

PATHOLOGY: IMMUNOLOGY & HIV INFECTION

1. How many % of peripheral lymphocytes are T cells?
 - A. 30-40%
 - B. 40-50%
 - C. 50-60%
 - D. 60-70%
 - E. 70-80%
2. What is the normal ratio of CD4: CD8 T cells in adults?
 - A. 1:1
 - B. 2:1
 - C. 3:1
 - D. 1:2
 - E. 1:3
3. Which of the following statement is TRUE?
 - A. CD4⁺ T cells only recognize antigen presented with MHC_{II} molecule by antigen presenting cell.
 - B. CD8⁺ T cells only recognize antigen presented with MHC_I molecule by antigen presenting cell.
 - C. T_{H1} cells secretes IL2 & IFN γ to facilitate macrophage dependent immune response.
 - D. T_{H2} cells secretes IL4 & IL5 to aid antibody synthesis
 - E. All of the above
4. How many % of peripheral lymphocytes are B cells?
 - A. 10-20%
 - B. 20-30%
 - C. 30-40%
 - D. 40-50%
 - E. 50-60%
5. Which of the following statement is FALSE?
 - A. B cells transform to plasma cells after antigen stimulation.
 - B. All B cells have IgM on their cell surface.
 - C. IgM on B cell surface is important for signal transduction
 - D. B cell antigen specificity is conferred by somatic rearrangement of Ig genes
 - E. Non-polymorphic molecules such as complement receptors & Fc γ R are found on B cell surface.

6. Which of the following statement regarding macrophage is TRUE?
- Macrophage acts as antigen presenting cell for T cells.
 - Macrophage are important in immunosurveillance & lyses tumor cells.
 - Macrophage secrete IL1 & TNF α to induce inflammatory & fibrogenic responses.
 - Macrophage are important effector cells in cell mediated immunity
 - All of the above
7. Which of the following statement is FALSE?
- Langerhan & dendritic cells has no phagocytic activity.
 - Dendritic cells act as antigen presenting cells.
 - NK cells does not secrete cytokines.
 - NK cells are important in antibody dependent cytotoxicity.
 - NK cells represents 10% of peripheral lymphocytes.
8. Function of cytokines include the following EXCEPT:
- mediates natural immunity
 - regulates lymphocyte growth & differentiation
 - activation of inflammatory cells
 - opsonization
 - stimulates hematopoiesis
9. Which of the following statement regarding cytokines is TRUE?
- Each cytokine is produced by 1 cell type.
 - Each cytokine may act on many different cell types.
 - Cytokine only act in paracrine fashion, with no long distance (endocrine) action.
 - Some cytokines does not have specific receptor sites on target cells.
 - All of the above.
10. Which of the following statement is TRUE?
- MHC_I is expressed on the surfaces of all nucleated cell & platelets.
 - MHC_I bind to viral envelope peptides.
 - CD4⁺ T cells are MHC_I restricted.
 - MHC_{II} is presented with extracellular antigen on the surface of antigen presenting cells.
 - None of the above.
11. The following statement regarding Type I hypersensitivity reaction is FALSE:
- The initial response is characterized by intense eosinophil infiltration & mucosal epithelial damage.
 - Late phase response occur without further exposure to antigen
 - It is initiated by antigen cross-linking of the IgEs on mast cell surface.
 - Histamine is the chief primary mediator of type I hypersensitivity.
 - All of the above.
12. The following stimuli mediates anaphylactoid reaction EXCEPT:

- A. Anaphylatoxins
- B. Monokines
- C. IgE
- D. Morphine
- E. Bee venom

13. Which of the following is NOT an action of histamine?

- A. Inhibition of platelet aggregation
- B. Enhancement of mast cell mediator release
- C. Chemotactic action
- D. Bronchial smooth muscle contraction
- E. All of the above

14. Which of the following agents are important in mediating bronchoconstriction in Type I hypersensitivity reaction?

- A. Histamine
- B. Adenosine
- C. LTC₄ & LTD₄
- D. PgD₂
- E. All of the above

15. Which of the following statement regarding Type 2 Hypersensitivity reaction is TRUE?

- A. It only occur when antibody dependent cytotoxicity is involved.
- B. It always involve complement activation
- C. The cells binding to the IgG Ab in type 2 hypersensitivity reaction is not sensitized.
- D. SLE is an example of Type 2 hypersensitivity reaction
- E. All of the above

16. Which of the following statement regarding Type 3 Hypersensitivity reaction is FALSE?

- A. Deposition of immune complexes is favored in slight antigen excess state.
- B. The antigen involved are all endogenous antigen
- C. Anaphylatoxin are activated, resulting in vasodilation & oedema
- D. Tissue damage is due to formation of microthrombi & release of lysozyme from leukocytes
- E. All of the above

17. Which of the following statement regarding tuberculin reaction is FALSE?
- CD8⁺ T cells are the predominant cell type involved in tuberculin reaction.
 - Sensitized T cells release IFN γ to activate macrophage at the site of reaction.
 - T cell predominates the reaction initially, then replaced by macrophages over 2-3 weeks.
 - Reaction begins within 8-12 hours, peaking at 72 hours.
 - All of the above
18. Which of the following statement regarding immunologic tolerance is TRUE?
- All B cells that bear receptors with self-antigen are deleted in the bone marrow & not released into the circulation.
 - Anergic T_{Helper} cells can react to self-antigen if it is presented with MHC_{II} molecule & the 2nd signal in subsequent exposures.
 - T_{suppressor} cells recognize self-antigen & respond by down-regulation of immune responses
 - All of the above
 - None of the above
19. Autoimmune disease may occur due to:
- Complexing of self antigen with drugs, leading to B cell stimulation
 - Cross reaction between microbe & self-antigen, leading to B cell stimulation
 - Non-antigenic stimulation of B cells by EBV.
 - Formation of self-antigen that is sequestered during development.
 - All of the above.
20. Which of the following regarding HIV is FALSE?
- Heterosexual contact is the predominant mode of transmission of HIV worldwide.
 - All forms of transmission of HIV are aided by coexisting STDs.
 - Transfusion of seronegative blood still has a small risk of HIV transmission.
 - Seroconversion rate for HIV in needle-stick injury is 3%.
 - Perinatal transmission to neonate is the most common cause of HIV infection in children.
21. Which of the following regarding HIV is FALSE?
- HIV is a dsDNA virus.
 - HIV₂ & HIV₁ have serologic cross-reactivity.
 - Viral envelope glycoproteins, gp120 & gp41 are critical for HIV infection of cells.
 - HIV has tropism for hematopoietic & CNS cells.
 - HIV is capable of causing immunosuppression.

22. Which of the following statement regarding HIV is TRUE?
- HIV has selective tropism for T_{Helper} cells.
 - CD₄ molecules on T cells & macrophages act as specific receptors for gp120 envelope protein on HIV.
 - In the dividing T cells, HIV cDNA enter nucleus to integrate into host genome.
 - When HIV infected T cells are activated by antigens or cytokines, extensive viral budding occurs, leading to cell death.
 - All of the above.
23. Which of the following statement regarding HIV is FALSE?
- Only 0.01-0.1% of circulating T cells are productively infected, especially early in the disease process.
 - Productive infection is continually activated in the latently infected cells as antigenic exposure occurs.
 - There is increase in CD₄:CD₈ ratio in the peripheral blood in AIDs.
 - More T cells are infected in lymphoid tissue than in the peripheral blood.
 - There is selective loss of memory subset of T_{Helper} cells early in the disease process, leading to clonal anergy even with common recall antigen.
24. Which of the following statement is TRUE regarding the mechanism of T_{Helper} cells in HIV infection?
- Extensive viral budding in the productively infected T cells lead to cell death
 - Direct infection of thymic progenitor cells or accessory cells that secrete trophic cytokines for CD₄⁺ T cell result in reduction in T cell maturation & number.
 - Fusion of infected T cells with uninfected cells results in formation of giant cells that balloon & die within a few hours.
 - Soluble gp120 molecules can be released to bind uninfected CD₄⁺ T cells, resulting in antigen dependent cytotoxicity (ADCC) of both infected & uninfected T cells in the presence of antigp120 antibodies.
 - All of the above
25. Which of the following statements regarding HIV infection of macrophages is FALSE?
- Majority of infected macrophage are tissue macrophages (esp brain & lung), not circulating monocytes.
 - HIV may enter macrophages via phagocytosis or endocytosis of antibodies coated HIV particles.
 - Infected macrophage formed a reservoir, factory & safe vehicle for HIV.
 - Extensive viral replication in macrophages lead to macrophage cell death.
 - Infected macrophages have inappropriate secretion of TNF α , leading to upregulation of HIV production.

26. Functional deficits of macrophages in HIV infection include:
- Impaired microbicidal activity
 - Impaired antigen presentation
 - Inappropriate or reduced cytokine secretion
 - Impaired chemotaxis.
 - All of the above
27. In HIV infected patients, there is impairment of:
- T cell mediated immunity.
 - Humoral immunity
 - Antigen presentation by antigen presenting cells
 - Antibody dependent cytotoxicity
 - All of the above
28. Which of the following statements regarding clinical syndrome of HIV is FALSE?
- Initial anti-HIV immune response involves HIV specific $T_{\text{cytotoxic}}$ cells
 - Increased levels of HIV p24 antigen in serum occurs before appearance of anti-gp120 antibodies.
 - All HIV infected adults suffers seroconversion illness 3-6 weeks after exposure.
 - CD_4^+ T cell count at the early acute phase may be severely reduced.
 - None of the above.
29. Which of the following statements regarding the latent phase of HIV infection is TRUE?
- During the latent phase of HIV infection, the viral burden per CD_4^+ T cells & the number of infected cells gradually increases.
 - Rapidly reducing CD_4^+ counts correlates with rapid disease progression.
 - There is reduction of CD_4^+ counts at about 50-100 cells/ μ l/year.
 - Persistent generalized lymphadenopathy with constitutional symptoms signals the onset of immune system decompensation with increased viral replication.
 - All of the above.
30. Which of the statements regarding Non-Hodgkin's Lymphoma in AIDs is TRUE?
- Almost all are of T cell origin.
 - Highest risk group are those with CD_4^+ counts < 50.
 - There is predilection for mediastinal LNs.
 - All are due to polyclonal B cell activation by EBV.
 - All of the above.

31. Which of the following statements regarding AIDs is FALSE?
- A. CD_4^+ count < 200 cells/ ml is defined as AIDs.
 - B. PCP is the most common opportunistic infection in AIDs.
 - C. Cryptosporidiosis is the most common cause of diarrhoea in AIDs patients.
 - D. All mycobacterial infection in AIDs are due to reactivation.
 - E. Kaposi sarcoma is the most common neoplasm in AIDs.

ANSWERS:

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| 1. D | 11. A | 21. A | 31. D |
| 2. B | 12. C | 22. E | |
| 3. E | 13. A | 23. C | |
| 4. A | 14. E | 24. E | |
| 5. C | 15. C | 25. D | |
| 6. E | 16. B | 26. E | |
| 7. C | 17. A | 27. E | |
| 8. D | 18. C | 28. C | |
| 9. B | 19. E | 29. E | |
| 10. A | 20. D | 30. B | |