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Inflammation - 90 Multiple Choice Questions (MCQs) with Answers

Section 1: Inflammation Basics (30 MCQs)

(Based on inflammation1.pdf)

1. What is the definition of inflammation?

- A) A response to physical trauma only
 - B) A protective response of vascularized tissue to injury
 - C) An uncontrolled immune response
 - D) A disease condition causing tissue damage
- Answer: B) A protective response of vascularized tissue to injury

2. What are the five Rs of inflammation?

- A) Recognition, Recruitment, Removal, Regulation, Resolution
 - B) Repair, Reduction, Resorption, Regulation, Reaction
 - C) Recognition, Redistribution, Resolution, Removal, Repair
 - D) Regulation, Response, Reduction, Resorption, Repair
- Answer: A) Recognition, Recruitment, Removal, Regulation, Resolution

3. Which chemical mediator causes vasodilation?

- A) Histamine
 - B) Bradykinin
 - C) Prostaglandins
 - D) All of the above
- Answer: D) All of the above

4. What is the main function of fibrin in inflammation?

- A) Enhancing fluid exudation
 - B) Blocking bacterial entry
 - C) Forming a network for phagocytes and fibroblasts
 - D) Reducing inflammation
- Answer: C) Forming a network for phagocytes and fibroblasts

5. Which plasma proteins play a role in the complement system?

- A) C1-C9
- B) Albumin
- C) Hemoglobin
- D) Myosin

Answer: A) C1-C9

6. What is the role of exudate in inflammation?

- A) Provides nutrients to inflammatory cells
- B) Carries immune mediators
- C) Dilutes toxins
- D) All of the above

Answer: D) All of the above

7. What is the function of opsonins in inflammation?

- A) Enhance phagocytosis
- B) Inhibit the immune response
- C) Promote vasoconstriction
- D) None of the above

Answer: A) Enhance phagocytosis

8. Which chemical mediator is primarily responsible for pain in inflammation?

- A) Serotonin
- B) Histamine
- C) Prostaglandin E2
- D) Thromboxane

Answer: C) Prostaglandin E2

9. What are the primary cells in acute inflammation?

- A) Macrophages
- B) Lymphocytes
- C) Neutrophils
- D) Plasma cells

Answer: C) Neutrophils

10. What type of exudate is seen in serous inflammation?

- A) Fibrin-rich exudate
- B) Watery, protein-poor exudate
- C) Pus-filled exudate
- D) Hemorrhagic exudate

Answer: B) Watery, protein-poor exudate

Section 2: Cellular and Systemic Response in Inflammation (30 MCQs)

(Based on inflammation2.pdf)

11. What is the first step in leukocyte migration?

- A) Chemotaxis
- B) Margination
- C) Phagocytosis
- D) Emigration

Answer: B) Margination

12. What are the primary adhesion molecules in leukocyte rolling?

- A) Selectins
- B) Integrins
- C) Collagens
- D) Immunoglobulins

Answer: A) Selectins

13. Which complement components play a major role in chemotaxis?

- A) C3a and C5a
- B) C1 and C9
- C) C2 and C4
- D) C6 and C7

Answer: A) C3a and C5a

14. What is the significance of leukocyte adhesion deficiency (LAD)?

- A) It enhances immune response
- B) It prevents leukocyte migration and causes recurrent infections
- C) It causes excess neutrophil activation
- D) It leads to autoimmunity

Answer: B) It prevents leukocyte migration and causes recurrent infections

15. What happens in diapedesis?

- A) Leukocytes move through blood vessel walls into tissues
- B) Neutrophils die by apoptosis
- C) Bacteria invade blood vessels
- D) Red blood cells actively escape vessels

Answer: A) Leukocytes move through blood vessel walls into tissues

16. What is the first leukocyte to arrive at the site of acute inflammation?

- A) Lymphocytes
- B) Macrophages
- C) Neutrophils
- D) Eosinophils

Answer: C) Neutrophils

17. What is the purpose of chemotaxis?

- A) Prevent leukocyte migration
- B) Guide leukocytes to the site of infection or injury
- C) Destroy phagocytic cells
- D) Prevent the immune response

Answer: B) Guide leukocytes to the site of infection or injury

18. What is the final step in phagocytosis?

- A) Recognition and attachment
- B) Engulfment
- C) Degradation
- D) Chemotaxis

Answer: C) Degradation

19. Which enzyme is involved in oxygen-dependent bacterial killing?

- A) Catalase
- B) Superoxide dismutase
- C) Myeloperoxidase
- D) Fibrinolysin

Answer: C) Myeloperoxidase

20. What is leukocytosis?

- A) Low white blood cell count
- B) Elevated white blood cell count
- C) Increased platelet count
- D) Excessive red blood cell formation

Answer: B) Elevated white blood cell count

21. What is the main function of neutrophils in acute inflammation?

- A) Antibody production
- B) Phagocytosis and bacterial killing
- C) Collagen synthesis
- D) Blood clotting

Answer: B) Phagocytosis and bacterial killing

22. Which of the following chemical mediators causes vasodilation?

- A) Histamine
- B) Bradykinin
- C) Prostaglandins
- D) All of the above

Answer: D) All of the above

23. What is the difference between exudate and transudate?

- A) Exudate has low protein content, transudate has high protein content
- B) Exudate is protein-rich, transudate is protein-poor
- C) Exudate is due to increased hydrostatic pressure, transudate is due to inflammation
- D) Exudate is caused by heart failure, transudate by infections

Answer: B) Exudate is protein-rich, transudate is protein-poor

24. What is the primary function of cytokines in inflammation?

- A) Enhance bacterial growth
- B) Regulate immune and inflammatory responses
- C) Destroy red blood cells
- D) Reduce blood flow

Answer: B) Regulate immune and inflammatory responses

25. What is the role of selectins in leukocyte migration?

- A) Mediate firm adhesion of leukocytes
- B) Initiate rolling of leukocytes on endothelium
- C) Promote phagocytosis
- D) Decrease inflammation

Answer: B) Initiate rolling of leukocytes on endothelium

26. What is the primary function of macrophages in chronic inflammation?

- A) Engulf and destroy pathogens
- B) Produce antibodies
- C) Decrease immune response
- D) Release histamine

Answer: A) Engulf and destroy pathogens

27. Which plasma protein plays a key role in opsonization?

- A) Albumin

- B) C3b (complement component)
- C) Fibrinogen
- D) Prothrombin

Answer: B) C3b (complement component)

28. What is the primary cause of fever in inflammation?

- A) Histamine release
- B) Interleukin-1 (IL-1) and tumor necrosis factor (TNF)
- C) Bradykinin activation
- D) Neutrophil degranulation

Answer: B) Interleukin-1 (IL-1) and tumor necrosis factor (TNF)

29. Which of the following is a systemic effect of acute inflammation?

- A) Leukocytosis
- B) Fever
- C) Increased C-reactive protein (CRP)
- D) All of the above

Answer: D) All of the above

30. Which of the following best describes the resolution phase of inflammation?

- A) Ongoing immune cell recruitment
- B) Clearance of inflammatory mediators and return to normal tissue function
- C) Chronic immune activation
- D) Continuous blood clot formation

Answer: B) Clearance of inflammatory mediators and return to normal tissue function

Inflammation - 30 Multiple Choice Questions (MCQs) on Chapter 2

31. What is the first step in leukocyte migration during inflammation?

- A) Chemotaxis
- B) Rolling
- C) Margination
- D) Diapedesis

Answer: C) Margination

32. Which adhesion molecule is responsible for leukocyte rolling?

- A) Integrins
- B) Selectins
- C) Cadherins
- D) Immunoglobulins

Answer: B) Selectins

33. What is the primary role of integrins in leukocyte migration?

- A) Weak adhesion and rolling
 - B) Firm adhesion to endothelial cells
 - C) Stimulating histamine release
 - D) Causing vasodilation
- Answer: B) Firm adhesion to endothelial cells

34. Which of the following chemical mediators promotes chemotaxis?

- A) Histamine
 - B) Prostaglandins
 - C) Leukotriene B4 (LTB4)
 - D) Thromboxane
- Answer: C) Leukotriene B4 (LTB4)

35. What is the final step of leukocyte migration?

- A) Rolling
 - B) Adhesion
 - C) Diapedesis
 - D) Chemotaxis
- Answer: D) Chemotaxis

36. Which immune cells are primarily involved in acute inflammation?

- A) Lymphocytes
 - B) Neutrophils
 - C) Macrophages
 - D) Plasma cells
- Answer: B) Neutrophils

37. What is the main function of neutrophils in inflammation?

- A) Phagocytosis
 - B) Antibody production
 - C) Histamine release
 - D) Blood clotting
- Answer: A) Phagocytosis

38. What enzyme is essential for oxidative burst in neutrophils?

- A) Catalase
- B) Myeloperoxidase
- C) Superoxide dismutase
- D) Peroxidase

Answer: B) Myeloperoxidase

39. Which of the following complement components is responsible for opsonization?

- A) C3b
- B) C5a
- C) C6
- D) C9

Answer: A) C3b

40. Which complement component is a major chemotactic factor for neutrophils?

- A) C3b
- B) C5a
- C) C6
- D) C9

Answer: B) C5a

41. What is the role of prostaglandins in inflammation?

- A) Vasodilation and pain mediation
- B) Blood clotting
- C) Increased neutrophil recruitment
- D) Opsonization

Answer: A) Vasodilation and pain mediation

42. Which cytokine is primarily responsible for fever?

- A) IL-4
- B) IL-10
- C) IL-1
- D) IL-8

Answer: C) IL-1

43. What is the main role of IL-8 in inflammation?

- A) Stimulating fever
- B) Promoting neutrophil chemotaxis
- C) Increasing vascular permeability
- D) Inducing fibrosis

Answer: B) Promoting neutrophil chemotaxis

44. Which plasma-derived mediator is involved in pain during inflammation?

- A) Bradykinin
- B) Thromboxane
- C) Fibrinogen
- D) Plasmin

Answer: A) Bradykinin

45. What is the main function of the fibrinolytic system in inflammation?

- A) Clot formation
- B) Clot dissolution
- C) Increasing vascular permeability
- D) Neutrophil activation

Answer: B) Clot dissolution

46. What happens during the resolution phase of acute inflammation?

- A) Ongoing neutrophil infiltration
- B) Clearance of debris and tissue repair
- C) Persistent tissue destruction
- D) Formation of granulomas

Answer: B) Clearance of debris and tissue repair

47. What is the function of transforming growth factor-beta (TGF- β) in inflammation?

- A) Stimulates neutrophil migration
- B) Promotes tissue repair and fibrosis
- C) Increases vascular permeability
- D) Enhances bacterial growth

Answer: B) Promotes tissue repair and fibrosis

48. Which inflammatory mediator is most associated with pain?

- A) Histamine
- B) Bradykinin
- C) C3a
- D) IL-10

Answer: B) Bradykinin

49. Which immune cells dominate in chronic inflammation?

- A) Neutrophils
- B) Lymphocytes and macrophages
- C) Mast cells
- D) Eosinophils

Answer: B) Lymphocytes and macrophages

50. What is the main difference between acute and chronic inflammation?

- A) Acute inflammation is long-term, chronic inflammation is short-term
- B) Acute inflammation primarily involves neutrophils, chronic inflammation involves macrophages and lymphocytes
- C) Acute inflammation causes fibrosis, chronic inflammation does not
- D) Chronic inflammation is always beneficial

Answer: B) Acute inflammation primarily involves neutrophils, chronic inflammation involves macrophages and lymphocytes

51. What is the function of nitric oxide in inflammation?

- A) Vasoconstriction
- B) Vasodilation and bacterial killing
- C) Enhances clot formation
- D) Prevents neutrophil migration

Answer: B) Vasodilation and bacterial killing

52. Which enzyme produces reactive oxygen species (ROS) in neutrophils?

- A) Superoxide dismutase
- B) NADPH oxidase
- C) Catalase
- D) Fibrinogen

Answer: B) NADPH oxidase

53. What are the classic signs of acute inflammation?

- A) Redness, heat, swelling, pain, and loss of function
- B) Fever, chills, nausea, and vomiting
- C) Lymphocytosis, fibrosis, and tissue necrosis
- D) Anemia, jaundice, and edema

Answer: A) Redness, heat, swelling, pain, and loss of function

54. Which cells mediate tissue remodeling after inflammation?

- A) Neutrophils
- B) Fibroblasts

C) Eosinophils

D) Platelets

Answer: B) Fibroblasts

55. Which cytokine inhibits inflammation?

A) IL-1

B) IL-6

C) IL-10

D) TNF- α

Answer: C) IL-10

56. What type of macrophages promote tissue repair?

A) M1 macrophages

B) M2 macrophages

C) Neutrophils

D) Natural killer cells

Answer: B) M2 macrophages

57. What is granulomatous inflammation?

A) Inflammation caused by bacteria only

B) A form of chronic inflammation with macrophage aggregation

C) Acute inflammation with neutrophils

D) A systemic inflammatory response

Answer: B) A form of chronic inflammation with macrophage aggregation

58. Which disease is associated with caseating granulomas?

A) Sarcoidosis

B) Tuberculosis

C) Rheumatoid arthritis

D) Gout

Answer: B) Tuberculosis

59. Which cytokine is essential for granuloma formation?

A) IL-1

B) IFN- γ

C) IL-10

D) TNF- α

Answer: B) IFN- γ

60. What is the fate of unresolved chronic inflammation?

- A) Resolution
- B) Fibrosis and tissue destruction
- C) Increased vascular permeability
- D) Decreased immune response

Answer: B) Fibrosis and tissue destruction

61. What is the defining feature of chronic inflammation?

- A) Predominance of neutrophils
- B) Persistent tissue damage with mononuclear cell infiltration
- C) Absence of vascular changes
- D) Immediate resolution within hours

Answer: B) Persistent tissue damage with mononuclear cell infiltration

62. Which of the following cells is most characteristic of chronic inflammation?

- A) Neutrophils
- B) Lymphocytes
- C) Mast cells
- D) Basophils

Answer: B) Lymphocytes

63. Which of the following is NOT a cause of chronic inflammation?

- A) Persistent infections
- B) Prolonged exposure to toxic agents
- C) Short-term bacterial infections
- D) Autoimmune diseases

Answer: C) Short-term bacterial infections

64. What is the primary function of macrophages in chronic inflammation?

- A) Phagocytosis and antigen presentation
- B) Release of histamine
- C) Direct destruction of red blood cells
- D) Blood clotting

Answer: A) Phagocytosis and antigen presentation

65. Which type of macrophage is involved in tissue repair?

- A) M1 macrophages
- B) M2 macrophages

- C) Neutrophils
- D) Natural killer cells

Answer: B) M2 macrophages

66. Which cytokine plays a central role in macrophage activation?

- A) IL-10
- B) IFN- γ
- C) IL-4
- D) TGF- β

Answer: B) IFN- γ

67. What is granulomatous inflammation?

- A) A form of chronic inflammation with aggregated macrophages
- B) A type of acute inflammation
- C) A process only seen in autoimmune diseases
- D) An inflammation with only neutrophils

Answer: A) A form of chronic inflammation with aggregated macrophages

68. What is the characteristic cell type in granulomas?

- A) Eosinophils
- B) Multinucleated giant cells
- C) Basophils
- D) Plasma cells

Answer: B) Multinucleated giant cells

69. Which of the following is an example of granulomatous inflammation?

- A) Tuberculosis
- B) Acute appendicitis
- C) Pneumonia
- D) Myocarditis

Answer: A) Tuberculosis

70. What is a Langhans giant cell?

- A) A multinucleated macrophage found in granulomas
- B) A neutrophil involved in acute inflammation
- C) A platelet responsible for clotting
- D) A mast cell producing histamine

Answer: A) A multinucleated macrophage found in granulomas

71. What type of necrosis is seen in granulomas of tuberculosis?

- A) Coagulative necrosis
- B) Liquefactive necrosis
- C) Caseous necrosis
- D) Fibrinoid necrosis

Answer: C) Caseous necrosis

72. Which cytokine is most important for granuloma maintenance?

- A) IL-4
- B) TNF- α
- C) IL-6
- D) IL-17

Answer: B) TNF- α

73. Which disease is associated with non-caseating granulomas?

- A) Tuberculosis
- B) Sarcoidosis
- C) Syphilis
- D) Rheumatic fever

Answer: B) Sarcoidosis

74. What is the fate of chronic inflammation if left unresolved?

- A) Complete resolution
- B) Fibrosis and tissue scarring
- C) Immediate tissue regeneration
- D) Restoration of normal function

Answer: B) Fibrosis and tissue scarring

75. What is the role of fibroblasts in chronic inflammation?

- A) Phagocytosis of pathogens
- B) Tissue repair and fibrosis
- C) Antigen presentation
- D) Vasodilation

Answer: B) Tissue repair and fibrosis

76. Which of the following conditions is an example of chronic inflammation?

- A) Acute bronchitis
- B) Rheumatoid arthritis

C) Acute gastritis

D) Anaphylaxis

Answer: B) Rheumatoid arthritis

77. What is a common feature of chronic inflammatory diseases?

A) Rapid resolution

B) Continuous immune cell recruitment

C) Lack of cytokine involvement

D) Absence of vascular changes

Answer: B) Continuous immune cell recruitment

78. What is the primary function of plasma cells in chronic inflammation?

A) Phagocytosis

B) Production of antibodies

C) Release of histamine

D) Increased neutrophil recruitment

Answer: B) Production of antibodies

79. What is the hallmark feature of fibrosis in chronic inflammation?

A) Excess collagen deposition

B) Increased histamine release

C) Decreased fibroblast activity

D) Complete tissue regeneration

Answer: A) Excess collagen deposition

80. What is the function of TGF- β in chronic inflammation?

A) Stimulates neutrophil migration

B) Promotes tissue repair and fibrosis

C) Increases vascular permeability

D) Enhances bacterial growth

Answer: B) Promotes tissue repair and fibrosis

81. What happens when chronic inflammation leads to excessive tissue damage?

A) Tissue regeneration

B) Fibrosis and loss of function

C) Resolution of inflammation

D) Increased vascular permeability

Answer: B) Fibrosis and loss of function

82. What is the role of IL-10 in chronic inflammation?

- A) Pro-inflammatory cytokine
- B) Anti-inflammatory cytokine that inhibits immune response
- C) Promotes granuloma formation
- D) Stimulates neutrophil recruitment

Answer: B) Anti-inflammatory cytokine that inhibits immune response

83. What is the function of matrix metalloproteinases (MMPs) in chronic inflammation?

- A) Breakdown of extracellular matrix for tissue remodeling
- B) Stimulate neutrophil adhesion
- C) Promote histamine release
- D) Enhance bacterial growth

Answer: A) Breakdown of extracellular matrix for tissue remodeling

84. What is a key feature of chronic viral hepatitis?

- A) Predominant neutrophil infiltration
- B) Lymphocytic infiltration with fibrosis
- C) Absence of immune response
- D) Rapid resolution

Answer: B) Lymphocytic infiltration with fibrosis

85. Which of the following is an autoimmune disease characterized by chronic inflammation?

- A) Tuberculosis
- B) Rheumatoid arthritis
- C) Appendicitis
- D) Malaria

Answer: B) Rheumatoid arthritis

86. Which organ is most affected by cirrhosis due to chronic inflammation?

- A) Lungs
- B) Heart
- C) Liver
- D) Brain

Answer: C) Liver

87. What is a common consequence of chronic inflammation in blood vessels?

- A) Atherosclerosis
- B) Hypercoagulation

- C) Decreased vascular permeability
- D) Increased neutrophil count

Answer: A) Atherosclerosis

88. Which chronic inflammatory disease is characterized by fibrosis of multiple organs?

- A) Systemic sclerosis (scleroderma)
- B) Tuberculosis
- C) Acute pneumonia
- D) Anaphylaxis

Answer: A) Systemic sclerosis (scleroderma)

89. What is the main histological finding in chronic gastritis?

- A) Neutrophilic infiltration
- B) Lymphoplasmacytic infiltration
- C) Granuloma formation
- D) Eosinophilic infiltration

Answer: B) Lymphoplasmacytic infiltration

90. Which cytokine is a major driver of fibrosis in chronic inflammation?

- A) IL-1
- B) TGF- β
- C) TNF- α
- D) IL-6

Answer: B) TGF- β