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. PGI\textsubscript{2} 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 Y
   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 aerugenosa
   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 IFNγ production
43. Successful immune response to HIV during the acute phase of infection results from
A. increase in the CD4+ lymphocyte numbers
B. appearance of anti-HIV antibodies
C. Type III hypersensitivity reaction
D. lymphoid tissue based destruction of infected cells
E. development of CD8+ virus specific cytotoxic cells

44. With respect to macrophages, which of the following is not true
A. they can produce TNF and IL4 both of which cause fever
B. they have direct tissue toxicity due to the ability to release hydrogen peroxide
C. they have oxygen dependent microbicidal activity
D. they have cytotoxicity against tumour cells
E. they process antigens and act as antigen presenting cells to activate lymphocytes

45. In viral hepatitis
A. the majority of cases of acute Hepatitis B infection result in a carrier state, without
clinical evidence of disease
B. anti HB s appears in the first week of infection
C. anti HCV IgG does not confer immunity to Hepatitis C
D. the major cause of death from Hepatitis B is hepatocellular carcinoma
E. Hepatitis A virus has an outer surface envelope of protein, lipid and carbohydrate

46. The most common cause of pericarditis is
A. SLE
B. drug hypersensitivity
C. trauma
D. post myocardial infarction
E. bacterial

47. All of the following are neoplastic syndromes associated with lung cancer except
A. Cushing’s syndrome
B. syndrome of inappropriate ADH secretion
C. hypocalcaemia
D. carcinoid syndrome
E. hypertrophic osteoarthropathy

48. All of the following are features of rheumatic fever except
A. carditis
B. subcutaneous nodules
C. erythema nodosum
D. elevated antistreptolysin
E. aschoff bodies in the heart

49. Mediators of septic shock include all of the following except
A. IL6
B. C5a
C. PAF
D. catecholamines
E. 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 x 10^3/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\textsubscript{H}2 T cells and B cells
   D. T\textsubscript{H}1 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
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