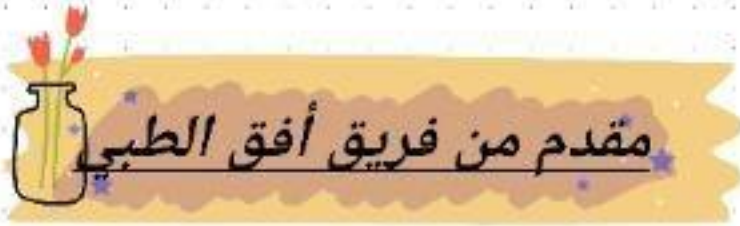
مقدم من فريق أفق الطبي


جامعة الأزهر - غزة
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حركة الشبيبة الفتحاوية
جامعة الأزهر
Fateh Youth Movement

Cell Injury - 50 Multiple Choice Questions (MCQs) with Answers

1. What are the causes of cell injury?

A) Infection
B) Hypoxia
C) Physical and chemical agents
D) All of the above
Answer: All of the above

2. Which of the following is a cause of hypoxia?

A) Ischemia
B) Hyperoxia
C) High oxygen saturation
D) None of the above
Answer: Ischemia

3. Which of the following is an example of a physical agent causing cell injury?

A) Heat and cold
B) Trauma
C) Radiation
D) All of the above
Answer: All of the above

4. What is the primary effect of ATP depletion in cell injury?

A) Increase in energy production
B) Altered cell membrane permeability
C) DNA replication
D) Protein synthesis
Answer: Altered cell membrane permeability

5. Which organelle is mainly affected in hypoxic cell injury?

A) Mitochondria
B) Lysosomes
C) Nucleus
D) Endoplasmic reticulum
Answer: Mitochondria

6. What happens when intracellular calcium levels increase due to cell injury?

A) Activation of phospholipases
B) Activation of proteases
C) Activation of ATP-ases
D) All of the above
Answer: All of the above

7. Which of the following is an oxygen-derived free radical?

A) Superoxide anion
B) Hydrogen peroxide
C) Hydroxyl ion
D) All of the above
Answer: All of the above

8. Free radicals cause cell injury by:

A) Lipid peroxidation
B) Protein modification
C) DNA damage
D) All of the above
Answer: All of the above

9. Which of the following produces reactive oxygen species (ROS)?

A) Mitochondria
B) Peroxisomes
C) Plasma membrane
D) All of the above
Answer: All of the above

10. Which enzyme is involved in the degradation of free radicals?

A) Superoxide dismutase
B) Catalase
C) Glutathione peroxidase
D) All of the above
Answer: All of the above

11. What is the Fenton reaction?

A) Formation of ROS from oxygen
B) Conversion of hydrogen peroxide into hydroxyl radicals
C) Free radical scavenging
D) DNA repair mechanism

Answer: Conversion of hydrogen peroxide into hydroxyl radicals

12. What is the effect of lipid peroxidation on cell membranes?

A) Increased stability
B) Membrane damage
C) Enhanced energy production
D) DNA synthesis
Answer: Membrane damage

13. What is oxidative stress?

A) Excess free radicals beyond the scavenging capacity
B) Increased oxygenation of tissues
C) Reduced energy production
D) Cellular swelling
Answer: Excess free radicals beyond the scavenging capacity

14. What is the fate of a cell undergoing severe injury?

A) Adaptation
B) Recovery
C) Necrosis or apoptosis
D) Increased function
Answer: Necrosis or apoptosis

15. What is the hallmark of reversible cell injury?

A) Cell membrane rupture
B) ATP depletion
C) Cell swelling
D) Nuclear fragmentation
Answer: Cell swelling

16. Which type of cells are more vulnerable to degeneration?

A) Liver cells
B) Renal tubular cells
C) Cardiac muscle cells
D) All of the above
Answer: All of the above

17. What is the main cause of cloudy swelling in cells?

A) Excess protein accumulation
B) Water accumulation
C) Lipid peroxidation
D) DNA fragmentation
Answer: Water accumulation

18. Fatty change (steatosis) is most common in which organ?

A) Heart
B) Kidney
C) Liver
D) Brain
Answer: Liver

19. What is necrosis?

A) Programmed cell death
B) Uncontrolled cell death due to injury
C) A reversible form of cell injury
D) Cell repair mechanism
Answer: Uncontrolled cell death due to injury

20. Which nuclear change in necrosis involves fragmentation?

A) Pyknosis
B) Karyorrhexis
C) Karyolysis
D) None of the above
Answer: Karyorrhexis

21. What type of necrosis occurs in the brain?

A) Coagulative necrosis
B) Liquefactive necrosis
C) Caseous necrosis
D) Fat necrosis
Answer: Liquefactive necrosis

22. Which necrosis is typical of tuberculosis?

A) Coagulative necrosis
B) Caseous necrosis
C) Fat necrosis
D) Gangrenous necrosis

Answer: Caseous necrosis

23. Which enzyme is responsible for digesting necrotic tissue?

A) Proteases
B) Lipases
C) DNases
D) All of the above
Answer: All of the above

24. Which organ is most affected by enzymatic fat necrosis?

A) Pancreas
B) Heart
C) Brain
D) Lungs
Answer: Pancreas

25. What is the characteristic microscopic feature of apoptosis?

A) Cell shrinkage
B) Chromatin condensation
C) Apoptotic bodies
D) All of the above
Answer: All of the above

26. What is the main difference between necrosis and apoptosis?

A) Apoptosis is programmed, necrosis is uncontrolled
B) Necrosis involves a single cell, apoptosis involves a group of cells
C) Apoptosis induces inflammation, necrosis does not
D) Apoptosis always results in cell rupture
Answer: Apoptosis is programmed, necrosis is uncontrolled

27. What is pyroptosis?

A) Cell death associated with IL-1 release
B) Cell death due to hypoxia
C) Cell repair mechanism
D) A type of coagulative necrosis
Answer: Cell death associated with IL-1 release

28. Which type of cell death is caspase-independent?

A) Necroptosis
B) Apoptosis
C) Pyroptosis
D) Ferroptosis
Answer: Necroptosis

29. Ferroptosis is triggered by excessive levels of:

A) Iron and ROS
B) ATP depletion
C) Inflammation
D) Ischemia
Answer: Iron and ROS

30. Cellular aging is mainly caused by:

A) DNA damage
B) Decreased cellular replication
C) Accumulation of metabolic damage
D) All of the above
Answer: All of the above

31. What is the primary cause of ischemic cell injury?

A) Increased oxygen supply
B) Decreased blood supply
C) Excessive ATP production
D) Increased cell proliferation
Answer: Decreased blood supply

32. What is the hallmark of irreversible cell injury?

A) ATP depletion
B) Membrane damage
C) Cell swelling
D) Increased protein synthesis
Answer: Membrane damage

33. Which of the following is NOT a mechanism of cell injury?

A) ATP depletion
B) Increased intracellular calcium
C) Excessive protein synthesis
D) Oxidative stress

Answer: Excessive protein synthesis

34. What is the role of antioxidants in the cell?

A) Promote free radical formation
B) Neutralize free radicals
C) Increase mitochondrial respiration
D) Enhance lipid peroxidation
Answer: Neutralize free radicals

35. What type of necrosis is commonly seen in infarcts (except in the brain)?

A) Liquefactive necrosis
B) Coagulative necrosis
C) Caseous necrosis
D) Fat necrosis
Answer: Coagulative necrosis

36. Which enzyme is responsible for breaking down hydrogen peroxide in the cell?

A) Catalase
B) Superoxide dismutase
C) Cytochrome C
D) Lipase
Answer: Catalase

37. Which of the following is a characteristic of apoptosis but not necrosis?

A) Inflammation
B) Cell swelling
C) DNA fragmentation
D) Membrane rupture
Answer: DNA fragmentation

38. What happens to cells in liquefactive necrosis?

A) Cells remain structurally intact
B) Cells undergo rapid enzymatic digestion
C) Cells undergo fibrosis
D) Cells turn into caseous material
Answer: Cells undergo rapid enzymatic digestion

39. Which of the following is NOT an anti-oxidant enzyme?

A) Catalase
B) Glutathione peroxidase
C) Superoxide dismutase
D) Protease
Answer: Protease

40. What causes gangrenous necrosis?

A) Ischemia followed by bacterial infection
B) Hypoxia without infection
C) Free radical injury
D) Increased protein synthesis
Answer: Ischemia followed by bacterial infection

41. What is the main mechanism of cell swelling in reversible injury?

A) Protein denaturation
B) ATP depletion leading to sodium and water influx
C) Lipid accumulation
D) DNA damage
Answer: ATP depletion leading to sodium and water influx

42. What does the presence of apoptotic bodies indicate?

A) Necrosis
B) Inflammatory response
C) Programmed cell death
D) Coagulative necrosis
Answer: Programmed cell death

43. What is the main function of p53 in cell injury?

A) Stimulating ATP production
B) Initiating DNA repair or apoptosis
C) Promoting cell proliferation
D) Increasing protein synthesis
Answer: Initiating DNA repair or apoptosis

44. What is the final fate of a necrotic tissue?

A) Regeneration
B) Inflammation, fibrosis, or calcification
C) Increased ATP production
D) Increased metabolic activity

Answer: Inflammation, fibrosis, or calcification

45. What is the role of lysosomes in cell injury?

A) DNA repair
B) Degradation of cellular components
C) Mitochondrial energy production
D) Protein synthesis
Answer: Degradation of cellular components

46. What type of necrosis is seen in tuberculosis?

A) Coagulative necrosis
B) Liquefactive necrosis
C) Caseous necrosis
D) Fat necrosis
Answer: Caseous necrosis

47. What distinguishes apoptosis from necrosis?

A) Apoptosis leads to inflammation
B) Apoptosis involves membrane rupture
C) Apoptosis is a controlled and programmed process
D) Apoptosis is always pathologic
Answer: Apoptosis is a controlled and programmed process

48. What does the term “pyroptosis” refer to?

A) Cell death due to ischemia
B) Apoptosis with inflammation and fever
C) Necrosis due to oxidative stress
D) Mitochondrial dysfunction
Answer: Apoptosis with inflammation and fever

49. What type of programmed cell death involves iron-dependent lipid peroxidation?

A) Apoptosis
B) Necroptosis
C) Ferroptosis
D) Pyroptosis
Answer: Ferroptosis

50. What happens when oxidative stress overwhelms a cell?

A) It enhances DNA replication
B) It triggers lipid peroxidation and protein damage
C) It promotes tissue repair
D) It increases ATP production
Answer: It triggers lipid peroxidation and protein damage