

**ANSWER the following concerning the condition shown (1-5)
(Biopsy on the left is normal; Biopsy on right is from patient)**

1. The condition is best described as a
 - a. Bacterial infection
 - b. Viral infection
 - c. Autoimmune reaction
 - d. Toxigenic reaction
 - e. Rejection phenomenon

2. The disease is primarily a
 - a. CD4 Th1 cell response
 - b. CD4 Th2 cell response

3. The condition usually leads to
 - a. Hypothyroidism
 - b. Hyperthyroidism

4. The principle cells seen on biopsy are
 - a. Plasma cells
 - b. Macrophages
 - c. B cells
 - d. Lymphocytes
 - e. Giant cells

5. The primary treatment is:
 - a. Removal of the thyroid by surgery or radioisotope
 - b. Replacement therapy with synthetic thyroid hormone

6. Depending upon the technique and substances used in the test, which cells could be identified?
 - a. T cells
 - b. B cells
 - c. Macrophages
 - d. a, b, c

7. The predominant cells seen in this biopsy of a palpable purpuric lesion are
- Polymorphonuclear leukocytes
 - B cells
 - T cells
 - Crophages
8. The test shown is used to detect which of the following?
(control is on the left)
- Numbers of macrophages
 - Functional activity of macrophages
 - Numbers of T cells
 - Functional activity of T cells
 - Numbers and function of B cells
9. Indicate the correct statement based upon the lower intestinal biopsy shown
(Upper biopsy is normal)
- The patient was an adult
 - The patient would have an elevated IgE level
 - Skin test to foods would be positive
 - Serum antibodies would be elevated
 - Few if any cells would be seen on higher magnification

10. Indicate when the aeroallergen shown would produce most symptoms in the NY area
- March to early June
 - May to the middle of July
 - May to mid September
 - August to the first frost
 - Throughout the year

Answer the following based upon the condition shown below (11-15)

11. The reaction is a typical Gell and Coombs
- Type 1 (anaphylactic)
 - Type 2 (cytotoxic)
 - Type 3 (immune complex)
 - Type 4 (cell mediated)
12. The condition would be seen how long after exposure?
- 1 hour after exposure
 - 6 hours after exposure
 - 24 to 48 hours after exposure
 - 3 days after exposure
13. A biopsy would reveal
- Dermal edema with few eosinophils
 - Neutrophil infiltration with occluded arterioles
 - Dermal mononuclear infiltration and perivascular cuffing
 - Lymphocytes including giant cells and epithelioid cells
14. To avoid future more severe episodes it would be wise to skin test as one would do for an aeroallergen allergy
- True
 - False
15. Treatment usually consists of topical soothing compresses and topical steroids with occasional use of antihistamines and at times oral or injectable steroids
- True
 - False

16. Which of the following is an organ specific autoimmune disease?
- Pernicious anemia
 - Dermatomyositis
 - Systemic lupus erythematosus
 - Progressive systemic sclerosis
 - Rheumatoid arthritis
17. Indicate in which of the following ways is autoimmunity least likely to be induced
- Antigenic cross-reactivity
 - Virus specific cytotoxicity
 - Exposure to sequestered antigens
 - Induction of class II MHC by viral infection
 - Tolerant antigens
18. In Infectious mononucleosis and Cold agglutinin disease the antibody is
- IgG
 - IgM
 - IgA
 - IgE
 - IgD
19. The most common cause of cold hemolysin disease is due to:
- IgG
 - IgM
 - IgA
 - IgE

MATCH the self-antigen with the disease given (20-24). Each choice may be used once, more than once or not at all.

- Acetylcholine receptor
- Gastric parietal cell antigen
- Streptococcal cell wall antigens
- Myelin basic protein
- Nuclear debris

20. Acute rheumatic fever **C**
21. Pernicious anemia **B**
22. Myasthenia gravis **A**
23. Multiple sclerosis **D**
24. Systemic lupus erythematosus **E**

MATCH the statement with the immunological test you would order (25-29). Each choice may be used once, more than once or not at all.

- a. Radioimmunoassay
- b. Nitrobluetetrazolium test (NBT)
- c. Direct immunofluorescence
- d. Ochterlony double diffusion in gel
- e. "One-way" mixed lymphocyte culture

- 25. Determine if renal pathology is Goodpasture's syndrome or post-streptococcal **C**
- 26. Determine IgE level as indicator of atopy from cord of a newborn **A**
- 27. Planned transplant of kidney from father to son **E**
- 28. Recurrent infections due to *Staphylococcus. Aureus* **B**
- 29. Determine if two samples of immunoglobulin are the same **D**

MATCH the test of immunologic function with the statement given (30-34). Each choice may be used once, more than once or not at all.

- a. Test of inflammatory response
- b. Test of humoral function
- c. Test of cytotoxic injury
- d. Test of antigen-antibody complex injury
- e. Test of IgE (Reagin) hypersensitivity

- 30. Antinuclear factor **D**
- 31. Antiglobulin test **C**
- 32. Quantitation of immunoglobulins **B**
- 33. Chemotactic assay **A**
- 34. Immediate hypersensitivity skin test **E**

MATCH the type of immunizing agent with the condition given (35-39). Each choice may be used once, more than once or not at all.

- a. Toxoid
- b. Killed bacteria
- c. Attenuated virus
- d. Subunit vaccine (recombinant antigen)
- e. Gamma globulin

- 35. Prophylaxis following a dirty penetrating wound with concern about tetanus **A**
- 36. An Rh negative woman with rising Rh positive titer in 2nd trimester of pregnancy **E**
- 37. Prevention of Pertussis (whooping cough) **B**
- 38. Immunization against measles, mumps, rubella (MMR) **C**
- 39. Immunization against Hepatitis B **D**

40. Which of the following immunizations should not be given before 1 year of age?
- MMR (measles-mumps-rubella)
 - Hepatitis B
 - DTP (diphtheria-tetanus-pertussis)
 - HiB (Haemophilus influenza type B)
 - IPV (enhanced inactivated polio)
41. An intern previously immunized against Hepatitis B is stuck with a needle while assisting in surgery on a patient with active hepatitis B. Your advice should be:
- Obtain blood samples over the next several months and reassure the intern
 - Administer Hepatitis B gamma globulin
 - Administer Hepatitis B active immunization
 - Administer Hepatitis B gamma globulin and give a "booster" for active immunization against Hepatitis B
 - Cleanse and then cauterize the site of the needle stick

MATCH the following (42-44). Each choice may be used once, more than once or not at all.

- Passive immunization
 - Active immunization
 - Both passive and active immunization
42. Immunity develops in 5 to 14 days **B**
43. Possibility of adverse reaction following administration **C**
44. Duration of immunity days to weeks **A**
45. Indicate the **correct** statement concerning adverse reactions to foods
- Most adverse reactions to foods are due to immunological hypersensitivity
 - IgG, IgM, IgA, or IgE can be involved in a hypersensitivity food reaction
 - Most adverse hypersensitivity food reactions are seen during the teen age
 - Most common cause of food hypersensitivity reactions in infancy is shell fish
 - Concentration of food bears little relationship to development of reactions
46. Indicate which of the following adverse food reactions is IgE mediated
- Celiac disease
 - Serum Sickness
 - Migraine headache
 - Urticaria due to milk
 - Contact skin reaction due to application of patch test of berries
47. The most effective **practical** therapy for food hypersensitivity is
- Antihistamines prior to the ingestion of the suspected food
 - Cromolyn sodium prior to the ingestion of the suspected food
 - Careful immunotherapy (desensitization) to food positive skin tests
 - Food elimination diet
 - Corticosteroids prior to and following the ingestion of the involved food
48. Skin testing for food allergies is of little practical value, especially in children
- True
 - False

49. A 40 year old male develops a localized rash at exactly the same place on his penis each time he takes Ex-Lax (containing phenolphthalein). This is probably a:
- Drug fever
 - Venereal lesion
 - Contact dermatitis
 - Fixed drug reaction
 - Munchausen syndrome
50. The most effective management of drug reactions is
- Taking a detailed drug history
 - Use of epinephrine 1:1000
 - Corticosteroids
 - Antihistamines
 - Use of drugs that are of a similar type but give a history of less adverse reactions
51. A 25 year old male has a proven case of gonorrhea, but gives a history of an acute anaphylactic reaction following prior administration of penicillin. Your action is:
- Test him with the major penicillin haptenic group and if negative administer penicillin
 - Test him with the minor penicillin haptenic group and if negative administer penicillin
 - Test him with the major and minor haptenic group and if negative administer penicillin
 - Test him with both groups and if positive admit to the hospital and give a “rush” administration of penicillin under careful supervision
 - Treat with another antibiotic to which gonococci are sensitive and to which the patient has no history of an adverse reaction
52. The test that is **least** productive in diagnosing an allergic reaction is
- History and physical examination
 - Skin testing
 - Radioallergosorbent test
 - Basophil degranulation test
 - Examination of nasal and chest secretions
53. The difference between the “late allergic response” and true delayed type of hypersensitivity is that in the late allergic response alone there is
- Primarily a lymphocytic response
 - Fixation of complement
 - A 24 to 48 hour time lapse between exposure and effect
 - Involvement of antibody
 - Transfer of memory by cellular factors
54. Your patient has severe tree allergic rhinitis and wants to know when he should exercise by jogging. You should advise him that the worse time would be on a
- Clear bright sunny day at 7 AM
 - Clear bright sunny day at 12 noon
 - Misty or fine rain day at 7 AM
 - Misty or fine rain day at 12 noon
55. In the New York area the most important aeroallergen is
- Alternaria
 - Oak tree pollen
 - June grass pollen
 - Ragweed pollen
 - Goldenrod

56. A forty-year old male has typical nasal and eye allergic symptoms only in March and late September. He probably is allergic to
- Trees and grasses
 - Trees and ragweed
 - Trees and molds
 - Grasses and ragweed
 - Grasses and English plantain
57. A highly emotional 40 year old woman has moderate nasal congestion, sneezes infrequently, has profuse rhinorrhea with marked post nasal drip, skin tests are negative, and she has a poor response to antihistamines, steroids, and nasal decongestants. Nasal smear shows few eosinophils. The diagnosis is probably
- Seasonal allergic rhinitis
 - Perennial allergic rhinitis
 - Vasomotor rhinitis
 - Perennial non-allergic rhinitis
58. An immunologically mediated cause of drug-induced urticaria is
- Aspirin
 - Radiocontrast material
 - Penicillin
 - NSAIDs
 - Opiates
59. The most practical screening test for hereditary angioedema is
- C 1
 - C 1 esterase inhibitor
 - C 2
 - C 3
 - C 4
60. An infrequent cardiovascular finding in an anaphylactic reaction is
- Hypotension
 - Bradycardia
 - Capillary leakage
 - Decreased cardiac motility
61. Indicate the correct statement concerning an anaphylactic reaction
- Usually occurs 1 to 2 hours after exposure
 - There is a slow progression of symptoms
 - Cutaneous and respiratory symptoms are the most common
 - The later the symptoms appear the greater the danger to life
 - Premedication can prevent virtually all anaphylactic reactions
62. Indicate which drug should not be used where there is danger of an anaphylactic reaction
- Propranolol (beta blocker)
 - Aspirin (analgesic/antiinflammatory)
 - Hydrochlorothiazide (diuretic)
 - Glucagon (anti hypoglycemic)
 - Digoxin (cardiac glycoside)

63. Indicate which is not an effect of immunotherapy for allergic diseases
- An initial fall in patient's serum IgE level at start of therapy
 - Increased IgG production
 - Production of antigen-specific suppressor T lymphocytes
 - Decreased production of IL-4 cells
 - Decreased release of histamine from basophils
64. Generally the best one to diagnose and treat most allergic conditions is
- An Osteopathic physician engaged in primary care
 - Clinical immunologist
 - Certified allergist/immunologist
 - Registered nurse with extensive experience in an allergy office
 - Physician who has suffered from allergic disease for many years

ANSWER THE FOLLOWING PATIENT ORIENTED PROBLEM SOLVING CASE # 1 (65-71)

CASE # 1: You are called to the nursery to see a newborn male with a history of convulsions. You note facial abnormalities, and on auscultation find cardiac abnormalities. The most significant finding is a hypocalcemia and an absence of the thymic shadow on x-ray.

65. Which immunodeficiency should you suspect?
- Agammaglobulinemia
 - Wiskott-Aldrich syndrome
 - Severe combined immunodeficiency (SCID)
 - DiGeorge syndrome
 - Chronic granulomatous disease
66. A laboratory finding most likely present would be
- An increased number of T cells with decreased function
 - Decreased numbers of T cells with decreased function
 - Normal numbers of T cells with normal function
 - Increased numbers of B cells with increased function
 - An increase in numbers of all cells of the hematopenic system

ANSWER the following questions True or False for CASE # 1 above (67-70)

67. The condition is associated with an embryonic abnormality of the thyroid
- True
 - False
68. Most cases are detected at birth (prior to 6 months of life)
- True
 - False
69. Treatment involves gamma globulin every 30 days
- True
 - False
70. Serum concentrations of immunoglobulins are frequently normal with antibody responses generally impaired
- True
 - False

71. A patient is known to have a deficiency in the lymphoid stem cells. This deficiency generally results in:

- Deficiencies in both T and B cell function
- Diminished B cell function but normal T cell functions
- Diminished T cell function but normal B cell functions
- Selective absence of immunoglobulin isotypes (e.g., IgA)
- Elevated IgM, and decreased IgA, IgG and IgE levels

MATCH the following patient oriented problem solving cases (POPS) (72-76). Each choice may be used once, more than once or not at all.

- Chronic granulomatous Disease (CGD)
- Chronic Mucocutaneous Candidiasis
- Goodpasture's syndrome
- Multiple myeloma
- Agammaglobulinemia

- | | |
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| 72. Autoimmune reaction against lung and renal basement membrane | C |
| 73. Infection by catalase positive bacteria | A |
| 74. Fungal infection with normal T cell and B cell count | B |
| 75. Malignancy of immune lymphoid cells | D |
| 76. Onset of infections and symptoms after 3 months of age | E |

MATCH the patient oriented problem solving cases (POPS) (77-81). Each choice may be used once, more than once or not at all.

- Hodgkin's disease
- Agammaglobulinemia
- DiGeorge syndrome
- Multiple myeloma
- Infectious mononucleosis

- | | |
|---|----------|
| 77. Viral invasion of B cells with strong subsequent T cell response | E |
| 78. "Monoclonal spike" on protein electrophoresis | D |
| 79. Defect in embryologic development of the 3rd and 4 th pharyngeal pouches | C |
| 80. In early life very susceptible to infections by encapsulated bacteria (e.g. pneumococcus) | B |
| 81. Reed Sternberg cells found in tissue | A |
82. Following dental surgery a 35-year-old female developed severe angioedema. She was told she had the inherited form of angioedema, but a screening for C4 complement level was reported as normal. You are called upon to confirm or refute the diagnosis. The test most diagnostic would be
- Total hemolytic complement
 - Skin test of the local anesthetic used
 - C1 determination
 - Functional assay of C1 esterase inhibitor
 - Total level of C3

MATCH the following practical tests of immunologic function with the statement given (83-87). Each choice may be used once, more than once or not at all.

- a. Test of inflammatory response
- b. Test of humoral function
- c. Test of cytotoxic injury
- d. Test of antigen-antibody complex injury
- e. Test of IgE (Reagin) hypersensitivity

- 83. Suspected case of Waldenström's macroglobulinemia **B**
- 84. Suspected case of vasculitis **D**
- 85. Suspected case of Hemolytic disease of the newborn **C**
- 86. Suspected case of latex induced anaphylaxis **E**
- 87. Suspected immunodeficiency in a one-week-old male infant **B**

MATCH the following in the clinical differential diagnosis of rhinitis (88-91). Each choice may be used once, more than once or not at all.

- a. Seasonal allergic rhinitis
- b. Perennial allergic rhinitis
- c. Perennial non-allergic rhinitis
- d. Vasomotor rhinitis
- e. Eosinophilic non-allergic rhinitis

- 88. A 6-year-old girl with frequent sneezing, profuse rhinorrhea, frequent eye symptoms, itching, many eosinophils, skin test positive with an excellent response to immunotherapy. **A**
- 89. 15 year old male with recurrent rhinorrhea, sneezing, nasopharyngeal itch and lacrimation with little nasal congestion, no evidence of sinusitis, but has eosinophilia **E**
- 90. A 45 year old female with moderate nasal congestion, rare sneezing, rare eye symptoms, no anosmia, few eosinophils, skin tests negative; poor response to antihistamines **D**
- 91. A 37 year-old male complaining of marked nasal congestion, frequent anosmia and polyps, rarely any eye symptoms, frequent infections, and a fair response to antihistamines but no response to immunotherapy **C**
- 92. Your patient is scheduled for a radiocontrast procedure. There is a history of an adverse reaction to the dye during a prior examination. Which of the following would be of little or **no** value in your management?
 - a. Use of a low molality contrast media
 - b. Consider a different procedure that might give the same information
 - c. Skin test to determine if the patient is allergic to the contrast material
 - d. Pre-medicate with steroids and antihistamine according to a protocol
 - e. Take a detailed history of the prior reaction and response to therapy

93. A 32 year old male develops severe chest pain 2 weeks post myocardial infarction. EKG shows a pericarditis but cardiac enzymes are unchanged; a pleural and pericardial effusion is noted on chest x-ray. Indicate the correct statement
- Condition is a most often an immune reaction to a streptococcus infection
 - Rising antibody titre against cardiac tissue can be found
 - The condition requires intensive antibiotic therapy
 - Immediate therapy with anticoagulants is indicated
 - The condition is usually fatal
94. You gave a 19 year old female an injection of penicillin since there was no prior history of penicillin allergy. Moments after receiving the injections she reports she is very nervous. She reports she is nauseous, becomes pale and diaphoretic, and slides to the floor. Your examination reveals a blood pressure of 114/70, her skin is moist, and her pulse is a regular sinus rhythm at 58/min. She is responsive after one minute and she reports she feels better. All signs have returned to normal. Based upon the above a correct statement is:
- The episode was an acute anaphylactic reaction to penicillin
 - Epinephrine 1:1000 in dose of 1 ml IV should have been given
 - The episode was probably a vaso-vagal reaction
 - Skin test her at this time to determine future plans for penicillin therapy
 - Send her home with instruction to take Benadryl, corticosteroids, and admonish her to never receive penicillin again regardless of need
95. An 18 year-old female presents to your office complaining of "hives" after eating strawberries. The medical terminology for this allergic reaction is called:
- Contact Dermatitis
 - Urticaria
 - Allergic Rhinitis
 - Tinea Corporis
 - Eczema
96. The treatment for the above disorder would be a combination of avoidance of the offending allergen and:
- A topical corticosteroid
 - An oral anti-histamine
 - An antibiotic ointment
 - An oral antibiotic
 - An oral leukotriene modifier
97. A patient with Multiple Myeloma would be most likely to have a combination of the following elements on history and laboratory testing?
- Fatigue, Constipation, and Hypochromic Microcytic Anemia
 - Fatigue, Rectal Bleeding, and Hypochromic Microcytic Anemia
 - Fatigue, Memory Loss, and Hypochromic Macrocytic Anemia
 - Fatigue, Cough, and Normochromic Normocytic Anemia
 - Fatigue, Back Pain, and Normochromic Normocytic Anemia
98. In Multiple Myeloma the peripheral smear would show:
- Basophilic Stippling
 - Rouleux Formation
 - Anisocytosis
 - Increased Platelet Size
 - Bence Jones Proteins

99. An afebrile patient with a history of seasonal nasal congestion, clear rhinorrhea and blue-colored nasal turbinates on physical exam most likely has:
- a. Allergic Rhinitis
 - b. Perennial Rhinitis
 - c. Vasomotor Rhinitis
 - d. Upper Respiratory Infection
 - e. Acute Sinusitis
100. On musculoskeletal exam, in a patient with an acute flair-up of there allergic rhinitis, you would expect to find a somatic dysfunction at:
- a. T1-T5
 - b. T5-T9
 - c. T10-T12
 - d. L1-L2
 - e. L2-L5