

PATHOLOGY

1. A performed mediator of inflammation is
 - A. Prostaglandin
 - B. Histamine
 - C. Leukotriene
 - D. Nitric oxide
 - E. Platelet activating factor

2. In normal haemostasis
 - A. Factor V inhibits thrombosis
 - B. Alpha 2 microglobulin is antithrombotic
 - C. PGI₂ favours platelet aggregation
 - D. Platelet aggregation is inhibited by von Willebrand factor
 - E. Tissue plasminogen activator is responsible for prothrombotic events

3. Mononuclear phagocytes
 - A. Are the predominant cells in three day old wounds
 - B. Are common in liver, spleen and pancreas
 - C. Produce fibroblast growth factor
 - D. Secrete interferon γ
 - E. Have a half life of one day

4. Normal endothelial cells decrease platelet aggregation by secreting
 - A. Interleukin 1
 - B. von Willebrand factor
 - C. Prostacyclin
 - D. Factor V
 - E. Thromboplastin

5. Interleukin 1 causes
 - A. Neutropaenia
 - B. Decreased sleep
 - C. Decreased prostaglandin synthesis
 - D. Increased collagen synthesis
 - E. Decreased leukocyte adherence

6. Thrombosis is potentiated by all of the following except
 - A. von Willebrand factor deficiency
 - B. Protein S deficiency
 - C. Antithrombin III deficiency
 - D. Thrombotic thrombocytopenia
 - E. Acute leukaemia

7. Acute compensatory mechanisms in shock include all of the following except
- A. Baroreceptor reflexes
 - B. Reverse stress-relaxation of vascular smooth muscle
 - C. The effects of increased aldosterone secretion
 - D. Activation of the renin-angiotensin system
 - E. The central nervous system ischaemic response
8. The following are primary mediators of type I hypersensitivity reactions except
- A. Adenosine
 - B. Neutrophil chemotactic factor
 - C. Heparin
 - D. Platelet activating factor
 - E. Acid hydrolases
9. Malignant neoplasms
- A. Are independent of hormonal influence
 - B. Are always composed of homogeneous cell lines
 - C. Arise from differentiated cells by a process of anaplasia
 - D. Display abnormal nuclei with pale nucleoli
 - E. Typically grow more rapidly than benign
10. Regarding metastasis
- A. All carcinomas have the ability to metastasise
 - B. Highly invasive carcinomas rarely metastasise
 - C. Carcinomas typically spread via lymphatics compared with haematogenous spread
 - D. Tumour cells develop increased cohesiveness of their cell surface in the formation of cancer cell emboli
 - E. Cells involved in lymphatic dissemination release degradative enzymes
11. HIV infection
- A. Is caused by rhinovirus
 - B. Results in increased CD₄ and T cell memory
 - C. Results in inversion at the CD₄-CD₈ ratio
 - D. Increases immature precursors of CD₄ and T cells
 - E. Causes a CD₄-CD₈ ratio close to 2
12. A typical feature of AIDS
- A. Decreased delayed type hypersensitivity reaction
 - B. Lymphocytosis
 - C. Hypogammaglobulinaemia
 - D. Increase CD₄ and T cells
 - E. Increase chemotaxis and phagocytosis

13. In reversible cell injury, all are true except
- A. ATP depletion is responsible for acute cellular swelling
 - B. Can cause myocardial cells to cease contraction within 60 seconds
 - C. ATP is generated anaerobically from creatine phosphate
 - D. Mitochondrial swelling and degranulation of ER are the hallmarks of irreversible cellular damage
 - E. Is associated with myelin figures

14. Metaplasia
- A. Is irreversible
 - B. Is commonly a change from squamous to columnar epithelium
 - C. An example is the transformation of epithelial cells into chondroblasts to produce cartilage
 - D. Retinoids may play a role
 - E. Even if the stimuli is persistent, it is a benign lesion

15. In apoptosis
- A. It involves physiologic and pathologic stimuli
 - B. Histologically, it involves coagulation necrosis
 - C. Its DNA breakdown is random and diffuse
 - D. Its mechanism involves ATP depletion
 - E. It involves an inflammatory tissue reaction

16. Hyperplasia
- A. Occurs after partial hepatectomy
 - B. Refers to an increase in the size of cells
 - C. Is always a pathologic process
 - D. Often occurs in cardiac and skeletal muscle
 - E. Usually progresses to cancerous proliferation

17. Metastatic calcification
- A. Causes widespread tissue damage
 - B. Occurs with normal calcium levels
 - C. Can be caused by systemic sarcoidosis
 - D. Occurs in hypothyroidism
 - E. Is caused by drinking large quantities of milk

18. Mumps virus is a
- A. Adenovirus
 - B. Herpes virus
 - C. Paramyxovirus
 - D. Pox virus
 - E. Picornavirus

19. Prothrombotic characteristics of endothelium include
- A. Plasminogen activator
 - B. Prostacyclin
 - C. von Willebrand factor
 - D. Thrombomodulin
 - E. Heparin like molecules
20. Regarding giant cell arteritis, which statement is not correct
- A. Affects medium arteries
 - B. Affects small arteries including vertebral
 - C. Affects small arteries including ophthalmic
 - D. Has an increased prevalence of HLA-DR₄
 - E. Has no gastrointestinal manifestations
21. All of the following organisms cause a clinical effect via the production of an exotoxin except
- A. Clostridium tetani
 - B. Staphylococcus aureus
 - C. E. coli
 - D. Pseudomonas aeruginosa
 - E. Vibrio cholera
22. Select the true statement concerning atherosclerosis
- A. Congenital absence of LDL cholesterol leads to premature atherosclerosis
 - B. Thoracic aorta is more likely to be involved than the abdominal
 - C. Fatty streaks appear in the aortas of children as young as 1 year
 - D. Fatty streaks are destined to become atherosclerotic plaques
 - E. Endothelial disruption always precedes atheroma development
23. Select the false statement concerning atherosclerosis
- A. Familial hypercholesterolaemia is associated with inadequate hepatic uptake of LDL
 - B. CMV has been detected in human atheromatous plaques
 - C. Fibrous atheromatous plaques are capable of regression
 - D. Foam cells can be considered to be specialised macrophages
 - E. Atherosclerosis is associated with medial calcific sclerosis
24. An infectious complication of transfusion
- A. Is most commonly Hepatitis C
 - B. Is most commonly Hepatitis B
 - C. Is rarely transmission of HIV since screening was instituted
 - D. Never includes gonorrhoea or malaria
 - E. Can be clinically apparent mononucleosis in about 7% of cases

25. Which of the following is true concerning rhabdomyolysis
- A. It is caused by injury to smooth muscle
 - B. Its diagnosis depends on the presence of characteristic physical findings
 - C. The final common pathway of injury involves damage to the sarcolemma
 - D. Renal failure is due to acute glomerular nephritis
 - E. Occurs only in trauma
26. Neutrophilia is generally caused by all of the following except
- A. Inflammatory disease
 - B. Bacterial infection
 - C. Viral infection
 - D. Corticosteroids
 - E. Stress
27. Which of the following is true of chronic myeloid leukaemia
- A. Most common leukaemia
 - B. Decreased leukocyte alkaline phosphatase level
 - C. Usually occurs in patients less than 40 years old
 - D. Increased WBC count with an abnormal differential
 - E. Rarely associated with the Philadelphia chromosome
28. All of the following are cardiac compensatory responses that occur in heart failure except
- A. Cardiac muscle fibre stretching
 - B. Increased adrenergic receptors on cardiac cells
 - C. Chamber hypertrophy
 - D. Decreased heart rate
 - E. Increased vasopressin levels
29. Shock in burn patients is primarily due to
- A. Neurogenic factors
 - B. Hypovolaemia
 - C. Acute erythrocyte haemolysis
 - D. Myocardial depression factor
 - E. All of the above
30. The immediate lethal dose of radiation exposure for humans in a non-mass casualty situation is
- A. 50 rads
 - B. 150 rads
 - C. 250 rads
 - D. 350 rads
 - E. 450 rads

31. With regard to apoptosis, which of the following is incorrect
- A. it may be regarded as a normal physiological process
 - B. it is characterised by chromatin condensation
 - C. it often elicits a strong inflammatory response
 - D. it is the process by which ovaries atrophy in post menopausal women
 - E. it is characterised by cell shrinkage
32. With regard to the acute inflammatory response, which is the most common mechanism of vascular leakage
- A. endothelial cell contraction
 - B. junctional retraction
 - C. direct injury
 - D. leukocyte-dependent leakage
 - E. regenerating endothelium
33. With regard to cellular injury, all of the following are reversible except
- A. decreased ATP
 - B. intracellular release of lysosomal enzymes
 - C. decreased Na pump activity
 - D. detachment of ribosomes
 - E. ER swelling
34. With regard to the role of complement in the acute inflammatory response, which of the following is incorrect
- A. C5a is a powerful, chemotactic agent for neutrophils, monocytes and eosinophils
 - B. C5a increases leukocyte adhesion to endothelium by activating leukocytes
 - C. C3a and C5a are called anaphylatoxins because they cause mast cell degranulation
 - D. C3a activates the lipoxygenase pathway in leukocytes
 - E. C3 and C5 can be activated in inflammatory exudate by lysosomal enzymes
35. Coagulative necrosis
- A. results from necrosis in which cellular enzymatic digestion predominates over denaturation
 - B. is characterised by a marked leukocytic infiltrate
 - C. is uncommon after myocardial infarction
 - D. usually occurs after irreversible ischaemic cellular damage
 - E. is not usually seen in association with caseous necrosis
36. Granulomatous inflammation
- A. may sometimes be a component of the acute inflammatory response
 - B. indicates the presence of tuberculosis
 - C. consists, in part, of microscopic aggregates of transformed lymphocytes
 - D. is always associated with the presence of giant cells
 - E. may result from non-immune mechanisms

37. Removal of sutures from a wound at day 7 coincides with a wound strength of
- A. 1% of unwounded skin strength
 - B. 10% of unwounded skin strength
 - C. 50% of unwounded skin strength
 - D. 75% of unwounded skin strength
 - E. 100%, ie. same as unwounded skin
38. In a healthy individual over the age of 5 years, lymphocytes are mainly found in
- A. bone marrow, thymus, spleen
 - B. liver, thymus, spleen
 - C. lymph nodes, spleen, thymus
 - D. bone marrow, spleen, liver
 - E. liver, spleen, pancreas
39. With regard to natural killer lymphocytes
- A. constitute less than 5% of blood lymphocytes
 - B. require opsonisation to enable their killing of cells
 - C. have a prime role in defense against parasites
 - D. require prior sensitisation to be effective
 - E. have an innate ability to lyse tumour cells and virally affected cells
40. With regard to B lymphocytes
- A. they constitute 50% of circulating lymphocytes
 - B. they are found in germinal centres in the red pulp of the spleen
 - C. they are genetically programmed to recognise specific antigens by means of antigen specific cell surface receptors
 - D. they release chemical mediators when attached to IgE Type I hypersensitivity reactions
 - E. they are not affected by HIV infection
41. Transplant rejection involves
- A. Type IV hypersensitivity only
 - B. Type IV and III hypersensitivity only
 - C. Type IV, III and II hypersensitivity only
 - D. Type IV and II hypersensitivity only
 - E. Type II and III hypersensitivity only
42. Major immune abnormalities associated with HIV infection include all of the following except
- A. hypergammaglobulinaemia
 - B. inversion of CD4-CD8 ratio
 - C. decreased delayed hypersensitivity reactions
 - D. decreased monocyte HLA class II expression
 - E. decreased IL2 and IFN γ production

43. Successful immune response to HIV during the acute phase of infection results from
- increase in the CD4+ lymphocyte numbers
 - appearance of anti-HIV antibodies
 - Type III hypersensitivity reaction
 - lymphoid tissue based destruction of infected cells
 - development of CD8+ virus specific cytotoxic cells
44. With respect to macrophages, which of the following is not true
- they can produce TNF and IL4 both of which cause fever
 - they have direct tissue toxicity due to the ability to release hydrogen peroxide
 - they have oxygen dependent microbicidal activity
 - they have cytotoxicity against tumour cells
 - they process antigens and act as antigen presenting cells to activate lymphocytes
45. In viral hepatitis
- the majority of cases of acute Hepatitis B infection result in a carrier state, without clinical evidence of disease
 - anti HB s appears in the first week of infection
 - anti HCV IgG does not confer immunity to Hepatitis C
 - the major cause of death from Hepatitis B is hepatocellular carcinoma
 - Hepatitis A virus has an outer surface envelope of protein, lipid and carbohydrate
46. The most common cause of pericarditis is
- SLE
 - drug hypersensitivity
 - trauma
 - post myocardial infarction
 - bacterial
47. All of the following are neoplastic syndromes associated with lung cancer except
- Cushing's syndrome
 - syndrome of inappropriate ADH secretion
 - hypocalcaemia
 - carcinoid syndrome
 - hypertrophic osteoarthropathy
48. All of the following are features of rheumatic fever except
- carditis
 - subcutaneous nodules
 - erythema nodosum
 - elevated antistreptolysin
 - aschoff bodies in the heart
49. Mediators of septic shock include all of the following except
- IL6
 - C5a
 - PAF
 - catecholamines
 - TNF antibodies
50. Metaplasia is seen in all of the following except

- A. respiratory epithelium of cigarette smokers
 - B. vitamin A excess
 - C. Barrett's oesophagitis
 - D. epithelium of a pancreatic duct containing stones
 - E. foci of cell injury
51. The commonest site of a Berry aneurysm in the Circle of Willis is
- A. junction of anterior cerebral and anterior communicating arteries
 - B. junction of middle cerebral and internal carotid arteries
 - C. bifurcation of the basilar artery
 - D. the middle cerebral artery
 - E. junction of the posterior cerebral and posterior communicating arteries
52. The virus causing molluscum contagiosum belongs to the following viral family
- A. adeno
 - B. herpes
 - C. parvo
 - D. pox
 - E. picorna
53. Most pulmonary emboli
- A. cause centrally located pulmonary haemorrhage
 - B. cause pulmonary infarction
 - C. cause acute right heart failure
 - D. are clinically silent
 - E. lead to pulmonary hypertension
54. Acute pancreatitis
- A. may be caused by Helminth infection
 - B. causes hypercalcaemia
 - C. develops in 50% of patients with gallstones
 - D. leads to inhibition of elastase
 - E. involves acinar cell injury as a late event
55. Which of the following is not a para-neoplastic syndrome associated with lung carcinoma
- A. ectopic ADH secretion
 - B. dermatomyositis
 - C. migratory thrombophlebitis
 - D. Eaton-Lambert (myasthenic) syndrome
 - E. thrombocytosis
56. Which of the following tumour is benign
- A. chondrosarcoma
 - B. osteochondroma
 - C. chondroblastoma
 - D. Ewing's tumour
 - E. none of the above
57. Which of the following is not a feature of acute Crohn's disease
- A. segmental lesions

- B. serosal involvement
- C. fissures penetrating deep into the wall of affected mucosa
- D. inflammatory pseudo-polyps
- E. epithelioid granulomata

58. A 50-year old woman presents with back pain. X-rays suggest a malignant deposit in the 10th thoracic vertebra. The least likely primary site is

- A. breast
- B. ovary
- C. thyroid
- D. kidney
- E. colon

59. Regarding haemorrhagic infarction of the brain, which of the following is not true

- A. it usually results from an embolic event
- B. it usually contains multiple petechial haemorrhages which may be confluent
- C. the distinction between this and non haemorrhagic infarcts is clinically insignificant
- D. the haemorrhages are presumed to be secondary to reperfusion injury
- E. the size of it will depend in part upon the collateral blood supply to that area

60. The histological appearance of contraction bands in association with acute myocardial infarction indicate

- A. previous old myocardial infarctions
- B. early aneurysmal formation
- C. compensatory responses to decreased myocardial contractility
- D. a right ventricular infarct
- E. recent reperfusion therapy

61. After occlusion of a coronary artery

- A. the ischaemia is most pronounced in the epicardial region
- B. loss of contractility only occurs when ultra structural changes in the myocyte are present
- C. reperfusion of the ischaemic area can result in new cellular damage, due to the generation of oxygen free radicals
- D. Q waves on the ECG are diagnostic of transmural infarction
- E. none of the above are true

62. With regard to aortic dissection, which is incorrect

- A. it tends to occur in 40-60 year old men
- B. approximately 90% of non-traumatic cases occur in patients with antecedent hypertension
- C. it is usually associated with marked dilatation of the aorta
- D. it is unusual in the presence of substantial atherosclerosis
- E. it is usually caused by an intimal tear within 10cm of the aortic valve

63. The most common site of origin of emboli causing cerebrovascular disease is
- A. common carotid artery
 - B. internal carotid artery
 - C. the heart
 - D. either end of basilar artery
 - E. intracranial vessels
64. Which of the following is malignant
- A. Squamous cell papilloma
 - B. Hydatidiform mole
 - C. Chondroma
 - D. Mature teratoma
 - E. Bronchial carcinoid
65. Anaplasia is not characterised by
- A. pleomorphism
 - B. Abundant nuclear DNA
 - C. A nuclear-cytoplasmic ratio of 1:6
 - D. Coarsely clumped chromatin
 - E. Lack of differentiation
66. All of the following are precancerous except
- A. Chronic gastritis of pernicious anaemia
 - B. Solar keratosis
 - C. Crohn's disease
 - D. Leukoplakia
 - E. Chronic ulcerative colitis
67. Prothrombogenic factors include all of the following except
- A. Platelet activating factor
 - B. Von Willebrand factor
 - C. Nitric oxide
 - D. Tissue factor
 - E. tPA inhibitor
68. In acute inflammation, all of the following are true except
- A. there is contraction of endothelial cells
 - B. there is a mononuclear infiltrate
 - C. there is induction of adhesion molecules on endothelium
 - D. there is production of arachidonic acid metabolites
 - E. cytokines induce a systemic acute phase response
69. Cellular events in acute inflammation include all of the following except
- A. redistribution of preformed adhesion molecules to the cell surface of leukocytes
 - B. adhesion and transmigration of leukocytes to endothelium
 - C. leukocyte activation
 - D. margination of macrophages to vessel walls
 - E. extracellular release of lysosomal enzymes and products of arachidonic acid metabolism
70. The factor conferring the most risk in thromboembolic disease is

- A. smoking
- B. atrial fibrillation
- C. oral contraceptives
- D. prolonged bed rest
- E. late pregnancy / post delivery

71. Systemic lupus erythematosus

- A. has a female : male gender ratio of 2:1
- B. is characterised by antinuclear antibodies (ANAs)
- C. rarely involves the kidney
- D. is associated with a seronegative arthropathy causing marked joint erosion
- E. is commonly fulminant with death in weeks to months

72. The most common cause of Traveller's diarrhoea is

- A. Rotavirus
- B. E.coli
- C. Shigella
- D. Salmonella
- E. Giardia

73. Iron deficiency anaemia features

- A. a normal haematocrit
- B. increased serum ferritin
- C. normal mean red cell volume
- D. low platelet count
- E. none of the above

74. Platelets

- A. have a normal concentration range in peripheral blood of $80-100 \times 10^3/\text{mm}^3$
- B. are important in haemostasis only
- C. remain viable in stored blood for 24 hours only
- D. normally are removed from the circulation almost entirely by the spleen
- E. have an average lifespan of average 20 days

75. In compensated heart failure

- A. right atrial pressure drops
- B. maximum cardiac output is unchanged
- C. resting cardiac output is unchanged
- D. renin level eventually drops below premorbid level
- E. fluid retention plays no role

76. Infective endocarditis

- A. in the acute form, is most commonly caused by streptococci
- B. involves abnormal valves in most acute cases
- C. is confirmed by positive blood cultures in less than 50% of cases
- D. may cause splenic infarction
- E. may cause MacCallum's plaques to form on affected valves

77. Cor Pulmonale may be caused by

- A. congenital heart disease

- B. mitral stenosis
- C. left ventricular failure
- D. primary pulmonary hypertension
- E. aortic regurgitation

78. Regarding peptic ulceration

- A. it occurs most commonly in the antrum of the stomach
- B. it has a strong genetic influence
- C. there is *H. pylori* infection of the mucosa in 50% of patients with duodenal ulceration
- D. it is more frequent in patients with chronic obstructive pulmonary disease
- E. gastric acid is the only prerequisite for formation of ulcers

79. The features of bronchogenic carcinoma include

- A. the classification of "oat cell" tumour within the large cell type
- B. high initial response to chemotherapy for small cell type
- C. the strongest correlation with cigarette smoking in the adenocarcinoma type
- D. that 50% of small cell type occur in nonsmokers
- E. histological features identical in small cell carcinomas and squamous cell types

80. The major abnormalities of immune function in AIDS are characterised by

- A. Inversion of the CD4-CD8 ratio
- B. Increase in the number of memory T cells
- C. Hypogammaglobulinaemia and decreased circulating immune complexes
- D. Decreased secretion of TNF and IL-1
- E. All of the above

81. Regarding hypersensitivity reactions

- A. In anaphylaxis, IgE is bound to mast cells by their Fab portions to release vasoactive amines
- B. Goodpasture's syndrome is an example of type III hypersensitivity reaction
- C. Farmer's lung is a type III reaction to micropolyspora species
- D. Delayed hypersensitivity is mediated by macrophages
- E. The Mantoux reaction is a form of contact hypersensitivity

82. Acute appendicitis

- A. In preschool children, it usually presents with the so-called "classic" signs and symptoms
- B. It is associated with appendiceal obstruction in 10% of cases
- C. Histologically, it shows neutrophilic infiltration of the muscularis layer
- D. The clinical diagnosis is falsely positive in about 50% of cases
- E. It cannot cause liver abscesses

83. *Pneumocystis carinii*

- A. Produces pneumocystis pneumonia in normal persons
- B. Causes a Ghon's focus in the lung
- C. Causes patchy atelectasis
- D. Is a fungus
- E. Attaches selectively to Type II alveolar cells

84. Regarding septic shock

- A. Endotoxin is the only cause
- B. Marked vasoconstriction occurs in the non-infected tissue

- C. Cardiac output is low in 75% of patients
- D. Endotoxin entering the circulation causes an effect very similar to anaphylaxis
- E. Blood viscosity is unchanged

85. Acute pancreatitis

- A. Is associated with increased serum amylase concentration without elevation in serum lipase concentration
- B. Occurs most often in later life
- C. Occurs in about 5% of patients with gallstones
- D. When associated with alcohol is not usually preceded by chronic pancreatitis
- E. Is often associated with hypercalcaemia

86. The acute nephritic syndrome has all of the following features except

- A. Proteinuria
- B. Haematuria
- C. Hypertension
- D. Hyaline casts
- E. Oliguria

87. A young baby presents with jaundice, dark urine and pale stools. He is most likely to have

- A. Physiologic jaundice of the newborn
- B. Breast milk jaundice
- C. Gilbert's syndrome
- D. Biliary atresia
- E. None of the above

88. With regard to the leukocyte extravasation of the acute inflammatory response, which of the following is incorrect

- A. ELAM-1 is a selectin found on endothelium
- B. E and P-selectins bind to oligosaccharides found on neutrophils and monocytes
- C. L-selectin is found on neutrophils, monocytes and lymphocytes
- D. ICAM-1 belongs to the immunoglobulin family of molecules, and is found on leukocytes
- E. VCAM-1 binds to integrins

89. IgE mediated Type I hypersensitivity reactions require the action of which lymphocyte class

- A. B only
- B. CD8 T cells and B cells
- C. T_H2 T cells and B cells
- D. T_H1 T cells and B cells
- E. Natural Killer cells and B cells

90. Thrombus formation is inhibited by
- A. Von Willebrands factor
 - B. IL-1
 - C. Alpha 2 macroglobulin
 - D. TNF
 - E. Endothelial cell injury

PATHOLOGY ANSWERS

1. B	16. A	31. C	46. D	61. C	76. D
2. B	17. C	32. A	47. C	62. C	77. D
3. C	18. C	33. B	48. C	63. C	78. D
4. C	19. C	34. D	49. E	64. E	79. B
5. D	20. E	35. D	50. B	65. C	80. A
6. A	21. D	36. E	51. A	66. C	81. C
7. C	22. C	37. B	52. D	67. C	82. C
8. D	23. E	38. C	53. D	68. B	83. D
9. E	24. A	39. E	54. A	69. D	84. D
10. E	25. C	40. C	55. E	70. D	85. C
11. C	26. C	41. C	56. B	71. B	86. D
12. A	27. B	42. A	57. D	72. B	87. D
13. D	28. D	43. E	58. D	73. E	88. D
14. D	29. E	44. A	59. C	74. C	89. C
15. A	30. E	45. C	60. E	75. C	90. C