CONTINUING MEDICAL EDUCATION EXAMINATION

Eosinophils: Old Players in a New Game

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"Actividad acreditada por el Consejo Catalán de Formación Continuada de las Profesiones Sanitarias – Comisión de Formación Continuada del Sistema Nacional de Salud con 1,3 CRÉDITOS".

Activity sponsored by Astra Laboratories

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CME Items

1. Which of the following best describes the immune response of eosinophilic asthma??
   a. A T_H1-type immune response, with predominance of cytokines such as TNFα, IL-8, and IL-17.
   b. A T_H3-type immune response, with predominance of cytokines such as MCP1, IL-4, and IL-13.
   c. A T_H2-type immune response, with predominance of cytokines such as IL-5, IL-4, and IL-13.
   d. A T_H2-type immune response, with predominance of cytokines such as IL-8, IL-17, and TNFα.

2. How do eosinophils perform their role in the pathophysiology of asthma?
   a. By releasing enzymes such as EPO, ECP, and MMP-9, which act upon the airways and damage epithelial cells and muscle cell hypertrophy.
   b. By releasing the mediators of inflammation-related NO, oxygen-reactive species, or ROS and lipid mediators such as lipoxin A4.
   c. By secreting exosomes that act upon eosinophils and upon epithelial cells and muscle cells modifying their behavior.
   d. All the previous answers are correct.

3. The receptor CRTH2 is expressed on eosinophils and binds the ligand. Which of the following functions does it perform?
   a. It binds the molecule IL-5 and promotes eosinophil survival.
   b. It binds the receptor ST2 and promotes eosinophil apoptosis.
   c. It binds the molecule GMCSF and acts as chemoattractant.
   d. It binds the molecule prostaglandin D2 and induces recruitment and activation of eosinophils.

4. Which of the following affirmations is correct?
   a. In atopic dermatitis, smooth muscle cells secrete amphiregulin, which activates keratinocytes that secrete cytokines such as TSLP, thus skewing the response to T_H1 and recruiting eosinophils into the epithelium.
   b. In atopic dermatitis, fibroblasts secrete IL-5, which activates muscular cells that secrete cytokines such as IL-8, thus skewing the response to T_H2 and recruiting eosinophils into the epithelium.
   c. In atopic dermatitis, muscular cells secrete periostin, which activates fibroblasts that secrete cytokines such as eotaxin-5, thus skewing the response to T_H2 and recruiting eosinophils into the epithelium.
   d. In atopic dermatitis, fibroblasts secrete periostin, which activates keratinocytes that secrete cytokines such as TSLP, thus skewing the response to T_H2 and recruiting eosinophils into the epithelium.

5. Which of the following affirmations is correct?
   a. TGF-β is secreted by eosinophils and regulates airway remodeling in asthma.
   b. MMP-9 is secreted by epithelial cells and regulates the circadian rhythm of eosinophils.
   c. ECP is secreted by eosinophils and stimulates proliferation of eosinophils.
   d. All the previous answers are correct.

6. Which of the following is an eosinophilic biomarker of asthma?
   a. High number of eosinophils in sputum.
   b. High levels of MBP in bronchoalveolar lavage.
   c. High number of eosinophils in blood.
   d. All the previous answers are correct.

7. How long is the half-life of eosinophils?
   a. One month in circulation.
   b. Between 8 and 18 hours in circulation.
   c. 3-4 days in tissues.
   d. Answers b and c are correct.

8. Which of the following is the main mediator of the antimicrobial activity of eosinophils?
   a. Lipid mediators.
   b. Cationic granule proteins.
   c. Reactive oxygen species.
   d. Nitric oxide.

9. Eosinophils release exosomes. What is their main function?
   a. Mechanisms of cellular death.
   b. Intercellular communication.
   c. Neutrophil degranulation and mast cell activation.
   d. Eosinophils are not able to release exosomes.

10. Which of the following monoclonal antibodies share a mechanism of action?
    a. Mepolizumab and reslizumab.
    b. Benralizumab and reslizumab.
    c. Mepolizumab, reslizumab, and benralizumab.
    d. Dupilumab and omalizumab.