

DISEASES OF IMMUNITY

1. the following are primary mediators of type I hypersensitivity reactions except
 - a. adenosine
 - b. neutrophil chemotactic factor
 - c. heparin
 - d. PAF
 - e. Acid hydrolases
 - f. Histamine
 - g. Eosinophil chemotactic factor
 - h. tryptase
2. HIV infection
 - a. Is caused by rhinovirus
 - b. Results in increased CD4 and T cell memory
 - c. Results in inversion of the CD4-CD8 ratio
 - d. Increases immature precursors of CD4 and T cells
 - e. Causes a CD4-CD ratio close to 2
3. A typical feature of AIDS
 - a. Decreased delayed type hypersensitivity reaction
 - b. Lymphocytosis
 - c. Hypogammaglobulinaemia
 - d. Increased CD4 and Tcells
 - e. Increase chemotaxis and phagocytosis
4. In GCA, which statement is incorrect
 - 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
5. In healthy individuals over the age of 5 years, lymphocytes are mainly found in
 - a. Bone marrow, thymus, spleen
 - b. Liver, thymus, spleen
 - c. LN, spleen, thymus
 - d. Bone marrow, spleen, liver
 - e. Liver, spleen, pancreas
6. With regard to NK lymphocytes
 - a. Constitutes 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 sensitization to be effective
 - e. Have an innate ability to lyse tumour cells and virally affected cells

7. 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 recognize 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
8. 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
9. Successful immune response to HIV during the acute phase of infection results from

 - a. Increase in CD4+ counts
 - 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
10. with regard to macrophages, which is incorrect

 - a. they can produce TNF and IL4 both of which cause fever
 - b. they have direct tissue toxicity due to their ability to release hydrogen peroxide
 - c. they have oxygen dependent microbicidal activity
 - d. they have cytotoxicity against tumour cells
 - e. they process antigen and act as antigen presenting cells to activate lymphocytes
11. Which of the following is not a feature of acute Crohn's

 - a. Segmental lesions
 - b. Serosal involvement
 - c. Fissures penetrating deep into the wall of affected mucosa
 - d. Inflammatory pseudo-polyps
 - e. Epithelioid granulomata

12. SLE
- a. Female : male gender ratio of 2 : 1
 - b. Is characterized by ANAs
 - c. Rarely involve the kidney
 - d. Is associated with a seronegative arthropathy causing marked joint erosion
 - e. Is commonly fulminant with death in weeks to months
13. The major abnormalities of immune function in AIDS are characterized by
- a. Inversion of CD4:CD8
 - 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
14. Regarding hypersensitivity reactions
- a. In anaphylaxis IgE is bound to mast cells by their Fab portions to release vasoactive amines
 - b. Goodpasture's 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
15. 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 μ 2 T cells and B cells
 - d. T μ 1 T cells and B cells
 - e. NK cells and B cells
16. T lymphocytes
- a. Are involved in humoral immunity
 - b. Are derived from the foetal liver and bone marrow
 - c. Release preformed antibodies
 - d. Are the precursors of plasma cells
 - e. Form memory cells
17. Type II hypersensitivity reactions
- a. Involve cell mediated immune responses
 - b. Include serum sickness as an example
 - c. Explain many transfusion reactions
 - d. Involve IgE on mast cells
 - e. Explain the tuberculin skin test

18. Which of the following can be considered autoimmune diseases
- Rheumatoid arthritis
 - IDDM
 - Myasthenia gravis
 - Hashimoto's disease
 - All of the above
19. IgG is composed of
- A gamma globulin with 4 antigen binding sites
 - A gamma globulin of MW 900000
 - 2 IgA molecules linked together
 - 2 heavy and 2 light chain types
 - 2 heavy chains and 4 light chain units
20. Passive immunity is achieved by administering
- Live virus
 - Attenuated virus
 - Absorbed toxin
 - Activated T cells
 - All of the above
21. The majority of HIV/AIDS cases are reported from
- Homosexual males
 - IVDU
 - Haemophiliacs
 - Recipients of blood products
 - Heterosexual contact
22. Following a needlestick from an HIV + patient the risk of HIV seroconversion is
- 1 in 5
 - 1 in 10
 - 1 in 50
 - 1 in 250
 - 1 in 1000
23. The HIV virus
- Is a retrovirus
 - Primarily targets the CNS and haemopoietic systems
 - Binds to the CD4 molecule on T cells
 - Binds to the CD4 molecule on macrophages
 - All of the above

24. The most common malignancy in patients with AIDS is

- a. NHL
- b. Primary lymphoma of the brain
- c. Kaposi's sarcoma
- d. Histoplasmosis
- e. Cervical carcinoma in women

25. Which is incorrect

- a. A 2nd phase may occur as part of anaphylaxis 2 to 8 hours after exposure to an allergen without additional exposure to the antigen
- b. Combination of IgE to IgE Fc receptors initiate 2 processes : mast cell degranulation and synthesis of secondary mediators
- c. PGD₂ is a vasodilator and intense bronchoconstrictor in the type I hypersensitivity reaction
- d. IgE is synthesized by B cells
- e. The cellular mechanisms of type I hypersensitivity includes the Arthus reaction

26. regarding SLE

- a. aetiology involves virally induced malfunctioning B cell lymphocytes
- b. kidneys are rarely involved
- c. disease limited to cutaneous lesions is known as discoid lupus erythematosus
- d. patients often present with rapid onset acute febrile illness
- e. the incidence is equal in both sexes

27. AIDS defining illnesses include all except

- a. Invasive cervical cancer
- b. Melioidosis
- c. Nocardiosis
- d. Histoplasmosis
- e. Cryptosporidiosis

28. Major abnormalities of immune function in AIDS is

- a. Decreased formation of circulating immune complexes
- b. Increased CD4:CD8
- c. No alteration in macrophage/monocyte function
- d. Increased MHC II antigen expression
- e. Decreased delayed hypersensitivity reactions

29. Type IV hypersensitivity

- a. Is mediated by IgG
- b. May result in contact dermatitis
- c. Is characterized by rheumatoid arthritis
- d. Does not cause granulomatous inflammation
- e. Involves mainly sensitized B lymphocytes

30. Regarding complement

- a. Complement is found in macrophages
- b. The classic pathway is triggered by cobra venom
- c. C3a is a powerful chemotactic agent
- d. The alternative pathway is triggered by endotoxins
- e. C1 bound to antibody triggers the classic pathway

31. Macrophages

- a. Are known as kupfer cells in the spleen
- b. Have a half life of ~ 1 day after migrating into tissue
- c. Have a very small role in acute inflammatory process
- d. Produce NO and PDGF
- e. Do not proliferate outside the bone marrow of adults

32. Type I hypersensitivity

- a. Involves sensitized T lymphocytes
- b. Involves phagocytosis of target cells by activated macrophages
- c. Involves formation of cytotoxic (IgE) antibody
- d. Histamine is a secondary mediator
- e. Proteases are secondary mediators

33. regarding T lymphocytes

- a. CD4 is present on 30%
- b. They have a receptor consisting of α and β polypeptide chains
- c. They directly produce antibody
- d. They predominate in white pulp of lymph nodes
- e. Receptor formation occurs in all tissues

34. Regarding delayed type hypersensitivity all are true except

- a. It is characterized by mononuclear cell accumulation
- b. It is associated with increased microvascular permeability
- c. CD4 positive and T helper cells act as mediators
- d. Granuloma formation is typical
- e. It is initiated by specifically sensitized β lymphocytes

35. macrophages

- a. do not produce fibrogenic cytokines
- b. lyse tumour cells by secreting proteolytic enzymes
- c. are facilitated by CD8+ cells
- d. are required for presentation of antigen to B cells
- e. are important in delayed type hypersensitivity reactions

36. With regard to immunopathogenesis of HIV
- Loss of CD4+ cells by direct and indirect mechanisms leads to the inversion of the CD4-CD8 ratio
 - Infection of monocytes and macrophages is relatively unimportant in the pathogenesis of HIV
 - CD4+ T cells and macrophages contained in blood are major sites of infection and persistence rather than lymphoid tissue
 - B cell antibody response to antigen is unaffected in AIDS
 - It is predominately CD4- T cells rather than CD4+ cells that are affected
37. macrophages
- may become activated by cytokines
 - generally do not perform phagocytosis
 - reduce in size in activation
 - secrete specific immunoglobulins
 - develop from plasma cells
38. HIV
- Colonises spleen, LNs and tonsils early in the course of the disease
 - Causes monoclonal β cell activation
 - Relies on CD4 molecules to escape from the T cell
 - Causes 4000-6000 CD4+ T cells to die each day
 - CNS involvement results from infection of neurons
39. Viruses kill host cells by all of the following except
- Inhibiting host cell DNA, RNA from protein synthesis
 - Damaging the plasma membrane
 - Lysing cells
 - Inducing host immune response to virus infected cells
 - By producing toxins
40. Which is an example of type II hypersensitivity
- The Arthus reaction
 - Systemic immune complex disease
 - The tuberculin reaction
 - Myasthenia gravis
 - Asthma
41. type I hypersensitivity reactions
- LTB4 is the most potent vasoactive agent
 - Adenosine causes bronchoconstriction
 - Eosinophils are not involved
 - Calcium efflux inhibits mast cell degranulation
 - CD8 T helper cells play an integral role

42. In the immune system
- a. T cells constitute 40% of peripheral lymphocytes
 - b. Macrophages are not important in the effector phase of humoral immunity
 - c. B cells can be activated by soluble antigens
 - d. NK cells have T cell receptors
 - e. NK cells are CD3 positive
43. All are examples of type II hypersensitivity reaction except
- a. Transfusion reactions
 - b. Erythroblastosis foetalis
 - c. Autoimmune thrombocytopenia
 - d. Good Pasture's syndrome
 - e. Acute serum sickness
44. regarding type II hypersensitivity all are true except
- a. may be mediated by haptens
 - b. may be mediated by IgE
 - c. ADCC results in phagocytosis
 - d. Good Pastures is an example
 - e. Opsonisation is part of the response
45. concerning HIV
- a. surface gp 120 binds to CD8
 - b. mutation of CCR5 may be protective
 - c. binding to CD4 is sufficient for infection
 - d. CD4 is a low affinity receptor
 - e. Macrophage infection is not clinically relevant
46. macrophages
- a. are not important in chronic inflammation
 - b. secrete factors including histamine
 - c. are derived from circulating monocytes
 - d. are not activated by cytokines
 - e. are usually smaller than monocytes

47. T lymphocytes (2 CORRECT)

- a. Constitute 30-40% peripheral cells
- b. Antigen binding sites occur on CD3 proteins
- c. CD3 proteins are variable
- d. Are found in cortical areas of LNs
- e. Of the CD4 type, can be viewed as master regulators
- f. Are capable of cytotoxic activity
- g. Are activated by the presence of soluble antigen
- h. Are the basis of type II hypersensitivity
- i. Differentiate into antibody producing plasma cells
- j. Contain CD3 proteins with a variable antigen binding region

48. Which cell type is found predominantly in the periarteriolar sheaths in the white pulp of the spleen

- a. B lymphocytes
- b. Neutrophil
- c. Mast cell
- d. T lymphocyte
- e. Macrophage

49. hyperacute transplant rejection is due to

- a. vasculitis
- b. fibrosis
- c. immune-complex deposition
- d. fibroblasts
- e. fibrinoid necrosis in arterial walls

50. Which is an AIDS defining illness

- a. Salmonella enteritis
- b. Hodgkin's lymphoma
- c. Invasive cervical carcinoma
- d. EBV

51. regarding HIV which is correct

- a. decrease in CD8 T cells greater than the decrease in CD4 cells
- b. are able to mount antibody response to new antigen
- c. increased delayed type hypersensitivity
- d. causes polyclonal Hypergammaglobulinaemia
- e. increased chemotaxis

52. macrophages may secrete (2 CORRECT)

- a. histamine
- b. serotonin
- c. PGs
- d. Oxygen free radicals

53. Which of the following cells cannot phagocytose
- Neutrophils
 - Eosinophils
 - Macrophages
 - T-cells
54. The most common peripheral circulating lymphocyte is
- B cell
 - T cell
55. mast cells
- may discharge independent of IgE
 - release lysosome
56. with regard to the complement cascade
- the alternative pathway is stimulated by Ag-Ab interaction
 - C3bBb inhibits the final common pathway
 - C5a initiates arachidonic metabolite release from neutrophils
57. In transplant mediated rejection, the hyperacute rejection is
- Cell mediated
 - Prevented largely by cross matching blood
 - Controlled by immunosuppressive drugs
58. The following are opportunistic AIDS infections except
- PCP
 - Atypical mycobacterium
 - CMV
 - Mycoplasma pneumonia
59. Which of the following reactions is cell mediated
- SLE
 - Arthus reaction
 - Anaphylaxis
 - Graft rejection
 - Good Pastures

ANSWERS

- | | | |
|---------|-------|-----------|
| 1. D | 21. E | 42. C |
| 2. C | 22. D | 43. E |
| 3. A | 23. E | 44. D + E |
| 4. E | 24. C | 45. B |
| 5. C | 25. E | 46. C |
| 6. E | 26. C | 47. E + F |
| 7. C | 27. B | 48. D |
| 8. ?E/A | 28. E | 49. ?C/E |
| 9. E | 29. B | 50. C |
| 10. A | 30. E | 51. D |
| 11. D | 31. D | 52. C + D |
| 12. B | 32. C | 53. D |
| 13. A | 33. B | 54. B |
| 14. C | 34. E | 55. A |
| 15. C | 35. B | 56. C |
| 16. E | 36. A | 57. B |
| 17. C | 37. A | 58. D |
| 18. E | 38. A | 59. D |
| 19. D | 39. E | 60. |
| 20. D | 40. D | |
| 61. | 41. B | |