

The irreversible component of persistent asthma

Instructions for category 1 Continuing Medical Education credit

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Learning objectives: "The irreversible component of persistent asthma"

1. To understand, define, and measure the irreversible component in asthma.
 2. To discuss current evidence on irreversible airflow obstruction in patients with asthma.
 3. To learn the mechanisms and pathophysiology of airway remodeling in patients with asthma.
 4. To evaluate the effect of current asthma treatments on airway remodeling and irreversibility in patients with asthma.
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CME items

Question 1. Irreversibility of airflow obstruction in the lung refers to —

- A. a change in the structure-function relationship, thereby increasing expiratory airflow.
- B. sustained reduction in expiratory airflow without reversion.
- C. reversibility only with asthma therapies.
- D. an increase in inspiratory airflow that is sustained without reversion.

Question 2. Which of the following is true about inhaled corticosteroids (ICSs) in asthma?

- A. FEV₁ decreases when patients stop using ICSs.
- B. Steroids directly alter the remodeling process.
- C. Steroids do not improve prebronchodilator FEV₁.
- D. Effects of steroids are independent of the duration of treatment.

Question 3. Longitudinal studies have not been able to prove irreversible airway obstruction because —

- A. the patients have not been followed for long enough.
- B. correlation with attempts to reverse lung function are lacking.
- C. cross-sectional studies are better suited to study the presence of irreversibility.
- D. the presence of smoking exposure acts as a confounder.

Question 4. Which of the following is true about airway remodeling in asthma?

- A. Reticular basement membrane (RBM) or subepithelial basement membrane thickening occurs much later in life.
- B. As asthma evolves, the types of proteins expressed in the RBM can vary over time.
- C. The degree of RBM thickening is associated with the severity of asthma.
- D. Smooth muscle mass tends to decrease with increasing asthma severity.

Question 5. Airway remodeling in patients with asthma has been associated with —

- A. RBM thinning.
- B. increased airway smooth muscle mass.
- C. bronchial wall thinning.
- D. eosinophilic inflammation in the epithelium.

Question 6. Which of the following statements is true?

- A. Postbronchodilator FEV₁ is often less than 100% of predicted value in patients with asthma.
- B. Airflow obstruction in patients with asthma is completely reversible.
- C. Airflow obstruction in patients with chronic obstructive pulmonary disease is not reversible.
- D. Forced vital capacity (FVC) is often increased in patients with severe asthma because of air trapping.

Question 7. A reduction in FEV₁/FVC ratio with little change in FEV₁ in children with asthma could be due to —

- A. increased bronchial hyperresponsiveness.
- B. decreased lung volume.
- C. loss of elastic recoil.
- D. chronic use of ICSs.

Question 8. Asthma severity is clearly associated with —

- A. onset during childhood.
- B. onset during adulthood.
- C. more bronchodilator reversibility.
- D. low FEV₁.

Question 9. Which of the following is true about ICSs in asthma treatment?

- A. They do not improve prebronchodilator FEV₁.
- B. They typically do not improve postbronchodilator FEV₁.
- C. They have no effect on the frequency of asthma exacerbations.

D. They increase bronchial hyperresponsiveness if bronchodilators are not used simultaneously.

Question 10. Which of the following is part of the proposed definition for the phenotype “asthma with apparent airflow limitation”?

- A. FEV₁ of less than 90% of predicted value in a patient taking corticosteroids after acute administration of a rapid-onset bronchodilator
- B. FEV₁ of less than 80% of predicted value in a patient taking corticosteroids after acute administration of a rapid-onset bronchodilator
- C. FEV₁ of less than 90% of predicted value in a patient taking corticosteroids before acute administration of a rapid-onset bronchodilator
- D. FEV₁ of less than 80% of predicted value in a patient taking corticosteroids before acute administration of a rapid-onset bronchodilator