smooth muscle hypertrophy. Both acute exacerbations and fixed airway obstruction represent important challenges with regard to defining the biological mechanisms and potential therapeutic pathways that when triggered may help to mitigate the effects of exacerbations especially as they relate to long term loss of lung function.

The Acute exacerbations are a major source of morbidity and mortality among asthma patients. Although exacerbations are a prominent feature of poorly controlled and severe asthma, they are not common among patients with mild disease. Recent guidelines pointed out that exacerbations constitute greatest risk to patients and comprise the main cause of stress and anxiety for patients and their families. Exacerbations also generate the highest costs for the healthcare systems.

A history of exacerbations has been incorporated into the definition of asthma control and their prevention is a primary goal in asthma treatment guidelines. In patients with type 2 asthma the risk of exacerbations can be reduced by improving baseline asthma control with ICSs. However, a decrease in asthma symptoms is not always associated with less frequent or less severe exacerbations. It has therefore been hypothesized that baseline disease control and the mechanisms underlying the exacerbations might be influenced by different factors. Exacerbation prone asthma has been identified as a potentially distinct phenotype among asthma patients linked with higher morbidity and mortality. Identifying patients at the greatest risk of exacerbations and achieving good asthma control in these patients are key to prevent future exacerbations and ultimately reducing healthcare costs.

It is essential that a consensus is reached with regard to standardized measures of asthma exacerbations, both in clinical practice and in the research field. The guidelines for severe asthma include two metrics of asthma exacerbations in their definition of severe asthma one is frequent severe exacerbations consisting of two or more burst of systemic corticosteroids during the past year second is serious exacerbations consisting of at least one hospitalization ICU stay or mechanical ventilation during the past year. Standardization of the definition of asthma exacerbations helps to maximise the potential for data pooling and comparison amongst various clinical trials. However three treatment related components emerged as the most commonly used criteria in clinical studies to define an exacerbation is treatment with systemic corticosteroids, an emergency room visit or hospitalization related to asthma and use of rescue short acting bronchodilator therapy.

The most common exacerbations are viral respiratory tract infections. Among these the human rhinovirus such as parainfluenza, adenovirus, coronavirus and influenza have all been found in respiratory samples obtained from patients with asthma exacerbations.