

Subject: Bt302 past papers mid term

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W 1).what type of Immune Response is Elicited by alloantigens?

2 Ans: • Alloantigens elicit both cell-mediated and humoral immune responses.

2). write 2 diseases for which inactive bacterial cell or viral particles are used for vaccines ?

Ans: inactivated bacterial cell 1-Anthrax 2-cholera 3-plague Viral particle 1-hepatitis A 2-influenza 3-polio

3.)Write Disease for which live attenuated vaccines are are uses.3 Ans: tuberculosis, typhoid, measles, polio, rotavirus, chickenpox, yellow fever.

4). write 6 symptoms of GVHR ? 3 Ans: ✓ Skin rash ✓ Emaciation (becoming thin) ✓

Retarded growth ✓ Diarrhoea ✓ Hepatomegaly ✓ Splenomegaly ✓ Increase in bilirubin production ✓ Bileducts are damaged ✓ anaemia

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5.) how a capsular antigen serves as vaccine, which cell are activated by these antigens give example ?

Ans: Capsular polysaccharides • The virulence of some pathogenic bacteria depends primarily on the anti phagocytic properties of their hydrophilic polysaccharide capsule. • Coating of the capsule with antibodies and or complement greatly increases the ability of macrophages and neutrophils to phagocytose such pathogens.

• The current vaccine for Streptococcus pneumoniae, which causes pneumococcal pneumonia, consists of 23 antigenically different capsular polysaccharides.

6.) what is cytokines and its types? 5

Ans: • Cytokines are a diverse group of non-antibody proteins released by cells that act as intercellular mediators, especially in immune processes • Low molecular weight soluble proteins (polypeptides) (Less than 30kD) • produced in response to microbes and other antigens Types 1. Monokines - produced by mononuclear phagocytes (monocytes) 2. Lymphokines - produced by activated T cells, primarily helper T cells 3. Interleukins - cytokines made by one leukocyte and acting on other leukocytes 4. Chemokines - cytokines with chemotactic activities

7). what are the type of Hypersensitivity? 5

Ans: • Type I • Type II • Type III • Type IV • _____ • Type I, II and III Antibody Mediated • Type IV Cell Mediated (detail topic 47)

8) Explain Function, mode of action and properties of cytokines?

Ans: function Cytokines classified according to their biologic actions into three groups:

1) Mediators and regulators of innate immunity - Produced by activated macrophages and NK cells .

in response to microbial infection - they act mainly on endothelial cells and leukocytes to stimulate the early inflammatory response to microbes 2) **Mediators and regulators of acquired immunity** -

Produced mainly by T lymphocytes in response to specific recognition of foreign antigens - They include IL-2, IL-4, IL-5,, IL-13, IFN, Transforming growth factor- β (TGF- β) and lymphotoxin (TNF- β) 3) Stimulators of haematopoiesis - Produced by bon marrow, leukocytes

- Stimulate growth and differentiation of leukocytes - Stem cell factors, IL-3, IL-7, GM-CSF

Mode of action

1. autocrine - act on the same cell that has secreted cytokine 1. Paracrine -act on a nearby cell 1. Endocrine -act on a distant cell reached through the circulation **Properties**

1. Produced by cells involved in both natural and specific immunity

2. Mediate and regulate immune and inflammatory responses

3. Secretion is brief and limited Not stored as pre-formed molecules Synthesis is initiated by new short-lived gene transcription .

4. Pleiotropic or for a different cell types to secrete the same cytokine single cytokine to act on several different cell types 5. Redundancy similar functions can be stimulated by different cytokines. Receptors for cytokines are heterodimers (sometimes heterotrimers) that can be grouped into families in which one subunit is common to all members of a given family 6. Often influence the synthesis of other cytokines They can produce cascades, or enhance or

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suppress production of other cytokines inflammatory responses They exert positive or negative regulatory mechanisms for immune infl. Often influence the action of other cytokines. antagonistic cytokines causing opposing activities Additive/synergistic two or more cytokines acting together 8. Bind to specific receptors on target cells with high affinity..

9.) What is ADCC cellular responses to cytokines are generally slow (hours), require new mRNA and protein synthesis 9. ?

Ans: Antibody-Dependent Cell-Mediated Cytotoxicity (ADCC) • Cells Capable of Cytotoxicity Express Fc Receptors • Antibody Binds Target Cell, Cytotoxic Cells Bind Fc Portion Of Ab • Antibody Provides The Specificity • Examples Of Cells Capable Of ADCC • Macrophages, NK, Neutrophils, eosinophils

10.) mechanism of hypersensitivity type III?

Ans: Mechanism of Type III Hypersensitivity

• Antigens combine with antibody within circulation and form immune complex • Wherever in the body they are deposited • They activate complement system • Polymorphonuclear cells are attracted to the site • Result in inflammation and tissue injury

11.) antibody and antigen?

Ans: antibody is known as immunoglobulin, is a large, Y-shaped protein produced mainly by plasma cells that is used by the immune system to neutralize pathogen such as pathogenic bacteria. A toxin or the foreign substance which induces an immune response in the body especially the production of antibodies.

12). cell mediated responses name?

Ans: Note: this answer is not conformed • Primary Function Of Cell Mediated Response • Eliminate Intracellular Pathogens • Eliminate Tumor Cells • Both Antigen Specific And Non-specific cells Are Involved • Ag Specific: Both Cytotoxic and Helper T cells • Non-specific: Macrophages (M), Neutrophils, NK • Both Specific And Non-specific responses Require Cytokines.

13) Function of lymph nodes(5) Ans: Function • 1st line of response to antigens • Secondary follicle (Germinal center) is site of B cell proliferation, mutation, differentiation • Specificity is high • >90% of B cells die through apoptosis • After Ag stimulation lymphocyte numbers up by 50X in efferent lymphatic vessel • Lymphadenopathy

14) Memory cell and natural killer(3)

Ans: memory cells When naïve lymphocytes are stimulated by their specific antigen, they proliferate and differentiate. Most become effector cells which function & then die, while others become long-lived memory cells..

NK cells Natural killer cells (also known as NK cells, K cells, and killer cells) are a type of lymphocyte (a white blood cell) and a component of innate immune system. NK cells play a major role in the host-rejection of both tumours and virally infected cells.

15)Function of proto oncogene ?

Ans. A proto-oncogene is a normal gene that can become an oncogene, either after mutation or increased expression. Proto-oncogenes code for proteins that help to regulate cell growth and differentiation. Proto-oncogenes are often involved in signal transduction and execution of mitogenic signals, usually through their protein products. Upon activation, a proto-oncogene (or its product) becomes a tumor inducing agent, an oncogene. Some oncogenes, usually

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involved in early stages of cancer development, increase the chance that a normal cell develops into a tumor cell, possibly resulting in cancer .

16)Proto Oncogene (2)

Ans: A proto-oncogene is a normal gene that can become an oncogene, either after mutation or increased expression. Proto-oncogenes code for proteins that help to regulate cell growth and differentiation .

17)What are interferons?

Ans: Interferon – chemical that interferes with the ability to viruses to attack other body cells .

Dendritic Cells (DC) (IFN α), fibroblasts (IFN β)

18)What are effector helper T cells are those cells which ?

Ans. stimulate the responses of other cells phagocytic macrophages, B cells, and cytotoxic T cells are cells.

19)Write names and functions of effector helper T of mhc proteins (3)

Ans: 2 main structurally & functionally distinct classes of MHC proteins: class I MHC proteins, present foreign peptides to cytotoxic T cells, & class II present foreign peptides to helper T cells. MHC groove can accommodate an extended peptide about 10 amino acids long. In extended conformation terminal amino group binds to an invariant pocket at one end of the groove and its terminal carboxyl group bound to an invariant pocket at the other end of the groove. Pockets recognize peptide backbone features common to all peptides, each class I MHC protein can bind a peptides of diverse sequence. Class II can accommodate longer peptides, which are usually 13 amino acids. Peptide not bound by ends. It is held in the groove by parts of its peptide backbone that bind to invariant pockets formed by conserved amino acids that line all class MHC peptide-binding groove

20) write functions of spleen ?

Ans: Function • Filters out older RBCs & II.

Responds to Ag in circulatory system •

21) Produces activated B cells How B cells form IgM antibody (5)

Ans: IgM first class of antibody B cell. to appear on the surface of a developing B cell. The major class secreted in the early stages of a primary antibody response. Secreted form, IgM is a pentamer, J chain is required for pentamer formation. The binding of an antigen to a single secreted pentameric IgM molecule can activate the complement system, which can either mark the pathogen for phagocytosis or kill it directly

22)Write the steps when mast cells are activated and leukocytes enter the site of injury (5)

Expansion of capillaries to increase blood flow (seen as blushing or a rash)

2. Increase in the permeability of the microvasculature structure to allow escape of fluid, plasma proteins, and leukocytes from the circulation edema

3. Exit of leukocytes from the capillaries and their accumulation at the site of injury What are antigens? Ans: a toxin or other foreign substance which induces an immune response in the body, especially the production of antibodies.

23)Define humoral and cellular immunity?

Ans: • Humoral (activation of B or T lymphocytes) lymphocytes) • Cellular (by activation

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24) Function of effector B cells?

Ans:

Plasma cells or effector B cells, also called plasma cells, are white blood cells, plasmocytes, plasmacytes, that secrete large volumes of antibodies. They are transported by the blood plasma and the lymphatic system. Activated cells Effector cells are the relatively short-lived that defend the body in an immune response.

25) What are the activation of cytotoxic T cells?

Cytotoxic T cells provide protection against intracellular pathogens such as viruses and some bacteria and parasites that multiply in the host cytoplasm,

26) where they are sheltered from attack by antibodies. cell B cell and t cell structure ?

Ans: T cells develop in the thymus, and B cells, in the bone marrow. Most lymphocytes die in central lymphoid organ. It is composed of four polypeptide mammals, develop in Antibody Structure chains 2 identical heavy chains & 2 identical light chains.

Tail (Fc) & hinge region are formed by the two heavy chains.

identical Binding Sites. Flexible hinge region improves efficiency of antigen binding and cross-linking. T cells and B cells. T cells (thymus cells) and B cells (bone marrow- or bursa-derived cells) are the major cellular components of the adaptive immune response. T cells are involved in cell-mediated immunity, whereas B cells are primarily responsible for humoral immunity (relating to antibodies). An important difference between T-cells and B-cells is that B-cells can connect to antigens right on the surface of the invading virus or bacteria. This is different from T-cells, which can only connect to virus antigens on the outside of infected cells.

27) AIS activation?

Cells of immune system?

Ans: Basophils Release histamine Eosinophils Kill atiod-oated parasites Neutrophils Phagotose atiod-oated pathoge Mast cells Release histamine he daaged Mootes Deelop ito arophages Marophages Egulf ad digest iroorgaiss Dedriti cells Preset atiges to T cells B cells Differentiate for atiod-produig cells ad eor cells Plasa cells Serete atiodies T cells Kill irus-ifeted cells; regulate atitiies of other hite lood cells Natural killer lse irus-ifeted/aerous cells

28) What is the function of Fc antibody in IgM 2 ?

Ans: IgG only Ab that can pass from mother to fetus.

placenta cells that are in contact with mothers blood have Fc receptors that are use to grab IgG and pass it to the fetus.

29) Functions of Thymus ?

Ans: Function • Takes in immature T cells and puts out mature (immunocompetent) T cells • Increased diversity of T cells selection

30) Write about IgM Immunoglobulin 5 ?

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Ans: • T cell IgM first class of antibody to appear on the surface of a developing B cell. The major class secreted in the early stages of a primary antibody response. Secreted form, IgM is a pentamer, J chain is req formation. uired for pentamer The binding of an antigen to a single secreted pentameric IgM molecule can activate the complement system, wich can either mark the pathogen for phagocytosis or kill it directly.

31) Write the name of chamicels that produce toattract the phygocytes(2 marks)

Ans: serine protease and perforin molecules

33) Cells involve in immune system?

Ans: Cells Involved in Immunity • Macrophages • B cells • T cells

34) Mast cells?

And: They are one kind of cells that involve in immune system their role is to release histamine.

