LEC 5 PATHOLOGY INFLAMMATION Q:

1. Which receptor is involved in platelet aggregation and is implicated in thromboembolic diseases?
A) Platelet Activating Factor (PAF)
B) Protease Activating Receptor (PAR)
C) Prostaglandin I_2 (PGI_2)
D) Thromboxane A_2 (TXA_2)

2. Which of the following mediators is primarily responsible for pain production during inflammation?
A) Histamine
B) Prostaglandins and Bradykinin
C) IL-1
D) Leukotrienes C4, D4, E4

3. Which type of inflammation is characterized by a cell-poor fluid with minimal cellular debris, often seen in skin blisters and serous effusions?
A) Fibrinous inflammation
B) Serous inflammation
C) Purulent inflammation
D) Ulcerative inflammation

4. Which of the following is NOT a cause of chronic inflammation?
A) Persistent infections
B) Hypersensitivity diseases
C) Acute infections
D) Prolonged exposure to toxic agents

5. Which of the following cytokines is associated with the pro-inflammatory M1 macrophage activation pathway?
A) IL-10
B) IL-4
C) TNF
D) TGF-beta

6. Which of the following is a characteristic feature of chronic inflammation?
A) Predominant neutrophil infiltration
B) Formation of granulomas
C) Rapid resolution with no tissue damage
D) Absence of tissue repair attempts

7. Which of the following is a characteristic of healing by fibrosis?
A) The tissue returns to its normal pre-inflammatory state
B) Scar tissue replaces normal tissue, leading to potential functional impairment
C) Complete tissue repair without scarring
D) Inflammatory resolution with no tissue damage

8. Which of the following is a classic gross feature of acute inflammation?
A) Severe tissue destruction

B) Increased vascular permeability and edema
C) Abscess formation
D) Granuloma formation

9. Which mediator is responsible for the pain in acute inflammation, particularly in response to tissue injury?
A) IL-1
B) Histamine
C) Prostaglandins
D) Thromboxane A_2

10. Purulent inflammation typically results in the formation of:
A) Clear, straw-colored fluid
B) Abscesses filled with pus and neutrophils
C) Granulation tissue
D) Fibrotic tissue formation

11. In chronic inflammation, macrophages secrete which of the following cytokines to modulate the inflammatory response?
A) IL-4 and IL-13
B) IL-1 and TNF
C) IL-10 and TGF-beta
D) IL-6 and IL-8

12. Serous effusions are typically seen in conditions that lead to a decrease in oncotic pressure, such as:
A) Chronic liver failure
B) Acute bacterial infections
C) Hypersensitivity reactions
D) Trauma-induced bleeding

13. Which cells are most commonly observed in chronic inflammatory infiltrates?
A) Neutrophils and eosinophils
B) Macrophages, lymphocytes, and plasma cells
C) Mast cells and basophils
D) Platelets and erythrocytes

14. What is the most common outcome of chronic inflammation if unresolved?
A) Complete resolution without fibrosis
B) Tissue damage with fibrosis and loss of function
C) Immediate infection control and resolution
D) Healing by regeneration with full restoration of function

15. Which of the following processes is most commonly seen during the healing phase of chronic inflammation?
A) Angiogenesis and fibrosis
B) Granuloma formation and tissue necrosis
C) Complete resolution with no scarring
D) Formation of serous exudates

16. Thromboxane A_2 primarily functions in:
A) Inhibiting platelet aggregation
B) Promoting platelet aggregation and vasoconstriction
C) Decreasing vascular permeability
D) Inducing smooth muscle relaxation

17. Which receptor is implicated in platelet aggregation and thromboembolic diseases?
A) Platelet Activating Factor (PAF)
B) Protease Activating Receptor (PAR)
C) Prostaglandin I_2 (PGI_2)
D) Thromboxane A_2 (TXA_2)

18. Which mediator is responsible for fever during acute inflammation?
A) IL-1
B) TNF
C) Prostaglandins
D) C3a

19. Which cytokines push macrophages toward the M2 activation pathway, contributing to tissue repair?
A) IL-1, TNF
B) IL-4, IL-13
C) TGF-beta, IL-10
D) IL-6, IL-8

20. Which of the following is NOT a feature of serous inflammation?
A) Clear, pale yellow fluid
B) Low cellularity
C) High protein content
D) Minimal cell debris

21. Which condition is most likely to result in fibrinous inflammation?
A) Bacterial pneumonia
B) Fibrinous pericarditis
C) Viral infection
D) Allergic reaction

Answers:

1. B
2. B
3. B
4. C
5. C
6. B
7. B
8. B

9. C
10. B
11. B
12. A
13. B
14. B
15. A
16. B
17. B
18. A
19. B
20. C
21. B

1. Which of the following cytokines, secreted by M1 macrophages, is primarily responsible for promoting inflammation and immune responses during acute inflammation?
A) IL-4
B) IL-10
C) TNF
D) TGF-beta

2. In chronic inflammation, which of the following cell types is most responsible for the secretion of IL-1, TNF, and chemokines that promote tissue destruction and continued inflammation?
A) Neutrophils
B) Lymphocytes
C) Macrophages
D) Mast cells

3. Which of the following best describes the role of thromboxane A_2 (TXA_2) in platelet aggregation during inflammation?
A) TXA_2 inhibits platelet aggregation and promotes vasodilation.
B) TXA_2 promotes platelet aggregation and vasoconstriction.
C) TXA_2 decreases vascular permeability and reduces inflammation.
D) TXA_2 induces the formation of fibrin clots and prevents bleeding.

4. Which of the following characteristics is most associated with the histologic appearance of fibrinous inflammation?
A) Neutrophil infiltration and abscess formation
B) Large vascular leakage with abundant fibrin deposits
C) Clear, protein-poor fluid and low cellularity
D) Granuloma formation with central necrosis

5. Which of the following mediators is most directly responsible for increased vascular permeability and fluid accumulation in the interstitial space during acute inflammation?
A) Prostaglandins
B) C3a and C5a

C) IL-1 and TNF
D) Leukotrienes C4, D4, E4

6. In the context of chronic inflammation, which of the following is a hallmark of the M2 macrophage activation pathway?
A) Secretion of IL-1 and TNF
B) Promotion of tissue repair and fibrosis
C) Enhancement of neutrophil recruitment
D) Induction of cytotoxic T-cell responses

7. Which of the following is the primary consequence of unresolved chronic inflammation in organs such as the liver or lungs?
A) Complete resolution and return to normal tissue function
B) Tissue regeneration and full restoration of normal architecture
C) Progressive fibrosis and organ dysfunction
D) Formation of granulomas with no functional impairment

8. Which of the following cytokines is primarily responsible for fever during inflammation by acting on the hypothalamus to raise body temperature?
A) IL-4
B) TNF
C) Prostaglandin I_2
D) IL-1

9. Which mediator is primarily responsible for the chemotactic recruitment of neutrophils and other leukocytes to sites of acute inflammation?
A) C3a
B) IL-10
C) Leukotriene B4
D) Thromboxane A_2

10. Which of the following is the most common pathologic feature of purulent inflammation, often seen in bacterial infections such as those caused by Staphylococcus aureus?
A) Excessive formation of scar tissue
B) Formation of abscesses rich in neutrophils and bacteria
C) Cell-poor fluid accumulation with minimal cellular debris
D) Fibrin deposition leading to tissue scarring

11. Which of the following mediators is involved in the regulation of vasodilation, pain, and fever during the acute inflammatory response, particularly by increasing prostaglandin production?
A) C3a and C5a
B) IL-4 and IL-13
C) IL-1 and TNF
D) Thromboxane A_2

12. Which of the following best describes the characteristic histologic feature of ulcerative inflammation?
A) Presence of granulomas and fibrosis

B) Mucosal discontinuity with adjacent areas of chronic inflammation
C) Exudate rich in neutrophils and bacteria
D) Large fibrin deposits within body cavities

13. In chronic inflammation, which of the following cells is particularly involved in the formation of granulomas, especially in diseases like tuberculosis?
A) Neutrophils
B) Eosinophils
C) Lymphocytes
D) Macrophages

14. Which of the following outcomes is most likely if acute inflammation persists and transforms into chronic inflammation, particularly in conditions such as rheumatoid arthritis or chronic viral infections?
A) Complete resolution with full restoration of function
B) Progressive tissue destruction with extensive fibrosis
C) Formation of new, healthy tissue with minimal scarring
D) Formation of abscesses and pus accumulation

15. Which of the following characteristics is a major difference between the M1 and M2 macrophage activation pathways?
A) M1 is associated with anti-inflammatory cytokine production, while M2 promotes inflammation and immune responses.
B) M1 promotes inflammation and tissue damage, while M2 is involved in tissue repair and resolution.
C) M1 is involved in tissue repair, while M2 is associated with immune defense.
D) M1 and M2 pathways are not functionally distinct and share overlapping cytokine production.

16. Which of the following is the primary function of protease-activated receptors (PARs) in platelets?
A) They inhibit platelet aggregation and prevent thrombosis.
B) They promote platelet aggregation and play a role in thromboembolic diseases.
C) They decrease vascular permeability and reduce inflammation.
D) They mediate vasodilation and smooth muscle relaxation.

17. Which of the following factors is most directly implicated in the pathogenesis of atherosclerosis, particularly in the context of chronic inflammation?
A) Prostaglandin I_2 (PGI_2)
B) Platelet Activating Factor (PAF)
C) Leukotriene B4
D) Thromboxane A_2 (TXA_2)

18. Which of the following is most likely to result in the formation of serous effusions, particularly in conditions that reduce oncotic pressure?
A) Chronic infections
B) Heart failure and liver failure
C) Autoimmune diseases
D) Hyperinflammatory states

Answers:

1. C
2. C
3. B
4. B
5. B
6. B
7. C
8. D
9. C
10. B
11. C
12. B
13. D
14. B
15. B
16. B
17. B
18. B

1. Which of the following mediators is primarily responsible for the pain associated with acute inflammation?
A) Prostaglandins
B) IL-1
C) Thromboxane A_2
D) C3a

2. Which of the following best describes the role of histamine during acute inflammation?
A) Histamine promotes platelet aggregation and vasoconstriction.
B) Histamine increases vascular permeability and causes vasodilation.
C) Histamine induces chemotaxis and leukocyte recruitment.
D) Histamine inhibits the release of reactive oxygen species from leukocytes.

3. Which of the following cytokines, secreted by macrophages during chronic inflammation, plays a key role in resolving inflammation by promoting tissue repair and fibrosis?
A) IL-6
B) TNF
C) IL-10
D) IL-1

4. In chronic inflammation, the presence of large numbers of macrophages, lymphocytes, and plasma cells is indicative of:
A) Serous inflammation
B) Granulomatous inflammation

C) Chronic inflammation
D) Acute inflammation

5. Which of the following is most likely to occur if acute inflammation progresses into chronic inflammation without resolution?
A) Complete restoration of normal tissue function
B) Formation of a granuloma
C) Extensive tissue destruction with fibrosis and scarring
D) Inhibition of tissue repair and regeneration

6. Which of the following is characteristic of fibrinous inflammation?
A) Abscess formation and pus accumulation
B) Large amounts of fibrin and coagulation in the exudate
C) Minimal cellular infiltrate and serous fluid accumulation
D) Formation of granulomas with central necrosis

7. Which mediator is involved in increasing vascular permeability and causing vasodilation, as well as promoting smooth muscle contraction during inflammation?
A) Leukotriene B4
B) Bradykinin
C) Prostaglandins
D) Platelet Activating Factor (PAF)

8. Which of the following cells is most involved in the formation of granulomas during chronic inflammation?
A) Neutrophils
B) Eosinophils
C) T lymphocytes
D) Macrophages

9. Which of the following is a key feature of purulent (suppurative) inflammation that distinguishes it from other forms of inflammation?
A) The presence of a clear, protein-poor exudate.
B) A dense infiltration of neutrophils and the formation of abscesses.
C) Fibrin deposition leading to tissue scarring.
D) Granuloma formation with a central necrotic area.

10. Which of the following is the primary function of leukotrienes C4, D4, and E4 during inflammation?
A) To promote platelet aggregation and vasoconstriction
B) To mediate chemotaxis and promote leukocyte recruitment
C) To induce smooth muscle relaxation and vasodilation
D) To increase vascular permeability and cause bronchoconstriction

11. Which of the following is NOT a typical feature of serous inflammation?
A) Formation of clear, protein-poor fluid (transudate)
B) Occurs in response to mild injuries such as first-degree burns
C) Infiltration of neutrophils and bacterial infection
D) Examples include skin blisters and seromas

12. In chronic inflammation, the M1 macrophage pathway is primarily associated with:
A) Tissue repair and anti-inflammatory actions
B) Increased phagocytosis and pro-inflammatory cytokine secretion
C) Inhibition of fibrosis and collagen deposition
D) Suppression of immune responses and tissue repair

13. Which of the following is a direct consequence of unresolved acute inflammation in tissues like the liver or lungs?
A) Resolution with no lasting tissue damage
B) Healing with regeneration of original tissue structure
C) Formation of significant fibrosis and potential organ dysfunction
D) Development of abscesses and pus accumulation

14. Which of the following is associated with the pathological outcomes of chronic inflammation, particularly in conditions like rheumatoid arthritis or tuberculosis?
A) Complete restoration of organ function
B) Formation of fibrous scar tissue and loss of function
C) Short-term tissue regeneration and limited scarring
D) Decreased immune responses and bacterial control

15. Which of the following factors most commonly causes chronic inflammation due to delayed hypersensitivity reactions, such as in tuberculosis or sarcoidosis?
A) Persistent microbial infection
B) Autoimmune diseases like rheumatoid arthritis
C) Exposure to toxic agents like silica or asbestos
D) Acute allergic reactions to environmental allergens

16. Which of the following is most likely to result from the activation of protease-activated receptors (PARs) on platelets during inflammation?
A) Inhibition of platelet aggregation and decreased thrombus formation
B) Promotion of platelet aggregation and thrombus formation
C) Activation of vasodilation and smooth muscle relaxation
D) Decreased vascular permeability and reduced edema

17. Which of the following best describes the role of TNF and IL-1 in the process of fever during inflammation?
A) These cytokines raise the set point of the hypothalamic temperature regulation, leading to fever.
B) These cytokines act to lower the body's temperature in response to infection.
C) They inhibit the release of prostaglandins, thus preventing fever.
D) They enhance the anti-inflammatory response to reduce body temperature.

18. Which of the following is an important consequence of macrophage activation via the M2 (alternative) pathway?
A) Increased production of pro-inflammatory cytokines
B) Promotion of tissue repair and fibrosis
C) Recruitment of neutrophils to the site of inflammation
D) Induction of cell-mediated immune responses

19. Which of the following is the most likely outcome of chronic inflammation in the lungs, as seen in conditions like chronic bronchitis or asthma?
A) Complete resolution of inflammation and restoration of normal function
B) Extensive scarring and loss of lung tissue elasticity
C) Rapid regeneration of normal lung tissue without scarring
D) Formation of abscesses and pus-filled cavities in the lungs

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Answers:

1. A
2. B
3. C
4. C
5. C
6. B
7. B
8. D
9. B
10. D
11. C
12. B
13. C
14. B
15. A
16. B
17. A
18. B
19. B

1. Which of the following is NOT directly associated with platelet activation during inflammation?
A) Activation of Protease-Activated Receptors (PARs)
B) Aggregation of platelets leading to thrombus formation
C) Production of Prostaglandin I_2 (PGI_2)
D) Release of Platelet Activating Factor (PAF)

2. Which of the following is a characteristic feature of granulomatous inflammation, often seen in chronic conditions like tuberculosis?
A) Formation of large amounts of fibrin-rich exudate
B) Presence of multinucleated giant cells and epitheloid macrophages
C) Infiltration predominantly by neutrophils and plasma cells
D) Acute vasodilation and rapid tissue swelling

3. In the context of inflammatory pain, which of the following mediators directly sensitizes nerve endings to increase the sensation of pain?
A) Prostaglandins
B) IL-1

C) Platelet Activating Factor (PAF)
D) Leukotriene B4

4. Which of the following best describes the impact of Reactive Oxygen Species (ROS) during acute inflammation?
A) ROS directly promote tissue repair and healing
B) ROS enhance the formation of granulomas to contain infection
C) ROS can lead to tissue injury by damaging cellular components
D) ROS suppress the inflammatory response by neutralizing inflammatory mediators

5. Which of the following is the most accurate statement regarding the role of C3a and C5a in inflammation?
A) C3a and C5a primarily induce platelet aggregation and thrombus formation
B) C3a and C5a activate the complement system, leading to opsonization of pathogens
C) C3a and C5a act as potent chemotactic factors, attracting leukocytes to the site of inflammation
D) C3a and C5a inhibit the activation of neutrophils and monocytes

6. Which of the following best explains why neutrophils are predominant in the early phase of acute inflammation?
A) Neutrophils release large amounts of cytokines and growth factors, promoting tissue repair.
B) Neutrophils are the first responders, migrating to the site of injury and eliminating pathogens through phagocytosis.
C) Neutrophils secrete antibodies, which neutralize foreign invaders.
D) Neutrophils are primarily involved in the resolution of inflammation by clearing apoptotic cells.

7. Which of the following statements about macrophages in chronic inflammation is most accurate?
A) Macrophages are primarily involved in initiating acute inflammation and fighting infections.
B) Macrophages play a dual role, promoting both tissue destruction and repair during chronic inflammation.
C) Macrophages release primarily anti-inflammatory cytokines, thereby suppressing the immune response.
D) Macrophages activate B cells and produce antibodies to neutralize pathogens during chronic inflammation.

8. Which of the following is a feature of serous inflammation that distinguishes it from other forms of inflammation like fibrinous or purulent inflammation?
A) Serous inflammation is characterized by large numbers of neutrophils and abscess formation.
B) Serous inflammation involves protein-rich fluid that can lead to fibrin deposition.
C) Serous inflammation produces clear, protein-poor fluid with few cells, typically occurring in mild injury scenarios.
D) Serous inflammation results in significant tissue necrosis and the formation of granulomas.

9. Which of the following inflammatory mediators is most associated with the recruitment of leukocytes, particularly neutrophils, during acute inflammation?
A) IL-4
B) TNF
C) IL-10
D) Leukotriene B4

10. Which of the following is the primary therapeutic target in conditions characterized by excessive fever during inflammation?
A) Prostaglandins
B) Histamine
C) IL-1 and TNF
D) Leukotrienes

11. Which of the following best describes the function of the M2 (alternative) pathway of macrophage activation?
A) The M2 pathway promotes inflammation and tissue injury by enhancing the secretion of pro-inflammatory cytokines.
B) The M2 pathway promotes the resolution of inflammation and tissue repair through the secretion of anti-inflammatory cytokines.
C) The M2 pathway causes the formation of granulomas in response to infections like tuberculosis.
D) The M2 pathway inhibits tissue repair and leads to fibrosis and scarring.

12. In the context of chronic inflammation, the formation of fibrous tissue and the resultant scarring is primarily driven by the activity of which of the following mediators?
A) IL-1
B) IL-10
C) TGF-beta
D) TNF

13. Which of the following best describes the pathophysiology of chronic hepatitis that leads to cirrhosis over time?
A) Acute inflammation resolves, leading to normal tissue regeneration and no lasting damage.
B) Chronic inflammation persists with repeated tissue injury, resulting in fibrosis and eventual organ dysfunction.
C) Granulomatous inflammation leads to tissue necrosis and scarring, but function is not impaired.
D) Acute inflammation rapidly transitions into regenerative tissue, bypassing fibrosis.

14. Which of the following best explains the phenomenon of "loss of function" in acute inflammation?
A) Increased vascular permeability and swelling inhibit normal tissue movement and function.
B) Tissue regeneration and repair lead to improved functionality in the affected organ.
C) Pro-inflammatory cytokines promote the activity of repair cells, thus enhancing tissue function.

D) The accumulation of inflammatory cells directly stimulates tissue regeneration, restoring function.

15. Which of the following best describes the main cellular response during acute inflammation?
A) Decreased blood flow to the site of injury and reduced immune cell migration.
B) Leukocyte adhesion, followed by migration and phagocytosis at the site of injury.
C) Formation of granulomas and chronic macrophage activation.
D) Rapid tissue regeneration and functional restoration without immune cell involvement.

16. Which of the following mediators is responsible for causing the "warmth" or hyperthermia often associated with inflammation?
A) IL-1
B) Prostaglandins
C) Histamine
D) TNF

17. Which of the following outcomes of acute inflammation is most likely to result in permanent organ dysfunction due to scarring?
A) Healing by fibrosis and scar formation following severe tissue destruction
B) Complete resolution with full tissue regeneration and restoration of function
C) Chronic inflammation leading to the gradual formation of granulomas
D) Abscess formation with localized purulent inflammation, resolving without scarring

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Answers:

1. C
2. B
3. A
4. C
5. C
6. B
7. B
8. C
9. D
10. C
11. B
12. C
13. B
14. A
15. B
16. B
17. A

1. Which of the following best explains the role of Platelet Activating Factor (PAF) in platelet aggregation during inflammation?
A) PAF stimulates the release of histamine from mast cells, leading to vasodilation.
B) PAF directly promotes the aggregation of platelets and plays a key role in thrombus formation.
C) PAF acts as a chemotactic factor, attracting neutrophils to the site of inflammation.
D) PAF inhibits the activation of protease-activated receptors (PARs) to prevent thrombosis.

2. Which of the following is the primary effect of bradykinin during inflammation?
A) Inhibition of vasodilation
B) Pain and increased vascular permeability
C) Suppression of immune cell recruitment
D) Promotion of fibrin deposition in tissues

3. Which of the following pathways is responsible for the pro-inflammatory effects of macrophages during chronic inflammation?
A) M2 activation pathway
B) IL-10 and TGF-beta secretion
C) M1 activation pathway
D) Granuloma formation

4. What is the most significant outcome of fibrinous inflammation if left untreated?
A) Tissue regeneration without scarring
B) Formation of a thick fibrinous membrane that can impair organ function
C) Resolution through the formation of granulomas
D) Complete resolution of the inflammatory response with no permanent damage

5. Which of the following mediators is most responsible for the tissue damage seen in the chronic inflammatory response?
A) Reactive oxygen species (ROS)
B) IL-10
C) Prostaglandins
D) Bradykinin

6. Which type of inflammatory reaction is characterized by the formation of abscesses, primarily composed of neutrophils and dead cells?
A) Serous inflammation

B) Purulent (Suppurative) inflammation
C) Fibrinous inflammation
D) Granulomatous inflammation

7. Which of the following is the key mediator in chemotaxis, particularly in attracting neutrophils and monocytes to the site of infection or injury during acute inflammation?
A) IL-4
B) Leukotriene B4
C) Prostaglandin E2
D) Platelet Activating Factor (PAF)

8. Which of the following best describes the role of C3a and C5a in inflammation?
A) Both C3a and C5a enhance the inflammatory response by activating T-cells.
B) C3a and C5a are key in opsonization, marking pathogens for phagocytosis.
C) C3a and C5a act as chemotactic factors, promoting the recruitment of leukocytes.
D) C3a and C5a suppress the inflammatory response by inducing macrophage apoptosis.

9. Which of the following is a key feature of serous inflammation, distinguishing it from other types such as fibrinous or purulent inflammation?
A) Characterized by the formation of large amounts of fibrin in the exudate.
B) Produces clear, protein-poor fluid with few inflammatory cells.
C) Leads to abscess formation and widespread tissue necrosis.
D) Occurs in response to bacterial infections, producing pus.

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10. What is the primary function of neutrophils in acute inflammation?
A) Tissue repair through the promotion of angiogenesis and fibrosis
B) Elimination of pathogens via phagocytosis and the release of proteolytic enzymes
C) Suppression of the inflammatory response by secreting IL-10
D) Secretion of growth factors to promote tissue regeneration

11. Which of the following best describes the key difference between the M1 and M2 macrophage activation pathways?
A) M1 macrophages promote inflammation, while M2 macrophages are involved in tissue repair and resolution of inflammation.
B) M1 macrophages are associated with chronic inflammation, whereas M2 macrophages are involved in acute inflammation.
C) M1 macrophages produce anti-inflammatory cytokines, while M2 macrophages

produce pro-inflammatory cytokines.
D) M1 macrophages are predominantly involved in wound healing, while M2 macrophages mediate pathogen defense.

12. Which of the following is a characteristic feature of ulcerative inflammation?
A) Acute inflammation with pus formation and neutrophil infiltration
B) A defect in the surface epithelium, often seen in mucosal surfaces like the gastrointestinal tract
C) Thick fibrin deposits causing tissue necrosis
D) A granulomatous reaction with the formation of giant cells and epithelioid macrophages

13. Which of the following mediators is most responsible for the production of fever in systemic inflammation?
A) IL-10
B) Prostaglandins
C) TNF and IL-1
D) Histamine

14. Which of the following is the most common outcome of acute inflammation in individuals with a competent immune system?
A) Chronic inflammation leading to progressive tissue damage
B) Complete resolution with full restoration of normal tissue structure and function
C) Healing with fibrosis and formation of permanent scars
D) Formation of granulomas leading to chronic tissue changes

15. Which of the following is the role of mast cells in inflammation?
A) Secretion of histamine and other mediators that enhance vascular permeability and attract leukocytes
B) Phagocytosis of pathogens during acute inflammation
C) Production of fibrin to stop bleeding during injury
D) Direct killing of pathogens via reactive oxygen species (ROS)

16. In chronic inflammation, which of the following is a key cellular feature seen under the microscope?
A) Predominant infiltration of neutrophils
B) Granuloma formation with multinucleated giant cells and epithelioid macrophages
C) Decreased tissue destruction and minimal fibrosis
D) Increased fibrin deposition leading to the formation of fibrinous exudate

17. Which of the following is a typical cause of chronic inflammation due to prolonged exposure to exogenous agents?
A) Autoimmune diseases like rheumatoid arthritis
B) Persistent infection by bacteria such as Mycobacterium tuberculosis
C) Environmental toxins such as silica, leading to diseases like silicosis
D) Endogenous factors like high blood cholesterol leading to atherosclerosis

18. Which of the following is the role of TGF-beta in the resolution of chronic inflammation?
A) It enhances macrophage activation and cytokine production.
B) It promotes fibrosis and tissue repair by stimulating collagen deposition.
C) It inhibits the activation of neutrophils and decreases vascular permeability.
D) It increases the production of pro-inflammatory cytokines like TNF and IL-1.

19. Which of the following is a characteristic feature of chronic hepatitis leading to cirrhosis?
A) Acute resolution with no significant tissue damage
B) Progressive fibrosis replacing normal liver parenchyma
C) Rapid regeneration of liver tissue after inflammation
D) Formation of granulomas in the liver

Answers:

1. **B**
2. **B**
3. **C**
4. **B**
5. **A**
6. **B**
7. **B**
8. **C**
9. **B**
10. **B**
11. **A**
12. **B**
13. **C**
14. **B**
15. **A**
16. **B**
17. **C**
18. **B**
19. **B**

A 65-year-old male with a history of hypertension presents with sudden onset chest pain and shortness of breath. His ECG shows ST-segment elevation, and his troponin levels are elevated. The patient is diagnosed with acute myocardial infarction (MI). Laboratory tests show elevated levels of Platelet Activating Factor (PAF) and Protease-Activated Receptors (PARs) in his blood.

Question:
What is the most likely mechanism by which PAF and PARs contribute to the patient's condition?
A) Increased platelet aggregation, leading to thrombus formation
B) Enhanced vascular permeability, resulting in edema
C) Inhibition of leukocyte recruitment, reducing inflammation
D) Reduction in prostaglandin synthesis, leading to vasoconstriction

Answer: A

A 45-year-old female with a recent history of a urinary tract infection (UTI) presents with fever, hypotension, and confusion. Her blood pressure is 85/50 mmHg, and she has a positive blood culture for Escherichia coli. Bradykinin levels are significantly elevated.

Question:
What role does bradykinin play in the pathophysiology of sepsis in this patient?
A) Induces vasodilation, leading to hypotension
B) Increases platelet aggregation, promoting thrombosis
C) Stimulates leukocyte recruitment to the infection site
D) Reduces vascular permeability, improving fluid retention

Answer: A

A 50-year-old woman with a 10-year history of rheumatoid arthritis (RA) presents with increasing joint pain, swelling, and morning stiffness. Laboratory tests show elevated levels of TNF and IL-1 in her synovial fluid. She also has chronic tissue damage and fibrosis around the joints.

Question:
Which of the following best explains the role of TNF and IL-1 in this patient's condition?
A) Promotion of tissue repair by inducing M2 macrophage activation
B) Induction of inflammation and recruitment of neutrophils to the affected tissue
C) Suppression of macrophage activation, reducing inflammation
D) Promotion of angiogenesis and fibrosis to repair damaged tissues

Answer: B

A 72-year-old man with a history of congestive heart failure presents with shortness of breath and bilateral leg edema. Echocardiography shows left ventricular dysfunction. His chest X-ray shows pleural effusion, and fluid analysis of the effusion reveals a clear, protein-poor fluid with low cellularity.

Question:
What is the likely cause of the serous effusion in this patient?
A) Increased vascular permeability due to inflammation
B) Decreased oncotic pressure due to hypoalbuminemia
C) Elevated platelet aggregation leading to thrombus formation
D) Release of chemokines and leukocyte infiltration into the pleural space

Answer: B

A 60-year-old male with a history of chronic hepatitis C presents with jaundice and hepatomegaly. His liver biopsy reveals infiltration by large numbers of macrophages, lymphocytes, and plasma cells, and significant tissue damage with fibrosis.

Question:
Which of the following best describes the role of macrophages in this patient's condition?
A) Macrophages have predominantly M2 activation, promoting fibrosis and tissue repair
B) Macrophages primarily exhibit M1 activation, promoting inflammation and tissue destruction
C) Macrophages secrete high levels of IL-10 and TGF-beta, resolving inflammation
D) Macrophages in this condition have been completely depleted, leading to poor tissue repair

Answer: B

A 30-year-old male presents with acute pain, swelling, and redness in his right knee following an injury. His physician notes increased leukocyte infiltration and elevated levels of C3a, C5a, and Leukotriene B4 in the synovial fluid.

Question:
Which of the following most likely describes the function of C3a, C5a, and Leukotriene B4 in this patient's condition?
A) These molecules reduce the recruitment of neutrophils, minimizing inflammation
B) They reduce vascular permeability, preventing fluid leakage from the blood vessels
C) They enhance platelet aggregation, leading to clot formation at the injury site
D) They act as potent chemotactic agents, recruiting neutrophils and promoting inflammation

Answer: D

A 45-year-old male with a history of alcohol use and Helicobacter pylori infection presents with epigastric pain, nausea, and hematemesis. Endoscopy reveals an ulcer in the gastric mucosa, with adjacent areas showing signs of acute and chronic inflammation.

Question:
What best explains the ulceration seen in this patient?
A) Disruption of mucosal continuity due to inflammatory mediators like prostaglandins and bradykinin

B) Increased vascular permeability leading to edema and fluid loss
C) Platelet aggregation and thrombus formation in the gastric vessels
D) Excessive collagen deposition causing fibrosis and mucosal thinning

Answer: A

A 58-year-old male presents with chest pain and a pericardial friction rub. His ECG shows ST-segment elevation across all leads, and a pericardial effusion is detected on echocardiogram. Fluid analysis reveals a significant amount of fibrin in the pericardial space.

Question:
What is the most likely explanation for the fibrinous inflammation seen in this patient?
A) Coagulation of blood due to an infection leading to an abscess formation
B) The inflammatory response has led to large vascular leakage and fibrin deposition in the pericardium
C) Angiogenesis and fibrosis in the pericardium due to chronic inflammatory changes
D) Impaired platelet function, preventing proper clotting and tissue repair

Answer: B

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