

Kumar: Robbins and Cotran Pathologic Basis of Disease, 8th Edition

Chapter 02: Acute and Chronic Inflammation

Test Bank

MULTIPLE CHOICE

1. Transmembrane adhesive heterodimeric proteins, composed of an α and a β chain, are expressed on activated leukocytes during inflammation. They bind primarily to intercellular adhesion molecule 1 (ICAM-1) and vascular cell adhesion molecule 1 (VCAM-1), both of which belong to the family of proteins known as
 - a. selectins
 - b. integrins
 - c. immunoglobulins
 - d. lectins
 - e. growth factors

ANS: C, Surface proteins expressed on activated leukocytes are integrins, and they bind to intercellular adhesion molecule 1 (ICAM-1) and vascular cell adhesion molecule 1 (VCAM-1), which belong to the immunoglobulin family of proteins.

2. Which of the following mediators of inflammation has chemotactic properties and is increased in persons taking aspirin?
 - a. Thromboxane A₂
 - b. Prostaglandin E₂
 - c. Platelet-activating factor
 - d. Leukotriene B₄
 - e. Interleukin-1

ANS: D, Leukotriene B₄ is chemotactic. It is increased in persons who take aspirin, because aspirin inhibits the cyclooxygenase pathway, thus shunting more arachidonic acid early derivatives into the lipoxygenase pathway. This promotes the synthesis of leukotrienes.

3. A 2-year-old child known to suffer from recurrent bacterial infections and poor wound healing was found to have leukocyte adhesion molecule deficiency 1 (LAD-1). The leukocytes of this patient do not express CD18, a molecule classified as belonging to the family of
 - a. selectins
 - b. integrins
 - c. lectin type of vascular adhesion molecules
 - d. aminotransferases
 - e. glycosidases

ANS: B, LAD-1 is characterized by a deficiency of CD18, a cell surface molecule that is a β_2 integrin. The infections occur because the defective leukocytes cannot adhere to endothelial cells, cannot spread and attach, and cannot phagocytose bacteria. PBD7 62

4. Bradykinin is produced from a high-molecular weight kininogen circulating in the blood. This reaction is mediated by
- coagulation factor X
 - kallikrein
 - Hageman factor
 - complement C3
 - protein C

ANS: B, Kallikrein promotes the formation of bradykinin from the high-molecular weight kininogen. PBD7 67

5. Nitric oxide synthesis is augmented in endothelial cells by a calmodulin-mediated influx of which element?
- Calcium
 - Sodium
 - Potassium
 - Oxygen
 - Nitrate

ANS: A, Endothelial cell nitric oxide synthase is constitutively expressed at low levels, but it can be increased by a calmodulin-mediated influx of calcium into the endothelial cells. PBD7 72

6. Which of the following mediators of inflammation causes pain?
- Nitric oxide
 - Complement C3a
 - Bradykinin
 - Leukotriene B₄
 - Interleukin-1

ANS: C, Bradykinin causes pain. Other pain-causing substances are substance P and prostaglandin E₂. PBD7 65

7. Aspirin lowers the body temperature by inhibiting the synthesis of which regulator of the central thermostat in the hypothalamus?
- Leukotriene B₄
 - Lipoxin
 - Thromboxane A₂
 - Prostacyclin
 - Prostaglandin E₂

ANS: E, Aspirin inhibits the action of cyclooxygenase, and thus inhibits the synthesis of

thromboxane A₂, prostacyclin, and prostaglandin E₂. However, only prostaglandin E₂ is involved in thermoregulation. The synthesis of lipoxin and leukotrienes is not inhibited by aspirin. PBD7 70

8. C-reactive protein binds to the surface of microbes in tissues acting as a(n)
- caspase
 - peroxidase
 - opsonin
 - anaphylatoxin
 - membrane attack protein

ANS: C, C-reactive protein, an acute phase protein produced by the liver in acute and chronic inflammation, binds to microbes acting as an opsonin. Opsonization of bacteria facilitates phagocytosis.