# Systemic Pathology Objectives

**2004-2005***

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*Under review as part of a project to develop a comprehensive set of national guidelines for second year pathology students.

**Topic number refers to MCA topic designation in the GRIPE question banks.
The student will be able to:

1. Define and use in proper context:
   - anastomosis
   - aneurysm
   - angina pectoris
   - arrhythmia
   - Aschoff body
   - beriberi heart disease
   - carcinoid heart disease
   - cardiac tamponade
   - cardiogenic shock
   - cardiomyopathy
   - chronic ischemic heart disease
   - coarctation of the aorta
   - conduction system of the heart
   - congenital heart disease
   - congestive heart failure
   - contraction band necrosis
   - cor bovinum

   cor pulmonale
   coronary artery disease
   diastole
   Dressler syndrome
   ductus arteriosus
   Ebstein anomaly/malformation
   endocardial
   endocarditis
   foramen ovale
   heart failure
   hemopericardium
   hypertensive heart disease
   hypertension
   hypertrophy of the myocardium
   ischemic heart disease
   Libman-Sacks
   endocarditis
   marantic endocarditis
   mitral valve prolapse

   myocardial infarct
   myocarditis
   dextrocardia
   pancreatitis
   pericarditis
   Prinzmetal angina
   reperfusion injury
   rheumatic fever
   rheumatic heart disease
   ring abscess
   stenosis
   sudden cardiac death
   systole
   tetralogy of Fallot
   transposition of great vessels
   truncus arteriosus
   unstable angina
   valvular insufficiency
   valvular regurgitation
   valvular stenosis
   vegetation
   verruca

2. List the most common forms of heart disease in the United States

3. Compare and contrast the following:
   - congestive heart failure
   - high-output heart failure
   - forward heart failure
   - backward heart failure
   - left-sided heart failure
   - right-sided heart failure
   - cor pulmonale

   in terms of:
   - etiology
   - pathogenesis
   - compensatory mechanisms
   - morphology
   - clinical features

4. Discuss cardiogenic shock in terms of:
   - etiologic factors
   - pathogenesis
   - morphology
   - stages
5. Discuss congenital heart disease in terms of:
   o genetic and environmental factors
   o types which result in:
     - left-to-right vs. right-to-left shunt
     - cyanotic vs. acyanotic disease
   o types which present in:
     - infancy
     - childhood
     - adulthood

6. Compare and contrast the following forms of congenital heart disease:
   atrial septal defect (ASD)  patent ductus arteriosus (PDA)
   ostium primum  transposition of the great vessels
   ostium secundum  coarctation of the aorta
   ventricular septal defect (VSD)  preductal
tetralogy of Fallot  postductal
endoocardial cushion defects  anomalous pulmonary venous return
hypoplastic left heart syndrome

   in terms of:
   o incidence
   o embryologic abnormality
   o pathogenesis
   o gross morphology
   o hemodynamic abnormalities
   o associated defects
   o clinical features
   o complications
   o treatment
   o prognosis

7. Discuss:
   • endocarditis
   • myocarditis
   • pericarditis
   • pericardial effusion
   • cardiac tamponade
   • pancarditis

   in terms of:
   o classification/types
   o epidemiology
   o etiology/pathogenesis
   o morphology
   o clinical features
   o prognosis

8. Compare and contrast:
   • acute rheumatic fever.
   • chronic rheumatic heart disease

   in terms of:
   o pathogenesis
   o diagnostic criteria
   o morphology (cardiac and extracardiac)
   o complications
   o laboratory findings
9. Compare and contrast the following forms of valvular heart disease:

- calcific aortic stenosis
- aortic insufficiency
- mitral stenosis/insufficiency
- mitral valve prolapse
- mitral annular calcification
- tricuspid insufficiency
- pulmonic insufficiency
- endocarditis
- infective endocarditis
- noninfective endocarditis
- carcinoid heart disease

in terms of:

- epidemiology
- etiology
- pathogenesis
- morphology (cardiac and extracardiac)
- clinical features
- complications
- prognosis

10. List long term complications associated with prosthetic heart valves

11. Compare and contrast:
- dilated (congestive) cardiomyopathy
- hypertrophic cardiomyopathy (idiopathic hypertrophic subaortic stenosis (IHSS)
- restrictive cardiomyopathy
- endomyocardial fibrosis
- eosinophilic (Loeffler) endomyocarditis
- endocardial fibroelastosis

in terms of:

- etiology
- pathogenesis
- morphology
- clinical course

12. Discuss coronary artery disease, in terms of:

- epidemiology
- risk factors
- etiologic factors
- pathogenesis
- complications

13. Discuss myocardial infarct, in terms of:

- etiologic factors
- risk factors
- pathogenesis
- morphology
  - evolution of morphologic changes with time
  - correlation of morphologic distribution of infarct with site of coronary artery disease
- clinical, laboratory, and electrocardiographic findings with increasing time after event
- complications, including timing thereof after event
- prognosis, including most common causes of death with increasing time after event
14. Discuss sudden cardiac death, in terms of:
   o causes
   o relationship to arrythmias
   o cardiac morphology

15. Discuss the following cardiac tumors
    • myxoma
    • rhabdomyoma
    • lipoma
    • metastatic
    cardiac effects of noncardiac neoplasms
62 - VESSELS

The student will be able to:

1. Define and use in proper context:
   - aneurysm
dysplasia
   - angiitis
fibrous cap
   - arteriolosclerosis
fibrous plaque
   - arteriosclerosis
fusiform aneurysm
   - arteriovenous fistula
gangrene
   - arteriovenous hematoma
   - malformation
hypertension
   - arteritis
leukocytoclastic
   - atheroma
vasculitis
   - atherosclerosis
lymphedema
   - deep vein thrombosis
marfan syndrome (DVT)
   - false aneurysm
mycotic aneurysm
   - fatty streak
obliterative
   - fibromuscular
endarteritis

2. Discuss mechanisms of blood pressure regulation, including:
   - cardiac influences
   - neural factors
   - hormonal factors
   - vasoactive agents
   - renin-angiotensin system

3. Compare and contrast the following types of hypertension:
   - essential
   - malignant
   - renovascular
   - secondary
   in terms of:
   - etiology
   - pathogenesis
   - level of blood pressure elevation
   - vascular morphologic findings
   - clinical features
   - prognosis

4. Discuss the morphologic effects of hypertension on:
   - heart
   - brain
   - kidneys
   - placenta
   and enumerate the clinical consequences thereof

5. Describe the development, anatomy, and clinical consequences of the major congenital malformations of arteries.
6. Discuss the following vascular diseases:
   - arteriosclerosis
   - atherosclerosis
   - arteriolosclerosis
   - Mönckeberg medical calcific sclerosis
   - vasculitis
   - lymphangiitis
   - lymphedema
   - phlebothrombosis
   - thrombophlebitis
   - varicose veins

   in terms of:
   - etiologic/predisposing factors
   - morphologic features
   - type and size of vessels involved
   - organs involved
   - complications of lesions
   - fate of lesions
   - clinical features and prognosis

7. Discuss the following forms of vasculitis:
   - infectious vasculitis
   - giant cell (temporal) arteritis
   - Takayasu arteritis
   - polyarteritis nodosa
   - Kawasaki (muco-cutaneous lymph node) syndrome
   - microscopic (hypersensitivity) polyangiitis
   - Wegener granulomatosis
   - thromboangiitis obliterans (Buerger disease)

   in terms of:
   - incidence
   - age distribution
   - etiology
   - pathogenesis
   - size, type, and distribution of vessels involved
   - morphology of lesions
   - laboratory findings
   - clinical features, complications, and prognosis

8. Compare and contrast the following disorders:
   - atherosclerotic aneurysm
   - syphilitic aneurysm
   - aortic dissection (dissecting hematoma)
   - berry aneurysm
   - Charcot-Bouchard microaneurysm

   in terms of:
   - incidence
   - etiology
   - pathogenesis
   - type and distribution of vessels involved
   - morphology
   - clinical features
   - complications and prognosis

9. Compare and contrast thoracic and abdominal aortic aneurysms on the basis of:
   - etiologic factors
   - incidence
• complications

10. Discuss the effects of the following on the pathogenesis and prevalence of atherosclerosis:
   • age
   • sex
   • geographic location
   • risk factors

11. Outline the development of the atherosclerotic lesion with respect to:
   • pathogenic mechanisms
   • morphology
   • clinical manifestations
   • complications

12. Compare and contrast:
   • hyaline arteriolosclerosis
   • hyperplastic arteriolosclerosis
   in terms of:
     o pathogenesis
     o morphology
     o clinical significance

13. Compare and contrast the following vascular tumors:
   - vascular ectasias
   - hemangioma
   - hemangioendothelioma
   - hemangiopericytoma
   - lymphangioma
   - glomus tumor (glomangiomia)
   - angiosarcoma
   - bacillary angiomatosis
   - Kaposi sarcoma
   in terms of:
     o age distribution
     o etiology
     o pathogenesis
     o morphology
     o clinical features
     o prognosis
The student will be able to:

1. Define and use in proper context:
   - achlorhydria
   - acute leukemia
   - agnogenic myeloid metaplasia
   - aleukemic leukemia
   - amyloidosis
   - anemia
   - autosplenectomy
   - basophilic stippling
   - Bence Jones protein
   - Birbeck granule (HX body)
   - bronchus-associated lymphoid tissue (BALT)
   - chronic leukemia
   - circulating pool
   - coagulation
   - complete blood count (CBC)
   - cryoglobulinemia
   - direct antiglobulin (Coombs) test
   - dyserythropoiesis
   - dysmegakaryocytepoiesis
   - ecchymoses
   - erythropoiesis
   - erythropoietin
   - extramedullary hematopoiesis
   - extravascular hemolysis
   - ferritin
   - G6PD screen
   - granulocytopenia
   - granulopoiesis
   - Ham test
   - haptoglobin
   - hematocrit
   - hematoma
   - hemoglobin electrophoresis
   - hemostasis
   - hyperviscosity syndrome
   - hypochromia
   - idiopathic thrombocytopenic purpura (ITP)
   - indirect antiglobulin (Coombs) test
   - ineffective hematopoiesis
   - intravascular hemolysis
   - intrinsic factor
   - left shift
   - leukemia
   - leukemoid reaction
   - leukocytosis
   - leukoerythroblastosis
   - leukopenia
   - lymphoma
   - macrocytosis
   - marginalizing pool
   - maturation/storage pool
   - mean cell hemoglobin (MCH)
   - mean cell hemoglobin concentration (MCHC)
   - mean cell volume (MCV)
   - microcytosis
   - mucosa-associated lymphoid tissue (MALT)
   - myelodysplastic syndrome
   - myelophthisis
   - myeloproliferative disorder
   - nuclear-cytoplasmic asynchrony
   - pancytopenia
   - petechiae
   - Philadelphia chromosome
   - Plummer-Vinson syndrome
   - poikilocytosis
   - polychromasia
   - proliferating pool
   - purpura
   - red cell distribution width (RDW)
   - reticulocyte count
   - Schilling test
   - sickle cell disease
   - sickle cell prep
   - sickle cell trait
   - stem cell
   - sugar water test
   - thalassemia
   - thrombocytopathy
   - thrombocytopenia
   - thrombocytosis
   - thrombopoiesis
   - thrombopoietin
   - thrombotic thrombocytopenic purpura (TTP)
   - total iron binding capacity (TIBC)
   - transferrin
   - von Willebrand factor
2. Define, state the significance of, and identify on a peripheral blood smear each of the following:
   - erythrocyte (discocyte)
   - reticulocyte
   - acanthocyte (spur cell)
   - echinocyte (burr cell)
   - codocyte (leptocyte, target cell)
   - stomatocyte
   - schistocyte
   - rouleaux
   - ringed sideroblast
   - Cabot ring
   - Howell-Jolly body
   - Pappenheimer body
   - Heinz body
   - polymorphonuclear leukocyte (PMN)
   - neutrophil
   - band (stab) form
   - basophil
   - eosinophil
   - monocyte
   - plasma cell
   - plasmacytoid lymphocyte
   - atypical lymphocyte
   - lymphocyte
   - lymphoblast
   - myeloblast
   - Pelger-Huët cell
   - pseudo-Pelger-Huët cell
   - Döhle body
   - basket (smudge) cell
   - flame cell
   - grape cell (Mott cell, thesaurocyte)
   - Russell body
   - hairy cell
   - Sezary cell
   - platelet
   - giant platelet

3. Define, state the significance of, and identify on a bone marrow smear each of the following:
   - pronormoblast
   - normoblast
   - megaloblast
   - myeloblast
   - promyelocyte
   - myelocyte
   - metamyelocyte
   - band (stab) form
   - neutrophil
   - lymphocyte
   - megakaryocyte
   - plasma cell
   - eosinophil
   - lymphocytes
   - plasma cells

4. Explain:
   - the concept of reference (normal) range
   - the theory of the automated cell counter
   - the components of the complete blood count (CBC) and its application in patient evaluation

5. Compare and contrast the reporting of leukocyte differential counts as relative percentages vs. absolute numbers, in terms of the advantages and disadvantages of each system.

6. Discuss the stages of erythropoiesis in terms of:
   - morphology of each stage
   - stages in which hemoglobin is produced
   - lifespan of reticulocytes and mature red blood cells
   - mechanisms of degradation of senescent erythrocytes
   - factors (vitamin, minerals and hormones) which influence erythropoiesis

7. Discuss the stages of granulopoiesis in terms of:
   - morphology of each stage
   - time to form and life span of mature granulocytes
   - basic functions of the different types of maturing granulocytes
   - factors which influence granulopoiesis.

8. Discuss the stages of development of lymphocytes, plasma cells, and monocytes, in terms of:
   - morphology
   - life span of mature forms
   - functions of mature forms
   - factors which influence production.

9. Discuss thrombopoiesis in terms of:
   - morphology of megakaryocytes
• fate of megakaryocytes
• life span of platelets
• factors which influence thrombocytopoiesis
• abnormal morphologic forms of platelets and megakaryocytes

10. Discuss the following classification of anemia in terms of rationale for its use, and specific examples in each category:
   • hypochromic-microcytic
   • normochromic-normocytic
   • macrocytic

11. Categorize and discuss laboratory test procedures used in the diagnosis of anemia, outlining the basic workup of a patient who presents with anemia.

12. Assess bone marrow function in the diagnosis of the anemic patient, on the basis of:
   • reticulocyte count (relative, absolute, and corrected)
   • serum bilirubin
   • urobinogen concentration

13. Discuss the following types of anemia:
   iron deficiency anemia
   megaloblastic anemias
   folate deficiency anemia
   pernicious anemia
   anemia of chronic disease
   aplastic anemia

   in terms of:
   incidence
   associated risks
   laboratory diagnostic criteria
   etiology and pathogenesis
   clinical features and course

14. Utilize peripheral blood and bone marrow smears to assess the deviations from normal marrow response which occur in:
   • hemolytic anemias
   • nuclear maturation defects
   • cytoplasmic maturation defects
   • hypoproliferative anemias

15. Compare and contrast anemia secondary to acute vs. chronic blood loss in terms of:
   • etiology
   • pathophysiologic changes
   • clinicopathologic diagnosis

16. Discuss the following types of anemia:
   • sickle cell anemia
   • the thalassemia disorders
   • hereditary spherocytosis
   • glucose-6-phosphate dehydrogenase (G6PD) deficiency
   • pyruvate kinase deficiency
   • paroxysmal nocturnal hemoglobinuria
   • mechanical hemolytic anemia
   • malaria

   in terms of:
   o genetics - molecular changes
   o incidence
   o etiology
   o pathogenesis
   o morphology

   peripheral blood
   bone marrow
17. Compare and contrast warm vs. cold antibody immunohemolytic anemias in terms of:
   • etiology
   • pathogenesis
   • associated risks-diseases
   • laboratory diagnosis
   • clinical features and course

18. Compare and contrast intravascular vs. extravascular hemolysis, in terms of:
   • etiology
   • pathogenesis
   • laboratory diagnosis
   • clinical findings and course

19. Compare and contrast:
   • acute lymphoblastic leukemia (ALL)
   • acute myeloblastic leukemia (AML)
   • chronic lymphocytic leukemia (CLL)
   • chronic myeloid leukemia (CML)
   • hairy cell leukemia (HCL)
   in terms of:
     • incidence and age distribution
     • cytogenetics
     • morphology (bone marrow and peripheral blood)
     • immunophenotyping
     • laboratory diagnosis (including cytochemical stains)
     • clinical features
     • prognosis

20. Describe the FAB (French-American-British) classification of acute myeloblastic leukemias in terms of:
   • nomenclature
   • incidence of each type
   • general features of each type

21. List the major etiology and pathogenesis of the following:
   leukopenia atypical lymphocytes
   leukemoid reaction eosinophilia
   neutropenia (relative and absolute) monocytosis
   lymphocytosis (relative and absolute) basophilia
   left shift leukoerythroblastic reaction

22. Distinguish between leukemia and leukemoid reaction on the basis of:
   • etiology
   • pathogenesis
   • laboratory data

23. Morphologically differentiate a blast form from a monocyte and lymphocyte.

24. Discuss the following myelodysplastic syndromes:
   • refractory anemia
   • refractory anemia with ringed sideroblasts
   • refractory anemia with excess blasts (RAEB)
   • refractory anemia with excess blasts in transformation (RAEB-IT)
25. Define and classify the myeloproliferative disorders.

26. Discuss the following myeloproliferative disorders:
   - chronic myeloid leukemia
   - polycythemia vera
   - myeloid metaplasia with myelofibrosis
   - essential thrombocythemia
   in terms of:
     o incidence
     o clinical presentation
     o genetics
     o pathogenesis
     o morphology-peripheral blood and bone marrow
     o laboratory diagnosis
     o clinical course and complications
     o prognosis

27. Compare and contrast:
   - polycythemia vera
   - relative polycythemia
   - secondary polycythemia
   in terms of:
     o etiology
     o diagnostic criteria
     o clinical course and complications

28. Describe the proper mode of submission of a lymph node biopsy to the surgical pathology laboratory for workup of a suspected lymphoproliferative disorder.

29. Define, state the significance of, and identify in a microscopic section of a lymph node or extranodal site of involvement each of the following:

   lymphocyte (normal)  Hodgkin cell
   small cleaved lymphocyte  Reed-Sternberg cell
   large lymphocyte  "popcorn" cell
   macrophage  lacunar cell

30. Compare and contrast:
   - follicular hyperplasia
   - follicular lymphoma
   on the basis of:
     o histologic criteria
     o clinical significance

31. Discuss general features of non-Hodgkin lymphomas in terms of:
• incidence
• immunophenotyping (T vs B cells)
• morphologic patterns (diffuse vs. follicular)
• principles of:
  o classification
  o grading
  o staging
• laboratory methods of diagnosis
• clinical features
• prognosis
• extralymphatic organs involved
• likelihood of a leukemic phase

32. Compare and contrast:
  • small lymphocytic lymphoma
  • follicular lymphoma
  • diffuse large cell lymphoma

  in terms of:
  1. incidence
  2. associated conditions
  3. age and sex distribution
  4. morphology
  5. immunophenotyping
  6. clinical presentation
  7. laboratory diagnosis
  8. clinical features
  9. prognosis

33. Compare and contrast:
  • lymphoblastic lymphoma
  • small noncleaved cell (Burkitt) lymphoma

  in terms of:
  1. incidence
  2. associated conditions
  3. age and sex distribution
  4. morphology
  5. immunophenotyping
  6. clinical presentation
  7. laboratory diagnosis
  8. clinical features
  9. prognosis

34. Discuss Hodgkin disease in terms of:
  1. classification
  2. incidence of each type
  3. etiology
  4. pathogenesis
  5. morphology of each types
  6. laboratory diagnosis
  7. clinical features
  8. prognosis

35. Compare and contrast:
  • non-Hodgkin lymphomas
  • Hodgkin disease

  in terms of:
  1. clinical features
  2. methods of staging

36. Discuss:
  • mantle cell lymphoma
  • marginal zone lymphoma
  • peripheral T-cell lymphoma
  • adult T-cell lymphoma/leukemia
  • cutaneous T-cell lymphoma

  in terms of:
37. List benign and malignant etiologies of lymphadenopathy and splenomegaly.

38. Categorize and discuss the different types of plasma cell dyscrasias in terms of definitions and clinical presentation.

39. Discuss multiple myeloma in terms of:
   - clinical presentation
   - etiology
   - clinicopathologic diagnosis
   - morphology and sites of lesions
   - clinical course
   - complications
   - prognosis

40. Discuss Waldenström macroglobulinemia in terms of:
   - clinical presentation
   - morphology with immunophenotyping
   - associated conditions
   - clinical course
   - complications
   - prognosis

41. Compare and contrast:
   - plasmacytoma
   - monoclonal gammopathy of uncertain significance (MGUS)
   - heavy chain disease
   in terms of:
     - incidence
     - clinical presentation
     - clinicopathologic diagnosis
     - clinical course
     - differentiation from multiple myeloma

42. Discuss the different laboratory procedures used in the clinicopathologic diagnosis of the different plasma cell dyscrasias.

43. List benign and malignant etiologies of monoclonal gammopathies.

44. Discuss Langerhans cell histiocytosis in terms of:
   - definition
   - classification
   - clinicopathologic diagnosis
   - morphology
   and for each type, discuss:
     - age of onset
     - distribution of lesions
     - clinical course/prognosis

45. Classify major causes of changes in size of spleen, in terms of both increase and decrease.

46. Enumerate the gross and microscopic characteristics of involvement of the spleen by:
   - infarcts
   - sickle cell disease
   - extramedullary hematopoiesis
   - passive congestion
   - amyloid
   - leukemia
   - lymphoma
   - rupture

47. List the major complications of splenomegaly.

48. Briefly describe the morphologic features and clinical findings in:
   - histiocytoses
• Gaucher disease
• Neimann-Pick disease
• Tay-Sachs disease

49. Discuss thrombocytopenia in terms of:
  • differential diagnosis
  • clinical features
  • bone marrow morphology and
  • laboratory features

50. Discuss thrombocytosis in terms of diagnosis and differential diagnosis.

51. Outline the role of platelets in normal hemostasis.

52. Outline the process for stepwise evaluation of a patient with suspected platelet disorder

53. Compare and contrast the following disorders of platelets:
  - Glanzmann thrombasthenia
  - Chediak-Higashi syndrome
  - Bernard-Soulier disease
  - Hermansky-Pudlak syndrome
  - von Willebrand disease
  - HIV-associated thrombocytopenia
  - Gray platelet syndrome
  - Drug-induced thrombocytopenia

  in terms of:
  o definition
  o genetics
  o laboratory features including platelet aggregation patterns
  o clinical features

54. Categorize and discuss acquired disorders of platelet function in terms of etiology and pathogenesis.

55. Compare and contrast:
  • idiopathic thrombocytopenic purpura (ITP)
  • thrombotic thrombocytopenic purpura (TTP)
  • hemolytic-uremic syndrome (HUS)

  in terms of:
  o etiology
  o pathogenesis
  o clinical features
  o morphologic findings
  o clinicopathologic diagnosis

55. List and discuss the laboratory diagnostic procedures used to approach patients with:
  • bleeding disorders
  • thrombotic disorders

56. Discuss disseminated intravascular coagulopathy (DIC) in terms of:
  etiologies clinical presentation and course
  pathogenesis laboratory diagnosis
  morphologic features complications and prognosis
64 – RESPIRATORY SYSTEM

The student will be able to:

1. Define and use in proper context:

   acute interstitial pneumonia (AIP)
   adult respiratory distress syndrome (ARDS)
   allergic bronchopulmonary aspergillosis (ABPA)
   alveolar-capillary membrane
   anthracosis
   asbestos
   asbestosis
   asteroid body
   asthma
   atelectasis
   bagassosis
   barrel chest
   "benign mesothelioma"
   bird-fancier's disease
   bleb
   blue bloater
   branchial cleft cyst
   bronchial cyst
   bronchiectasis
   bronchiolitis obliterans
   bronchogenic carcinoma
   bronchogenic cyst
   bronchopulmonary sequestration
   bulla
   byssinosis
   Caplan syndrome
   Charcot-Leyden crystal
   chronic bronchitis
   chronic obstructive pulmonary disease (COPD)
   chylothorax
   coal macule
   coal nodule
   coin lesio
   consolidation
   cor pulmonale
   cryptogenic fibrosing alveolitis (CFA)
   cryptogenic organizing pneumonia (COP)
   Curschmann spiral
   diffuse alveolar damage (DAD)
   diffuse parenchymal lung disease (DPLD)
   dyspnea
   emphysema
   empyema
   extrinsic allergic alveolitis (EAA)
   farmer's lung
   ferruginous body
   Ghon complex
   Goodpasture syndrome
   Hamman-Rich syndrome
   heart failure cell
   hemoptysis
   hemothorax
   histiocytosis X
   honeycomb lung
   Horner syndrome
   hyaline membrane
   hydrothorax
   hypersensitivity pneumonitis (HP)
   hypertrophic pulmonary osteoarthropathy
   idiopathic interstitial pneumonia (IIP)
   idiopathic pulmonary fibrosis (IPF)
   jagziekte
   juvenile laryngeal papillomatosis
   Loeffler syndrome
   lymphangitic carcinomatosis
   Meigs syndrome
   middle lobe syndrome
   nasopharyngeal carcinoma
   non-small cell lung cancer (NSCLC)
   obstructive lung disease
   organizing pneumonia
   Pancoast tumor
   paraneoplastic syndrome
   pigeon-breeder's lung
   pink puffer
   plexiform lesion
   pneumoconiosis
   pneumothorax
   progressive massive fibrosis (PMF)
   pulmonary edema
   pulmonary embolism
   pulmonary veno-occlusive disease (PVOD)
   rales
   Reid index
   restrictive lung disease
   rhonchi
   saddle embolus
   scar carcinoma
   Schaumann body
   severe acute respiratory syndrome (SARS)
   silicatosis
   silicosis
   silo-filler's disease
   singers’ node
   small airways disease
   status asthmaticus
2. Describe the mechanisms by which the following pulmonary defense mechanisms accomplish their functions:
   • nasal clearance
   • laryngeal (including epiglottic) action
   • tracheobronchial clearance
   • alveolar clearance

3. Explain the pathogenesis of each of the following manifestations of pulmonary disease:
   - pain
   - cough
   - dyspnea
   - sputum production
   - cyanosis
   - clubbing of fingers
   - hypertrophic pulmonary osteoarthropathy
   - secondary polycythemia
   - hemoptysis
   - cor pulmonale

4. Discuss the following pulmonary congenital anomalies, in terms of morphology and clinical consequences:
   • agenesis
   • hypoplasia
   • congenital lobar overinflation ("emphysema")
   • congenital cyst
   • bronchopulmonary sequestration
     - intralobar
     - extralobar

5. Compare and contrast:
   • obstruction (resorption) atelectasis
   • compression atelectasis
   • contraction atelectasis
   • microatelectasis
   • patchy

   in regards to:
   - predisposing factors
   - etiology
   - pathogenesis
   - morphologic findings
   - clinical features

6. Contrast obstructive and restrictive pulmonary disease, in terms of:
   • morphologic features
   • radiologic manifestations
   • pulmonary function test results
   • clinical manifestations

7. Compare and contrast the etiologies and effects of airflow obstruction that occur in lesions involving the airways with those that involve the alveolar parenchyma.

8. Compare and contrast:
   • emphysema
   • chronic bronchitis
   • bronchial asthma
   • bronchiectasis

   in terms of:
   - etiology
9. Compare and contrast the following forms of bronchial asthma:
   - atopic
   - non-atopic
   - drug-induced
   - occupational
   in terms of etiology and pathogenesis

10. Compare and contrast
    - centriacinar (centrolobular) emphysema
    - panacinar (panlobular) emphysema
    - paraseptal (distal acinar) emphysema
    - focal emphysema
    - interstitial emphysema
    - senile "emphysema"
    - congenital lobar "emphysema"

    in terms of:
    - incidence
    - age and sex distribution
    - etiology
    - pathogenesis
    - gross and microscopic morphology
    - physiologic changes
    - radiologic features
    - clinical presentation, course, and prognosis

11. Discuss the Reid index, in terms of a normal index vs. an index indicative of chronic bronchitis

12. Discuss respiratory bronchiolitis of smokers (small airways disease) in terms of:
    - pathogenesis
    - morphology
    - clinical presentation

13. Discuss bronchiectasis, in terms of:
    - predisposing conditions
    - the types of organisms typically cultured from bronchi
    - sequelae

14. Compare and contrast neonatal and adult respiratory distress syndrome in terms of:
    - predisposing factors/associated conditions
    - pathogenesis
    - morphology
    - complications
    - clinical course

15. Compare and contrast the following forms of diffuse parenchymal lung disease (DPLD):
    - diffuse alveolar damage (DAD)
    - bronchilitis obliterans-organizing pneumonia (BOOP)
    - usual interstitial pneumonia (UIP)
    - desquamative interstitial pneumonia (DIP)
    - lymphoid interstitial pneumonia (LIP)
    - nonspecific interstitial pneumonia (NSIP)

    in terms of:
    - synonyms
    - associated diseases
    - etiopathogenesis
    - morphologic features
    - radiologic features
    - clinical manifestations
    - treatment
    - prognosis

16. Discuss the following disorders:
sarcoidosis  
Goodpasture syndrome  
idiopathic pulmonary hemosiderosis (IPH)  
hypersensitivity pneumonitis (HP)  
pulmonary alveolar proteinosis  
pulmonary eosinophilic granuloma  
pulmonary infiltrates with eosinophilia (PIE)  
lipid pneumonia  
Wegener granulomatosis  
lymphomatoid granulomatosis  
in terms of:  
  o  associated conditions  
  o  etiopathogenesis  
  o  morphologic features (pulmonary and extrapulmonary)  
  o  radiologic features  
  o  clinical manifestations  
  o  treatment  
  o  prognosis

17. Discuss pulmonary involvement in autoimmune ("collagen-vascular") diseases, noting the major morphologic manifestations in the lung of:  
  • systemic lupus erythematosus (SLE)  
  • rheumatoid arthritis (RA)  
  • progressive systemic sclerosis (PSS)

18. Discuss the basic pathogenesis of pneumoconioses.

19. Compare and contrast the following pneumoconioses:  
  • coal workers' pneumoconioses  
  • silicosis  
  • asbestosis  
  • berylliosis  
in terms of:  
  o  occupational exposure  
  o  pathogenesis  
  o  gross and microscopic morphology  
  o  complications  
  o  clinical course

20. Discuss the following asbestos-related lung diseases:  
  • fibrous pleural plaques  
  • pleural effusion  
  • asbestosis  
  • bronchogenic carcinoma  
  • malignant mesothelioma  
in terms of:  
  o  epidemiology  
  o  etiopathogenesis  
  o  morphology  
  o  clinical features  
  o  prognosis

21. Discuss the acute and chronic stages of radiation lung injury, in terms of:  
  • temporal features  
  • pathogenesis  
  • morphology  
  • consequences

22. Discuss drug-induced lung disease, enumerating drugs most commonly associated with the following pulmonary reactions:
• bronchospasm
• pulmonary edema
• hypersensitivity pneumonitis (HP)
• eosinophilic pneumonia
• diffuse alveolar damage (DAD)
• pulmonary fibrosis

23. Enumerate the general indications for lung transplantation, and discuss the following complications thereof:
• pulmonary infection
• acute rejection
• chronic rejection

in terms of:
  o etiology
  o pathogenesis
  o morphology
  o clinical features

24. Discuss the pulmonary features of cystic fibrosis (CF), in terms of:
• frequency of involvement of lung in CF
• pathogenesis
• morphology
• functional alterations
• clinical manifestations
• pulmonary complications
  o obstructive
  o infectious (including most common organisms involved)
• treatment
• prognosis

25. Compare and contrast:
• bronchopneumonia
• lobar pneumonia
• primary atypical pneumonia
• aspiration pneumonia
• lung abscess
• pulmonary infiltrates in the immunocompromised host

in terms of:
  predisposing factors
  etiologic organisms
  pathogenesis
  morphologic features
  radiologic features
  clinical manifestations
  prognosis

26. Describe the four classic stages of the inflammatory response in lobar pneumonia, in terms of:
• temporal features
• morphology

27. Discuss the following specific respiratory tract infections:
  anthrax
  Legionnaire's disease
  actinomycosis
  nocardiosis
  tuberculosis
  atypical mycobacteriosis
  mycoplasmia pneumonia
  psittacosis
  histoplasmosis
  coccidioidomycosis
  blastomycosis
  crytococcosis
  aspergillosis
  mucormycosis
respiratory syncytial virus (RSV) infection
influenza pneumonia
adenovirus pneumonia
cytomegalic inclusion disease (CID)
in terms of:
characteristics of organism
predisposing factors
associated conditions
pathogenesis

respiratory syncytial virus (RSV) infection
influenza pneumonia
adenovirus pneumonia
cytomegalic inclusion disease (CID)
severe acute respiratory syndrome (SARS)
Pneumocystis carinii pneumonia (PCP)
toxoplasmosis
strongyloidiasis
in terms of:
morphology, including use of special stains
radiologic features
clinical features
prognosis

28. Differentiate among tuberculosis, sarcoidosis, and granulomatous fungal disease on the basis of:
• etiopathogenesis
• morphologic features, including use of special stains
• organs involved
• radiologic features
• clinical presentation
• diagnostic tests
• laboratory findings
• prognosis

29. Discuss pulmonary edema, embolism, and infarction in terms of:
• predisposing factors and etiology
• pathogenesis
• radiologic features
• clinical manifestations

30. Compare and contrast pulmonary embolism caused by:
thrombus
fat
air
bone marrow
amniotic fluid
talc
in terms of:
predisposing factors
incidence
morphology
pulmonary pathophysiology
complications
clinical course

31. Compare and contrast primary and secondary pulmonary hypertension, in terms of:
• predisposing factors/associated conditions
• pathogenesis
• age and sex distribution
• clinical manifestations
• size and type of vessels involved
• morphologic features (including reversible vs. irreversible lesions)
• hemodynamic consequences
• prognosis

32. Discuss:
pulmonary circulatory disease associated with congenital heart disease
persistent fetal circulation
in terms of:
etiopathogenesis
size and type of vessels involved
morphologic features
pulmonary pathophysiology
prognosis
33. Compare and contrast the following thoracic tumors:
   - squamous cell carcinoma of lung
   - bronchogeneic adenocarcinoma
   - bronchioloalveolar carcinoma
   - small cell carcinoma of lung
   - large cell carcinoma of lung
   - bronchial carcinoid
   - pulmonary hamartoma
   - malignant lymphoma
   - Hodgkin disease
   - metastatic neoplasm to thorax
   - pleural fibroma (solitary fibrous tumor)
   - malignant mesothelioma of pleura
   in terms of:
   - epidemiology
   - clinical manifestations (pulmonary, extrapulmonary)
   - etiology
   - staging
   - pathogenesis
   - treatment
   - morphologic features
   - prognosis
   - radiologic features

34. Compare central and peripheral neoplasms of the lung in terms of:
   - clinical presentation
   - radiographic presentation
   - histologic types
   - clinical course
   - prognosis

35. Enumerate the different types of mediastinal masses based on location in:
   - superior mediastinum
   - anterior mediastinum
   - posterior mediastinum
   - middle mediastinum

36. Compare and contrast:
   - thymoma
   - malignant thymoma
   - thymic carcinoma
   in terms of:
   - associated conditions and syndromes
   - clinical presentation and course

37. List likely etiologies and expected effects on pulmonary function of:
   - hydrothorax
   - empyema
   - hemothorax
   - pneumothorax
   - tension pneumothorax
   - pleural adhesion
   - chylothorax

38. Discuss pleural fluid collections on the basis of fluid type and common associations

39. List appropriate diagnostic procedures for patients clinically suspected of having pleural effusions

40. Compare and contrast:
   - nasal polyp
   - sinonasal papilloma
   - laryngeal nodule (singers' node)
   - laryngeal papilloma
   - juvenile laryngeal papillomatosis
   - laryngeal squamous cell carcinoma
   - nasopharyngeal carcinoma
   in terms of:
   - etiology
   - morphology
   - clinical features
   - prognosis
71 - ORAL REGION

The student will be able to:

1. Define and use in proper context:
   - carcinoma ex pleomorphic adenoma
   - erythroplasia
   - glossitis
   - leukoplakia
   - Mikulicz syndrome
   - sicca syndrome
   - xerostomia

2. Describe the following congenital anomalies:
   - cleft lip/palate
   - branchial cleft cyst
   in terms of:
     - embryonic developmental pathogenesis
     - morphology
     - clinical features

3. Describe dental caries and periodontal disease, in terms of:
   - epidemiology
   - etiology and pathogenesis
   - complications
   - prophylaxis

4. Describe the following oral lesions:
   - primary herpetic gingivostomatitis
   - perioral herpes simplex
   - aphthous ulcer
   - oral candidiasis
   - hairy leukoplakia
   in terms of:
     - epidemiology
     - etiology and pathogenesis
     - clinical and morphologic features

5. State the relationship of carcinoma of the oral mucosa to:
   - leukoplakia
   - erythroplasia
   - jagged teeth
   - tobacco
   - ill-fitting dentures

6. Describe the development of squamous cell carcinoma, in terms of:
   - predisposing factors
   - specific sites within organ
   - morphology
   - clinical features and course
   - prognosis
   - associated predisposing lesions
   - patterns of metastasis

   for each of the following anatomic sites:
   - lip
   - pharynx
   - tongue
   - larynx
   - floor of mouth
   - trachea
7. List the signs, symptoms, and usual etiology of acute epiglottitis

8. Compare and contrast laryngeal nodules ("singer's nodes") and laryngeal papillomas, in terms of:
   - age of onset
   - etiology
   - morphology
   - biologic behavior
   - relationship to carcinoma

9. Describe the following salivary gland lesions:
   - sialadenitis
   - sialolithiasis
   - pleomorphic adenoma (mixed tumor)
   - adenolymphoma (Warthin tumor)
   - acinic cell tumor

   in terms of:
   - relative frequency
   - location
   - morphology
   - prognosis

10. Describe the following odontogenic lesions:
    - odontogenic cyst
    - dentigerous cyst
    - ameloblastoma

    in terms of:
    - pathogenesis
    - morphology
    - prognosis

11. List defining features and significance of the following oral lesions:
    - peripheral giant cell granuloma (epulis)
    - mucocele
    - pyogenic granuloma ("pregnancy tumor")

12. Compare and contrast the following lesions of the nasal cavity and paranasal sinuses:
    - acute rhinitis
    - nasal polyps
    - angiofibroma
    - Wegener granulomatosis
    - polyporphic reticulosis (lethal midline granuloma)
    - olfactory neuroblastoma (esthesioneuroblastoma)

    in terms of:
    - age and sex predilection
    - etiology
    - clinical and radiologic features
    - morphology
    - course and prognosis
72 - ALIMENTARY TRACT

The student will be able to:

1. Define and use in proper context:
   - achalasia
   - acute gastritis
   - adhesion
   - angiodysplasia
   - appendicitis, acute
   - atresia
   - Barrett esophagus
   - carcinoid syndrome
   - carcinoid tumor
   - chronic gastritis
   - chronic inflammatory bowel disease
   - Crohn disease
   - Curling ulcer
   - Cushing ulcer
   - d-xylose absorption test
   - diarrhea
   - diverticulum
   - dysentery
   - dysphagia
   - dysplasia
   - enterocolitis
   - enterotoxin
   - erosion
   - esophageal varices
   - esophagitis
   - gastritis, atrophic
   - gastritis, autoimmune
   - gastritis, chronic idiopathic
   - gastroesophageal reflux disease (GERD)
   - Helicobacter pylori
   - hematemesis
   - hematochezia
   - hernia
   - hypergastrinemia
   - hyperplastic polyp
   - inflammatory polyp
   - juvenile polyp
   - Krukenberg tumor
   - linitis plastica
   - malabsorption
   - Mallory-Weiss syndrome
   - Meckel diverticulum
   - Mediterranean lymphoma
   - megacolon
   - melena
   - mucocoele
   - napkin ring lesion
   - necrotizing enterocolitis (NEC)
   - odynophagia
   - peptic ulcer
   - pernicious anemia
   - Peutz-Jegher syndrome
   - Plummer-Vinson syndrome
   - pseudomembranous colitis
   - pseudomyxoma peritonei
   - pyloric stenosis
   - reflux esophagitis
   - Schatzki ring
   - signet ring cell
   - sprue (celiac, tropical, nontropical)
   - steatorrhea
   - stress ulcer
   - superficial gastritis
   - transmural inflammation
   - tubular adenoma
   - ulcer
   - ulcerative colitis
   - villous adenoma
   - Virchow node
   - volvulus
   - Whipple disease
   - Zenker diverticulum
   - Zollinger-Ellison syndrome

2. Describe the following disorders of the esophagus:
   - esophagitis
   - hiatal hernia
   - achalasia
   - Mallory-Weiss syndrome
   - in terms of:
     - etiology
     - pathogenesis
     - clinical features and course
     - morphologic features

3. Describe the clinical presentation and morphology of the following esophageal lesions:
   - congenital stenosis/atresia and associated tracheal lesions
   - mucosal webs
   - diverticula

4. Discuss the etiology, pathogenesis, gross appearance, histopathology, clinical course, and the route of metastasis of esophageal carcinoma.
5. Describe esophageal varices, their pathogenesis and typical complications.

6. Discuss the following congenital gastric anomalies:
   - pyloric stenosis
   - diaphragmatic hernia
   - gastric heterotopia
   in terms of:
     - incidence
     - morphology
     - clinical presentation and course

7. Compare and contrast acute (erosive), autoimmune, atrophic, and chronic gastritis, in terms of:
   - etiology
   - pathogenesis
   - morphology
   - clinical presentation and course

8. Discuss the pathogenesis and the morphology of stress ulcers.

9. Contrast and compare duodenal and gastric peptic ulcers, and their typical complications.

10. Compare and contrast the following types of gastric polyp:
    - hyperplasic
    - fundic gland
    - adenomatous
    in terms of:
      - incidence
      - pathogenesis
      - morphology
      - malignant potential

11. Describe typical gross and histologic features of gastric carcinoma.

12. Discuss the epidemiology and risk factors of gastric carcinoma.

13. Correlate the pathologic findings and clinical symptoms of gastric carcinoma.

14. Discuss gastrointestinal stromal tumors (GIST), in terms of:
    - histogenesis
    - morphology
    - prognosis

15. Discuss gastrointestinal lymphoma, in terms of:
    - epidemiology
    - etiology and pathogenesis
    - level of the alimentary tract most frequently affected
    - morphologic features
    - clinical features and course

16. Compare and contrast the following diseases:
    - celiac sprue
    - tropical sprue
    - Whipple disease
    in terms of:
17. Compare and contrast ulcerative colitis and Crohn disease, in terms of:
   - epidemiology
   - pathogenesis
   - morphology
   - clinical features and course
   - complications
   - malignant potential

18. List the most important viral, bacterial and parasitic pathogens causing enterocolitis.

19. Contrast and compare diarrheal disease caused by enterotoxin-producing bacteria and diarrhea due to enteroinvasive microbes.

20. Compare and contrast:
   - necrotizing enterocolitis (NEC)
   - infectious enterocolitis
   - pseudomembranous colitis
   - ischemic colitis
   - collagenous colitis
   - lymphocytic colitis

   in terms of:
   - etiology
   - pathogenesis
   - morphology
   - clinical features and course

21. Discuss the following intestinal processes:
    hernia  Hirschsprung disease  volvulus
    adhesion  diverticulosis  angiodysplasia
    intussusception  diverticulitis

   in terms of:
   - age predilection
   - etiology
   - pathogenesis
   - morphology
   - clinical features and course
   - complications

22. Compare and contrast the following small intestinal neoplasms:
   - adenoma
   - adenocarcinoma
   - carcinoid
   - stromal tumors

   in terms of:
   - benignity vs. malignancy
   - morphology
   - clinical presentations and course

23. Discuss the following types of colonic polyps:
• hyperplastic
• juvenile
• adenomas (tubular, villous, tubulovillous)

in terms of:
  o incidence
  o morphology
  o clinical features and course
  o malignant potential

24. Compare and contrast the following syndromes:
  • Peutz-Jeghers syndrome
  • familial adenomatous polyposis (FAP)
  • Gardner syndrome
  • Turcot syndrome
  • Hereditary nonpolyposis colorectal cancer (Lynch) syndrome (HNPCC)

in terms of:
  o genetics
  o morphology, types, and malignant potential of lesions produced
  o clinical features and course

25. Describe colorectal carcinoma, in terms of:
  • etiology
  • pathogenesis, including genetic and molecular factors
  • morphology, including grading and staging criteria
  • clinical features and course

26. Contrast and compare the morphology and the clinical presentation of carcinoma of the right vs. left colon.

27. Discuss carcinoid tumors of the colon, rectum, and appendix, in terms of:
  • pathogenesis
  • morphology
  • clinical features (including extra-colonic manifestations)
  • course and prognosis

28. Describe the etiology, pathogenesis, and morphology of appendicitis, and list the most common complications.

29. Compare and contrast:
  • mucocele of appendix
  • mucinous neoplasms (cystadenoma/cystadenocarcinoma) of appendix
  • pseudomyxoma peritonei

in terms of:
  o interrelationships with one another
  o morphology
  o clinical features and course

30. List the clinical situations in which stool examination may be helpful in the diagnosis of alimentary diseases.
# 73 - LIVER AND BILIARY TRACT

**The student will be able to:**

1. Define and use in proper context:
   - acidophil body
   - acute yellow atrophy
   - alcoholic hepatitis
   - alcoholic liver disease
   - alpha-1-antitrypsin deficiency
   - ascites
   - bile
   - bile duct hamartoma
   - bile lake
   - bile stones
   - biliary atresia
   - bilirubin
   - bridging fibrosis
   - bridging necrosis
   - Budd-Chiari syndrome
   - cardiac sclerosis
   - centrilobular necrosis
   - cholangitis
   - cholecystitis
   - choledocholithiasis
   - cholelithiasis
   - cholestasis
   - cholesterolosis
   - cirrhosis
   - Councilman body
   - Crigler-Najjar disease
   - delta hepatitis
   - direct vs. indirect bilirubin
   - Dubin-Johnson syndrome
   - fatty liver
   - focal nodular hyperplasia
   - galactosemia
   - gallstone ileus
   - Gilbert disease
   - hemochromatosis
   - hemochromatosis
   - hepatic coma
   - hepatic encephalopathy
   - hepatitis
   - hyperbilirubinemia
   - hyperalbuminemia
   - icterus
   - interface hepatitis
   - jaundice
   - kernicterus
   - liver function test
   - macronodular cirrhosis
   - Mallory body (hyaline)
   - massive necrosis
   - micronodular cirrhosis
   - nutmeg liver
   - portal hypertension
   - primary biliary cirrhosis
   - primary sclerosing cholangitis
   - Reye syndrome
   - schistosomiasis
   - secondary biliary cirrhosis
   - steatohepatitis
   - steatosis
   - strawberry gallbladder
   - submassive necrosis
   - von Meyenburg complex
   - Wilson disease

2. Describe the formation of bile and explain the main abnormalities that could cause jaundice.

3. Discuss the following laboratory tests:
   - alanine aminotransferase (ALT, SGPT)
   - aspartate aminotransferase (AST, SGOT)
   - alkaline phosphatase (ALP)
   - alpha-fetoprotein
   - ammonia
   - anti-mitochondrial antibody
   - anti-smooth muscle antibody
   - bilirubin: total, conjugated, unconjugated
   - ceruloplasmin
   - gamma-glutamyl transferase (GGT)
   - urobilinogen

   in terms of:
   - indications
   - hepatobiliary parameter measured
   - diseases associated with elevations thereof

4. Discuss:
   - congenital hepatic fibrosis
   - polycystic liver disease

   in terms of:
   - inheritance pattern
   - etiology/pathogenesis
   - clinical and laboratory features
   - prognosis
5. Compare and contrast
   - Crigler-Najjar syndrome, type I
   - Crigler-Najjar syndrome, type II
   - Gilbert syndrome
   - Dubin-Johnson syndrome
   - Rotor syndrome

   in terms of:
   - inheritance pattern
   - defect(s) in bilirubin metabolism
   - morphology of liver
   - laboratory diagnosis
   - clinical features and course

6. Compare and contrast biliary atresia and neonatal hepatitis, in terms of:
   - etiology and pathogenesis
   - morphology
   - laboratory findings
   - clinical features and course
   - complications

7. Describe the principal clinical and morphologic findings in chronic liver disease.

8. Compare and contrast hepatitis caused by the following viruses:
   - hepatitis A virus (HAV)
   - hepatitis B virus (HBV)
   - hepatitis C virus (HCV)
   - hepatitis D (delta) virus (HDV)
   - hepatitis E virus (HEV)
   - hepatitis G virus(es) (HGV)
   - cytomegalovirus (CMV)
   - Epstein-Barr virus (EBV)

   in terms of:
   - nomenclature of antigens and antibodies
   - epidemiology
   - modes of transmission
   - incubation period
   - laboratory findings
   - serologic findings at various stages in course of disease
   - morphologic findings
   - clinical features and course, including propensity for chronicity
   - carrier state
   - complications


10. Compare and contrast:
    - alcoholic hepatitis
    - nonalcoholic steatohepatitis
    - viral hepatitis
    - granulomatous hepatitis
    - drug-induced
    - toxic hepatitis

    in terms of:
    - etiology
    - pathogenesis
    - morphology
    - clinical features and course
11. Discuss the pathogenesis, morphology, and clinical course of the following alcohol-induced liver diseases:
   - fatty change (steatosis)
   - alcoholic hepatitis
   - fibrosis
   - cirrhosis

12. Classify types of cirrhosis, in terms of:
   - etiology
   - pathogenesis
   - morphologic pattern (gross and microscopic)
   - relationship to neoplasia

13. Differentiate among the following disease processes, based on clinicopathologic data:
   - alcoholic cirrhosis
   - postnecrotic cirrhosis
   - primary biliary cirrhosis
   - secondary biliary cirrhosis
   - cirrhosis due to:
     - hemochromatosis
     - Wilson disease
     - α₁-antitrypsin deficiency

14. Discuss portal hypertension in terms of:
   - etiologic factors
   - pathogenesis
   - clinical features and course

15. Compare predictable and unpredictable drug induced liver disease.

16. Classify the following hepatotoxic drugs/chemicals:
   - acetaminophen
   - carbon tetrachloride
   - halothane
   - phenothiazines
   - tetracyclines
   in terms of:
     - whether or not toxicity is dose-related
     - pattern of reaction (cholestasis vs. hepatocellular necrosis vs. fatty change)

17. Compare and contrast:
   - autoimmune hepatitis
   - primary biliary cirrhosis
   - secondary biliary cirrhosis
   - primary sclerosing cholangitis
   in terms of:
     - associated conditions
     - pathogenesis
     - incidence
     - laboratory diagnosis
     - sex predilection
     - clinical features
     - etiology
     - prognosis

18. Describe typical infectious liver diseases caused by bacteria, protozoa and helminths; in terms of clinical and morphologic findings.

19. List causes of fatty change (steatosis) of the liver, in terms of:
20. Describe the etiopathogenesis and consequences of:
   - hepatic encephalopathy
   - portal hypertension
   - esophageal varices
   - hepatic vein thrombosis
   - ascites

21. Compare and contrast the following tumors:
   - bile duct hamartoma
   - bile duct adenoma
   - hepatic adenoma
   - focal nodular hyperplasia of liver
   - hepatoblastoma
   - hepatocellular carcinoma
   - fibrolamellar variant
   - hepatic angiosarcoma
   - cholangiocarcinoma
   - metastatic carcinoma to liver

   in terms of:
   - relative frequency
   - etiology and pathogenesis
   - relation to cirrhosis
   - morphology
   - methods of diagnosis
   - clinical findings and course
   - complications

22. Describe cholelithiasis in terms of
   - risk factors
   - mechanisms of stone formation
   - composition of stones
   - morphology of stones and gallbladder
   - clinical features
   - complications, including complications of therapy

23. Compare and contrast acute and chronic cholecystitis, in terms of:
   - epidemiology
   - associated diseases
   - morphology
   - clinical findings
   - complications, including complications of therapy

24. Compare and contrast empyema and hydrops of the gallbladder, in terms of:
   - etiology
   - pathogenesis
   - morphology
   - clinical findings

25. Discuss carcinoma of the gallbladder and extrahepatic bile ducts, in terms of:
   - epidemiology
   - relationship to cholelithiasis
   - morphology
   - clinical findings and course

26. Describe the indications, benefits, and hazards of liver transplantation.

27. Describe the morphology of liver transplant rejection.
74 - PANCREAS

The student will be able to:

1. Define and use in proper context:
   - cystic fibrosis (CF)
   - CFTR
   - mucoviscidosis
   - sweat chloride test
   - pancreatitis
   - amylase
   - lipase
   - pseudocyst
   - mucinous cystadenoma
   - mucinous cystadenocarcinoma
   - insulinoma
   - gastrinoma
   - glucagonoma
   - somatostatinoma
   - VIPoma
   - PP-secreting islet cell tumor
   - Whipple triad
   - Zollinger-Ellison syndrome

2. Compare and contrast:
   - exocrine pancreatic insufficiency
   - endocrine pancreatic insufficiency
   - in terms of:
     - causes
     - clinical manifestations
     - laboratory abnormalities

3. Discuss cystic fibrosis, in terms of:
   - genetics
   - primary defect
   - morphologic findings in:
     - pancreas
     - lung
     - liver
     - salivary glands
     - male genital tract
     - laboratory manifestations
     - clinical findings and course
     - therapy, including gene therapy

4. List the difference between acute edematous and acute hemorrhagic pancreatitis with regard to histopathology and clinical outcome.

5. Compare and contrast acute and chronic pancreatitis, in terms of:
   - etiologic/predisposing factors
   - pathogenesis
   - morphologic features
   - laboratory manifestations
   - clinical findings and course
   - complications

6. Compare and contrast adenocarcinoma of the:
   - pancreatic head
   - pancreatic body/tail
   - ampulla of Vater
   - in terms of:
     - incidence
     - risk factors
7. Discuss islet cell tumors of the pancreas, in terms of:
   - incidence
   - morphology
   - benignity vs. malignancy
   - immunohistochemical characteristics
   - endocrine function
   - clinical features and course

8. Discuss indications and complications of pancreatic islet cell transplant.
81 - KIDNEY

The student should be able to:

1. Describe the normal anatomy (gross and microscopic) of each of the following:
   - kidney
   - ureter

2. Define and use in proper context:
   - anuria
   - azotemia
   - bacteriuria
   - Bence-Jones protein
   - dysuria
   - glomerulonephritis
   - hematuria
   - hydronephrosis
   - hydronephrosis Kimmelstiel-Wilson disease
   - Kimmelstiel-Wilson disease
   - nephrolithiasis
   - nephrocalcin
   - nephrosclerosis
   - nocturia
   - oliguria
   - proteinuria
   - pyelonephritis
   - pyuria
   - pyelonephritis Kimmelstiel-Wilson disease
   - pyelonephritis vonHippel-Lindau (VHL)
   - urolithiasis
   - uremia
   - vonHippel-Lindau (VHL)
   - "wire-loop" lesion

3. List the criteria for the diagnosis of:
   - nephritic syndrome
   - nephrotic syndrome
   - acute renal failure
   - chronic renal failure
   and list:
   - the renal diseases commonly causing each of the above
   - the clinical and laboratory findings in each of the above

4. Discuss the proper use of the following laboratory tests in the evaluation of urinary tract disease:
   - creatinine
   - urea (blood urea nitrogen, BUN)
   - urinalysis
   and interpret abnormalities of these parameters in clinical context

5. Discuss the following congenital renal anomalies:
   - renal agenesis
   - double ureter
   - horseshoe kidney
   - aberrant renal artery
   - ectopic kidney
   in terms of:
   - morphology
   - clinical manifestations
   - complications

6. Compare and contrast the following cystic diseases of the kidney:
   - autosomal dominant (adult) polycystic kidney disease
   - autosomal recessive (childhood) polycystic kidney disease
   - acquired (dialysis-associated) cystic disease
in terms of:
  o incidence
  o etiology and pathogenesis
  o morphologic (gross and microscopic) appearance
  o clinical presentation, course, and prognosis
  o complications

7. Define the following terms as they apply to glomerular histopathology:
   • focal
   • diffuse
   • segmental
   • global

8. Discuss the following glomerular diseases:
   • minimal change disease
   • membranous glomerulonephritis
   • focal segmental glomerulosclerosis
   • membranoproliferative glomerulonephritis
   • acute proliferative (poststreptococcal, postinfectious) glomerulonephritis
   • rapidly progressive glomerulonephritis
   • IgA nephropathy (Berger disease)
   • hereditary nephritis
   • Henoch-Schönlein purpura
   • chronic glomerulonephritis
   in terms of:
     o relative frequency
     o etiology and pathogenesis
     o clinical presentation, course, and prognosis
     o laboratory findings
     o microscopic (light, immunofluorescent, ultrastructural) appearance

9. Describe the major clinical and histopathologic findings associated with renal involvement by the following systemic diseases:
   • diabetes mellitus
   • amyloidosis
   • gout
   • multiple myeloma

10. Discuss lupus nephritis in terms of:
    • etiology and pathogenesis
    • clinical presentation
    • nomenclature, morphologic features, and prognosis of each of the five classes

11. Discuss the following renal tubular diseases:
    • acute pyelonephritis
    • chronic pyelonephritis
    • xanthogranulomatous pyelonephritis
    • acute drug-induced interstitial nephritis
    • drug-induced analgesic nephropathy
    • acute tubular necrosis
in terms of:
  - etiology and pathogenesis
  - clinical presentation and course
  - laboratory findings
  - morphologic (gross and microscopic) appearance
  - treatment and prognosis

12. Discuss the significance of unilateral renal artery disease, including:
   - usual causes
   - mechanism(s) of clinical effects
   - morphologic changes in contralateral kidney
   - tests used for detection and localization

13. Describe the pathophysiology of hypertension induced by renal artery constriction

14. Compare and contrast benign and malignant nephrosclerosis with regard to:
   - pathogenesis
   - morphologic (gross and microscopic) appearance
   - clinical presentation, course, and prognosis

15. List the three major thrombotic microangiopathies, and describe their renal effects, with regard to:
   - pathogenesis
   - microscopic appearance
   - clinical presentation, course, and prognosis

16. Discuss renal vein thrombosis in terms of:
   - etiology/pathogenesis
   - morphology
   - method(s) of diagnosis
   - clinical and laboratory features

17. Discuss urolithiasis in terms of:
   - composition and relative incidence of various types of stones
   - pathophysiologic abnormalities associated with the common types of stones
   - etiology and pathogenesis of stone formation
   - effect of location of stones on clinical and anatomic findings
   - clinical course and complications

18. Discuss hydronephrosis in terms of:
   - etiologic factors and their relative frequencies
   - pathogenesis
   - morphology (gross and microscopic)
   - clinical course and prognosis

19. Discuss the following renal neoplasms:
   - cortical adenoma
   - medullary fibroma
   - renal cell carcinoma
   - oncocytoma
   - angiomyolipoma
   - Wilms tumor (nephroblastoma)
   - urothelial (transitional cell) carcinoma of renal pelvis
in terms of:
  o genetics/associated syndromes
  o incidence
  o age and sex distribution
  o etiology
  o morphologic (gross and microscopic) appearance
  o laboratory features
  o clinical presentation, course, and complications
  o treatment
  o routes of spread
  o prognosis, including assessment of prognostic factors
82 – LOWER URINARY TRACT

The student will be able to:

1. Describe the normal anatomy (gross and microscopic) of each of the following:
   - ureter
   - urinary bladder
   - urethra

2. Define and use in proper context:
   - bacteriuria
   - cystitis
   - cystitis cystica
   - cystitis glandularis
   - dysuria
   - epispadias
   - exstrophy
   - hematuria
   - hypospadias
   - pyuria
   - pyuria
   - pyuria
   - urethral caruncle
   - urolithiasis
   - urolithiasis
   - urolithiasis
   - neurogenic (cord) bladder

3. Discuss the proper use of urinalysis in the evaluation of lower urinary tract disease, and interpret abnormalities of this test in clinical context

4. Discuss obstruction at various levels of the urinary tract in terms of:
   - site and nature of lesion
   - etiology and pathogenesis
   - alteration in renal function
   - morphologic effect on kidney

5. Discuss diverticula of the urinary bladder, in terms of:
   - etiology
   - pathogenesis
   - morphology
   - complications

6. Discuss urolithiasis in terms of:
   - relative incidence of various types of stones
   - pathophysiologic abnormalities associated with the common types of stones
   - etiology and pathogenesis of stone formation
   - effect of location of stones on clinical and anatomic findings
   - clinical course and complications

7. Discuss the following congenital anomalies:
   - patent urachus
   - hypospadias
   - epispadias
   - exstrophy of the bladder
   - duplications of the collecting system
   - urethral valves
   - in terms of:
     - frequency
     - morphology
     - complications
8. Compare and contrast the following inflammatory conditions:
   - infectious cystitis
   - interstitial cystitis
   - malacoplakia
   
   with regard to:
   - etiology and pathogenesis
   - clinical course and complications
   - morphologic (gross and microscopic) appearance

9. Discuss the following neoplasms of the lower urinary tract:
   - urothelial (transitional cell) carcinoma
   - squamous cell carcinoma
   - adenocarcinoma
   
   in terms of:
   - incidence
   - age and sex distribution
   - etiology
   - morphologic (gross and microscopic) appearance
   - laboratory features
   - clinical presentation, course, and complications
   - treatment
   - routes of spread
   - prognosis, including assessment of prognostic factors
83 – MALE GENITAL SYSTEM

The student will be able to:

1. Describe the normal anatomy (gross and microscopic) of each of the following:
   • penis
   • prostate
   • testis

2. Define and use in proper context:
   - balanitis
   - balanoposthitis
   - choriocarcinoma
   - chylocele
   - condyloma acuminatum
   - cryptorchidism
   - chylocele
   - cryptorchidism
   - gonadoblastoma
   - hematocele
   - hydrocele
   - hypospadias
   - orchitis
   - paraphimosis
   - prepuce
   - prostatic intraepithelial hyperplasia (PIN)
   - prostatitis
   - seminoma
   - Schiller-Duval body
   - Sertoli-Leydig cell tumor
   - smegma
   - spermatocytic seminoma
   - teratoma
   - yolk sac tumor

3. Discuss the following congenital anomalies:
   • hypospadias
   • epispadias
   - in terms of:
     o frequency
     o morphology
     o complications

4. Discuss the following neoplasms:
   • squamous cell carcinoma of penis and scrotum
   • adenocarcinoma of prostate
   • germ cell tumors of testis
   • sex cord-stromal tumors of testis
   • malignant lymphoma of testis
   - in terms of:
     o incidence
     o age distribution
     o etiology
     o morphologic (gross and microscopic) appearance
     o laboratory features (including tumor markers)
     o clinical presentation, course, and complications
     o treatment
     o routes of spread
     o prognosis, including assessment of prognostic factors
     o ovarian counterparts of testicular tumors

5. Compare and contrast the following inflammatory conditions:
   • prostatitis (acute, chronic granulomatous)
   • orchitis (nonspecific, mumps, granulomatous)
   • torsion of spermatic cord
with regard to:
  o etiology and pathogenesis
  o clinical course and complications
  o morphologic (gross and microscopic) appearance

6. Discuss the following disorders:
   • nodular hyperplasia of the prostate
   • cryptorchidism

   in terms of:
   o incidence
   o etiology
   o pathogenesis
   o morphologic (gross and microscopic) appearance
   o clinical presentation and treatment
   o complications
   o relationship to malignancy

7. Classify anatomically the causes of male infertility.
84 - FEMALE GENITAL SYSTEM

The student will be able to:

1. Define and use in proper context:
   adenomyosis
   adenosis
   arrhenoblastoma
   atypical endometrial hyperplasia
   borderline ovarian tumor (BOT)
   Brenner tumor
   Call-Exner body
   carcinoma in situ (CIS)
   carinosarcoma
   cervical intraepithelial neoplasia (CIN)
   chocolate cyst
   choriocarcinoma
   colposcopy
   condyloma acuminatum
   condyloma latum
   cone biopsy
   curettage
   cystadenocarcinoma
   cystadenofibroma
   cystadenoma
   dysfunctional uterine bleeding (DUB)
   dyserminoma
   dysmenorrhea
   dysplasia
   embryonal carcinoma
   endodermal sinus tumor
   endometriosis
   fibroma
   flat condyloma
   follicular cyst
   gonadoblastoma
   granulosa cell tumor
   gynandroblastoma
   hematosapinx
   HPV
   HSV
   hydrosalpinx
   koilocytosis
   kraurosis vulvae
   krukenberg tumor
   LEEP
   Leukoplakia
   low malignant potential (LMP)
   luteal cyst
   malignant mixed Mullerian tumor (MMMT)
   Meigs syndrome
   menometorrhagia (MMR)
   menorrhagia
   microinvasive carcinoma
   nabothian cyst
   Pap smear
   pelvic inflammatory disease (PID)
   pseudomyxoma peritonei
   pyosalpinx
   sarcoma botryoides
   Schiller-Duval body
   Sertoli-Leydig cell tumor
   squamous intraepithelial lesion (SIL)
   Stein-Leventhal syndrome
   teratoma
   thecoma
   vaginal intraepithelial neoplasia (VAIN)
   vulvar intraepithelial neoplasia (VIN)

2. Describe the following congenital anomalies, including their embryologic bases:
   - imperforate hymen
   - bicornuate uterus
   - pseudohermaphroditism

3. List the common organisms which cause:
   - Bartholin abscess
   - vulvitis
   - vaginitis
   - cervicitis
   - endometritis
   - salpingitis

4. Discuss the following vulvar lesions:
   - Bartholin cyst
   - lichen scleriosis
   - squamous hyperplasia
   - condyloma acuminatum
in terms of:
  o etiology
  o clinical presentation
  o morphology
  o differential diagnosis

5. Compare and contrast trichomonal and monilial vaginitis, in terms of:
   • predisposing factors
   • etiology
   • pathogenesis
   • symptoms
   • methods of detection

6. Compare and contrast:
   • vulvar condyloma
   • vulvar and vaginal intraepithelial neoplasia (VIN, VAIN)
   • carcinoma of the vulva and vagina
   • sarcoma botryoides

   in terms of:
     o age predilection
     o incidence
     o etiology
     o clinical presentation
     o morphology
     o biologic behavior

7. Define discuss general features of extramammary Paget disease, in terms of:
   • clinical presentation
   • morphology
   • associated malignancies
   • clinical course

8. Discuss vaginal adenosis and vaginal adenocarcinoma, in terms of
   • epidemiology
   • etiology
   • pathogenesis
   • morphology
   • clinical significance

9. Compare and contrast the following cervical lesions:
   • cervical intraepithelial neoplasia (CIN)
   • microinvasive squamous cell carcinoma
   • invasive squamous cell carcinoma
   • adenocarcinoma

   in terms of:
     incidence
     age distribution
     risk factors
     pathogenesis
     diagnostic modalities for detection
     morphology
     grading and staging
     clinical features
     prognosis

10. Discuss the screening and diagnostic procedures for cervical cancer in terms of methodology, indications, and utilization.

11. Discuss cervicovaginal cytology, in terms of:
    • technique of obtaining specimen
    • utility in diagnosis of inflammatory conditions
• types and significance of abnormalities
• utility in diagnosis of:
  o CIN of cervix
  o carcinoma of cervix
  o carcinoma of endometrium

12. Outline the morphologic effects of oral contraceptive agents (oral contraceptive pills, OCP's) on the endometrium, in relation to mode of action and possible adverse complications

13. Compare and contrast endometriosis and adenomyosis in terms of:
• incidence
• clinical presentation
• pathogenesis
• morphology
• organs involved
• complications.

14. Discuss the following endometrial processes:
• atrophy,
• hyperplasia
• polyp
  in terms of:
  o etiology
  o morphologic types
  o differentiation from one another and from neoplasia
  o clinical course/significance of the different types

15. Discuss endometrial carcinoma in terms of:
  incidence
  age distribution
  risk factors
  clinical presentation
  epidemiology
  predisposing factors
  pathogenesis
  morphology including common types
  methods of detection
  grading and staging
  prognosis

16. Compare and contrast:
• endometrial stromal tumors
• myometrial leiomyoma
• myometrial leiomyosarcoma
  in terms of:
  o clinical presentation
  o pathogenesis
  o morphology
  o clinical features
  o prognosis

17. List the conditions which result in non-neoplastic enlargement or cysts of the ovary

18. Discuss polycystic ovarian disease in terms of clinical presentation and morphology

19. Compare and contrast the following ovarian neoplasms:
• surface epithelial tumors
  o benign
  o borderline
  o malignant
• sex cord-stromal tumors
• germ cell tumors
• metastatic malignancy to ovary

in terms of:

incidence
age predilection
different types
laterality
morphology
tumor markers

hormonal effects
clinical features
prognosis
complications
testicular counterparts

20. Compare and contrast ovarian vs. placental (gestational) choriocarcinoma, in terms of:
• cell of origin
• pathogenesis
• morphology
• clinical features
• treatment and prognosis

21. List the most common primary sites of metastatic malignancy to the ovary

22. List and differentiate among clinical etiologies of:
• pelvic pain in reproductive age group
• vaginal bleeding in reproductive age group
• vaginal bleeding in post-menopausal age group
• vulvar lesions in older women
85 - BREAST

The student will be able to:

1. Define and use in proper context:
   - adenosis
   - blue dome cyst
   - comedocarcinoma
   - cribriform pattern
   - fibrocystic change
   - gynecomastia
   - "Indian filing"
   - inflammatory carcinoma
   - intraductal papilloma
   - microcalcification
   - minimally invasive breast biopsy (MIBB)
   - peau d’orange
   - scirrhous
   - terminal duct-lobular unit (TDLU)
   - triple test

2. Describe the hormonally-induced morphologic changes which occur in the female breast during the following stages:
   - neonatal
   - pubertal
   - menstrual
   - gestational
   - lactational
   - postmenopausal

3. Describe the following congenital abnormalities of the breast:
   - amastia
   - polythelia
   - polymastia
   - neonatal enlargement
   - asymmetric puberal enlargement
   - hypertrophy of male breast
   - accessory breast tissue
   - in terms of:
     - incidence
     - morphology
     - clinical significance

4. Discuss the following reactive breast conditions:
   - fat necrosis
   - acute mastitis
   - periductal mastitis
   - granulomatous mastitis
   - plasma cell mastitis
   - mammary duct ectasia
   - galactocele
   - in terms of:
     - etiology
     - pathogenesis
     - morphology
     - clinical features
     - differential diagnosis

5. Discuss silicone breast implants, in terms of:
   - morphologic changes in adjacent breast
   - known epidemiologic relationships with autoimmune disease

6. Compare and contrast fibroadenoma and phyllodes tumor in terms of:
   - incidence
   - clinical presentation
   - morphology
   - clinical features and prognosis
7. Discuss fibrocystic change of the breast in terms of:
   age predilection  
   incidence  
   etiology  
   clinical presentation  
   general morphology  
   mammographic appearance  
   relationship to carcinoma of the breast

8. Compare and contrast the following morphologic manifestations of fibrocystic change of the breast:
   • apocrine metaplasia  
   • sclerosing adenosis  
   • intraductal hyperplasia
   in terms of:
     o pathogenesis  
     o morphology  
     o relationship to carcinoma of the breast

9. Compare and contrast the following:
   • intraductal papilloma  
   • intraductal hyperplasia without atypia  
   • intraductal hyperplasia with atypia (atypical ductal hyperplasia)  
   • ductal carcinoma-in-situ (DCIS, intraductal carcinoma)  
   • atypical lobular hyperplasia (ALH)  
   • lobular carcinoma-in-situ (LCIS)
   in terms of:
     o age predilection  
     o incidence  
     o etiology  
     o pathogenesis  
     o morphology  
     o pattern of spread  
     o methods of detection  
     o principles of management  
     o clinical features and course  
     o relationship to breast carcinoma, including the influence of family history thereupon

10. Discuss female mammary carcinoma in terms of:
    genetics  
    risk factors  
    incidence  
    etiology  
    pathogenesis  
    clinical presentation  
    gross morphology  
    patterns of spread  
    methods of diagnosis  
    clinical course  
    staging  
    prognostic indicators  
    treatment options  
    survival rates

11. Compare and contrast the following types of invasive mammary carcinoma:
    • invasive ductal carcinoma, no special type (NOS)  
    • medullary carcinoma  
    • colloid (mucinous) carcinoma  
    • tubular carcinoma  
    • invasive lobular carcinoma  
    • Paget disease
    in terms of:
      o age predilection  
      o microscopic morphology  
      o grading
12. Discuss the following diagnostic procedures for evaluating breast masses:
   - self-examination
   - mammography
   - fine needle aspiration cytology

   in terms of
   - indications
   - methodology
   - general interpretative features
   - relative sensitivity and specificity

13. List the most common causes of breast mass in females during the following stages of life:
   - under 35 years of age
   - 35-50 years of age
   - over 50 years of age

14. Compare and contrast the following diseases of the male breast:
   - gynecomastia
   - carcinoma

   in terms of:
   - etiology/pathogenesis
   - clinical features
   - prognosis
86 - ENDOCRINE GLANDS

The student will be able to:

1. Describe the normal embryology, anatomy, histology, and hormonal physiology of the:
   - pituitary gland
   - adrenal glands
   - parathyroid glands
   - thyroid gland
   - endocrine pancreas
   - pineal gland

2. Define and use in proper context:
   - 17-hydroxycorticosteroids
   - 17-ketosteroids
   - acromegaly
   - Addison disease
   - adrenocorticotropic (ACTH)
   - aldosterone
   - angiotensin
   - angiotensin converting enzyme
   - angiotensinogen
   - bronze diabetes
   - catecholamine
   - congenital adrenal hyperplasia (CAH)
   - corticotropin-releasing hormone (CRH)
   - cortisol
   - cortisol binding globulin (CBG)
   - cretinism
   - Cushing disease
   - Cushing syndrome
   - dexamethasone suppression test
   - diabetes insipidus
   - diabetes mellitus
   - diabetic ketoacidosis
   - ectopic ACTH
   - endemic goiter
   - epinephrine
   - euthyroidism
   - free thyroxine index (FTI)
   - gestational diabetes
   - glycoseylation (glycation)
   - goiter
   - goitrogen
   - growth hormone (GH)
   - growth hormone-releasing hormone (GHRH)
   - humoral hypercalcemia of malignancy (HHM)
   - hyperadrenalism
   - hyperadrenocorticism
   - hypercalcemia
   - hyperinsulinism
   - hyperosmolar nonketotic coma
   - hyperparathyroidism
   - hyperpituitarism
   - hyperthyroidism
   - hypocalcemia
   - hypoparathyroidism
   - hypopituitarism
   - hypothyroidism
   - impaired glucose tolerance
   - insulin resistance
   - ionized calcium
   - maturity-onset diabetes of young (MODY)
   - metabolic syndrome (syndrome X)
   - metanephrine/normetanephrine
   - metyrapone test
   - microalbuminuria
   - myxedema
   - norepinephrine
   - parathyroid hormone (PTH)
   - parathyroid hormone-related protein (PTHrP)
   - plasma renin activity (PRA)
   - plasma renin concentration (PRC)
   - primary aldosteronism (Conn syndrome)
   - primary diabetes
   - pseudohypoparathyroidism
   - radioactive iodine uptake (RAIU)
   - radioimmunoassay
   - renin
   - secondary aldosteronism
   - secondary diabetes
   - Sipple syndrome
   - somatostatin
   - sporadic goiter
   - steroid hydroxylase enzymes
   - thyroglobulin
   - thyroid hormone binding ration (THBR, T3U)
   - thyroid stimulating hormone (TSH, thyrotropin)
   - thyrotoxicosis
   - thyrotropin releasing hormone (TRH)
   - thyroxine (T4)
   - thyroxine binding globulin (TBG)
   - triiodothyronine (T3)
   - urinary free cortisol (UFC)
   - vanillylmandelic acid (VMA)
   - Wermer syndrome
   - Zollinger-Ellison syndrome
3. Compare thyroglossal duct cyst and branchial cleft cyst in terms of:
   - anatomic site in the neck
   - gross and microscopic features
   - complications

4. Compare and contrast hyperthyroidism, hypothyroidism, and euthyroid sick syndrome (ETS) in terms of:
   - etiologies
   - pathogenesis
   - clinical features
   - laboratory features
   - complications and prognosis

5. List the commonly used thyroid function tests and their indications.

6. Compare and contrast infectious, subacute (granulomatous), subacute lymphocytic, Hashimoto’s, and Riedel’s thyroiditis, in terms of:
   - age and sex distribution
   - etiology and pathogenesis
   - clinical, functional, and laboratory features
   - gross and microscopic features
   - complications and prognosis

7. Discuss the utilization of fine-needle aspiration (FNA) of the thyroid, in terms of:
   - basic methodology
   - indications
   - sensitivity
   - specificity

8. Discuss the calcium homeostatic mechanisms.

9. Discuss hypocalcemia and hypercalcemia, in terms of:
   - etiologies
   - clinical presentation
   - laboratory testing

10. Compare and contrast primary hyperparathyroidism, secondary hyperparathyroidism, tertiary hyperparathyroidism, and hypoparathyroidism, in terms of:
    - etiology
    - pathogenesis
    - clinical features
    - laboratory features
    - complications and prognosis

11. Discuss the biosynthesis of adrenal steroids, and the enzymatic defects which lead to adrenal hyperplasia.

12. Name the tests used in evaluating plasma glucocorticoids, their indications, and their interpretation.

13. Discuss how plasma concentrations of cortisol and aldosterone are controlled.

14. Name the tests for evaluating adrenal androgens, their indications, and their interpretation.

15. Discuss the biosynthesis of the adrenal catecholamines and their urinary metabolites.

16. Discuss the use of growth hormone stimulation tests.
17. Describe the following hyperfunctional and hypofunctional conditions:

- acromegaly
- gigantism
- Sheehan syndrome
- empty sella syndrome
- diabetes insipidus
- Graves disease
- diffuse nontoxic (simple) goiter
- multinodular goiter
- myxedema
- parathyroid hyperplasia
- congenital adrenal hyperplasia
- congenital adrenal hypoplasia
- inappropriate ADH secretion
- Addison disease
- Waterhouse-Friderichsen syndrome
- Cushing disease
- hypercortisolism (Cushing syndrome)
- primary aldosteronism (Conn syndrome)
- ectopic ACTH production
- 1° acute adrenocortical insufficiency

in terms of:

- etiology and pathogenesis
- laboratory abnormalities
- clinical manifestations
- morphology (gross and microscopic)

18. List the distinguishing features of type 1 and 2 diabetes mellitus, in terms of:

<table>
<thead>
<tr>
<th>etiology and pathogenesis</th>
<th>clinical and morphologic manifestations</th>
</tr>
</thead>
<tbody>
<tr>
<td>genetics</td>
<td>insulin and glucose levels</td>
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<tr>
<td>age and frequency</td>
<td>principles of treatment</td>
</tr>
<tr>
<td>mode of onset</td>
<td>response to insulin</td>
</tr>
</tbody>
</table>

19. Discuss the following lesions that may be found in diabetes mellitus:

- insulitis
- amylin (islet amyloid polypeptide) deposition
- atherosclerosis
- diabetic microangiopathy
- fatty change of the liver
- nodular (intercapillary) glomerulosclerosis (Kimmelstiel-Wilson disease)
- diffuse glomerulosclerosis
- pyelonephritis
- necrotizing papillitis
- diabetic retinopathy
- diabetic cataracts
- glaucoma
- peripheral neuropathy

in terms of:

- pathogenesis
- specificity for diabetes
- morphologic appearance
- relationship to serious manifestations of diabetes
- frequency in diabetes
- prevention and treatment
- occurrence early or late in the disease

20. Outline methods of screening patients for, and following patients with, diabetes mellitus, stating appropriate usage of the following laboratory tests:

- blood glucose concentration
- blood insulin concentration
- urine glucose concentration
- ketone bodies
- glucose tolerance test
- glycosylated (glycated) hemoglobin level
- urine protein concentration

21. Describe the following neoplasms:

- anterior lobe pituitary neoplasms
- craniopharyngioma
- thyroid adenomas
- thyroid carcinomas
- parathyroid adenoma
- parathyroid carcinoma
- adrenal cortical adenomas
- adrenal cortical carcinomas
- pheochromocytoma
- neoplasms of extra-adrenal paraganglia
- neuroblastoma
- ganglioneuroma
- pancreatic islet cell neoplasms
- pinealomas

in terms of:

- epidemiology
- immunohistochemical characteristics
- associated syndromes
- endocrine function
- etiology and pathogenesis
- complications and prognosis
22. Describe the various types of multiple endocrine neoplasia (MEN) syndromes, in terms of clinical, laboratory, and morphologic features, as well as prognosis.
The student will be able to: 

1. Define and use in proper context: 
   - abortion 
   - abruptio placenta 
   - amnion 
   - chorioamnionitis 
   - choriocarcinoma 
   - chorion 
   - chorionic villi 
   - circumvallate placenta 
   - cytotrophoblast 
   - diamnionic 
   - dichorionic 
   - chorioamnionitis 
   - gestational diabetes 
   - hematosalpinx 
   - human chorionic 
   - gonadotrophin (HCG) 
   - hydatidiform mole 
   - malformation 
   - monochorionic 
   - oligohydramnios 
   - placenta accreta 
   - placenta increta 
   - placenta previa 
   - polyhydramnios 
   - preeclampsia 
   - sirenomelia 
   - syncytiotrophoblast 
   - teratogen 
   - teratogenesis 
   - TORCH titers 
   - toxemia of pregnancy 
   - twin-twin transfusion syndrome 
   - velamentous insertion of umbilical cord 

2. Discuss the placenta in terms of: 
   - development 
   - normal gross and microscopic anatomy 
   - formation and quantity-regulating factors of: 
     - amniotic fluid 
     - human chorionic gonadotropin (HCG) 
   - most frequent morphologic abnormalities 

3. Discuss twin placentation, in terms of: 
   - mechanisms of occurrence of twin pregnancies 
   - morphology of twin placentas 
   - determination of zygosity through placental examination 

4. Compare contrast preeclampsia and eclampsia in terms of: 
   - clinical presentation 
   - morphology 
   - clinical course. 

5. Discuss ascending infections and hematogenous infections of pregnancy in terms of: 
   - etiology 
   - pathogenesis 
   - morphology 
   - methods of diagnosis 

6. Compare and contrast placenta previa and abruptio placenta in terms of: 
   - morphology 
   - clinical presentation, course, and complications. 

7. Compare and contrast: 
   - hydatidiform mole (complete and partial) 
   - invasive mole 
   - gestational (uterine) choriocarcinoma 
   - ovarian choriocarcinoma 
   - in terms of: 
   - genetics
• incidence
• predisposing factors
• clinical presentation,
• laboratory findings
• morphology
• clinical course including follow-up and complications.

8. Discuss ectopic pregnancy in terms of:
• incidence
• risk factors
• clinical presentation
• morphology
• clinical course
• complications

and differentiate ectopic pregnancy from pelvic inflammatory disease and acute appendicitis based on clinicopathologic data.

9. List the three major categories of factors which may underlie intrauterine growth retardation (IUGR) of the fetus.

10. Discuss the pathogenesis of deformations, and give examples of underlying factors which may lead to deformation by such pathogenetic mechanisms

11. List the most common birth injuries

12. List the most common congenital malformations

13. Describe the two phases of the intrauterine development of humans, and indicate the period of greatest susceptibility to teratogenic agents

14. List the different levels at which teratogens may act in producing malformations

15. Discuss maternal diabetes mellitus in terms of:
• methods of diagnosis
• effects on fetus
88 - PEDIATRIC PATHOLOGY

The student will be able to:

1. Define and use in proper context:
   - Apgar score
   - bronchopulmonary dysplasia (BPD)
   - caput succedaneum
   - cephalhematoma
   - choristoma
   - congenital
   - deformation
   - hamartoma
   - hereditary
   - heterotopia
   - hyaline membrane disease (HMD)
   - hydrops fetalis
   - immature
   - kernicterus
   - malformation
   - premature
   - small-, round-, blue-cell tumor
   - sudden infant death syndrome (SIDS)
   - teratogen
   - teratogenesis

2. Discuss the pathogenesis of deformations, and give examples of underlying factors which may lead to deformations via such pathogenetic mechanisms

3. List the most common birth injuries

4. State the most common cause of death in children, as well as the most common non-traumatic cause of death in children:
   - under one year of age
   - between one and four years of age
   - between five and fourteen years of age

5. List the most common congenital malformations

6. List the most common underlying causes of perinatal asphyxia

7. Describe the following disorders:
   - fetal alcohol syndrome
   - congenital rubella syndrome
   - cytomegalic inclusion disease
   - hemolytic disease of the newborn (HDN)
   - respiratory distress syndrome (RDS) of the newborn
   - bronchopulmonary dysplasia (BPD)
   - necrotizing enterocolitis (NEC)
   - phenylketonuria (PKU)
   - galactosemia
   - cystic fibrosis (CF, mucoviscidosis)
   - Hirschsprung disease
   - sudden infant death syndrome (SIDS)
   - pediatric acquired immunodeficiency syndrome (AIDS)

   in terms of:
   - incidence and epidemiology
   - etiology and pathogenesis
   - morphology
   - clinical course
8. Discuss the following pediatric neoplasms:
   - hemangioma
   - lymphangioma
   - acute leukemia
   - malignant lymphoma
   - neuroblastoma
   - retinoblastoma
   - medulloblastoma
   - Wilms tumor (nephroblastoma)
   - teratoma
   - rhabdomyosarcoma
   - Ewing sarcoma
   - osteosarcoma

   in terms of:
   - frequency
   - age of onset
   - role of genetics and environment
   - morphology
   - clinical behavior
   - prognosis
91 - SKIN

The student will be able to:

1. Define and use in proper context:
   - acantholysis
   - acanthosis
   - acrochordon
   - atopic
   - Auspitz sign
   - Bowen disease
   - bulla
   - comedone
   - compound nevus
   - condyloma
   - CREST syndrome
   - dermatitis
   - dermatofibroma
   - dyskeratosis
   - eczema
   - elastosis
   - ephesis
   - exocytosis
   - granuloma pyogenicum
   - halo nevus
   - hereditary angioneurotic edema
   - intradermal nevus
   - junctional nevus
   - lentigo
   - leukoplakia
   - liquefactive degeneration
   - macule
   - mole
   - Muebro microabscess
   - mycosis fungoides
   - nevus
   - nodule
   - panniculitis
   - pappule
   - parakeratosis
   - Pautrier microabscess
   - psoriasiform
   - psoriasis
   - psoriasisform
   - primary irritant
   - drug-related
   - exfoliative
   - erythema multiforme
   - erythema induratum
   - erythema nodosum

2. Compare and contrast:
   - vitiligo
   - albinism

   in terms of:
   - etiology
   - pathogenesis
   - clinical presentation
   - histomorphology

3. Discuss urticaria in terms of:
   - types of clinical presentation
   - pathogenesis
   - histomorphology

4. Compare and contrast the following types of dermatitis
   - contact
   - atopic
   - seborrheic
   - photocnetematous

   in terms of:
   - anatomic site(s) involved
   - clinical presentation
   - etiology/pathogenesis
   - histomorphology
   - clinical course

5. Compare and contrast:
   - erythema multiforme
   - erythema induratum
   - erythema nodosum
in terms of:
  o associated conditions
  o clinical presentation
  o pathogenesis
  o histomorphology

6. Compare and contrast:
   • psoriasis
   • lichen planus
   • lichen simplex chronicus
   in terms of:
     o associated conditions
     o clinical presentation
     o pathogenesis
     o histomorphology

7. Compare and contrast:
   • pemphigus vulgaris
   • bullous pemphigoid
   • dermatitis herpetiformis
   • cutaneous lupus erythematosus
   in terms of:
     o etiology
     o pathogenesis
     o anatomic site(s) affected
     o clinical presentation
     o morphology (light and immunofluorescent microscopic)
     o clinical course

8. Compare and contrast:
   verruca
   molluscum contagiosum
   herpes simplex infection
   acne vulgaris
   impetigo
   tinea
   arthropod assaults
   in terms of:
     o etiology
     o pathogenesis
     o clinical presentation
     o cutaneous structure(s) involved
     o histomorphology

9. Compare and contrast:
   • systemic sclerosis (scleroderma)
   • CREST syndrome
   • systemic lupus erythematosus (SLE)
   • discoid lupus erythematosus (DLE)
   in terms of:
     o etiology
     o pathogenesis
     o clinical cutaneous manifestations
     o morphology (light and immunofluorescent microscopic)
     o clinical course/complications
10. Compare and contrast:
   • lentigo simplex
   • lentigo senilis (solar lentigo)
   • lentigo maligna
   in terms of:
     o etiopathogenesis
     o age at presentation
     o clinical appearance
     o histomorphology
     o clinical course

11. Compare and contrast:
   • seborrheic keratosis
   • actinic keratosis
   • squamous cell carcinoma
   • keratoacanthoma
   • basal cell carcinoma
   in terms of:
     age at presentation
     anatomic site(s)
     etiology/pathogenesis
     clinical presentation
     associated syndrome(s)
     histomorphology
     predisposing lesion(s)
     biologic behavior

12. Discuss:
   • basal cell nevus syndrome
   • dysplastic nevus (BK mole) syndrome
   in terms of:
     o genetics
     o clinical manifestations

13. Compare and contrast the following types of nevocellular nevi:
   congenital
   junctional
   compound
   intradermal
   spindle and epithelioid cell (Spitz)
   blue
   halo
   dysplastic
   in terms of:
     o clinical presentation (including age)
     o histomorphology
     o clinical significance

14. Compare and contrast the following types of malignant melanoma:
   • lentigo maligna melanoma
   • superficial spreading melanoma
   • nodular melanoma
   • acral lentiginous melanoma
   in terms of:
     o age at presentation
     o etiopathogenesis
     o clinical morphology
     o microscopic morphology
     o staging criteria (Clark and Breslow)
     o clinical course
     o prognosis
15. Discuss the following skin tumors (i.e., masses):
   - cutaneous cysts
   - adnexal (appendage) tumors
   - Merkel cell carcinoma
   - fibrous histiocytoma
   - dermatofibrosarcoma protuberans
   - nevus flammeus
   - hemangioma
   - angiosarcoma
   - Kaposi sarcoma
   - metastatic neoplasia

   in terms of:
   - etiopathogenesis
   - clinical presentation
   - histomorphology
   - clinical course

16. Compare and contrast:
   - epidermolysis bullosa
   - porphyria

   in terms of:
   - etiology
   - pathogenesis
   - clinical presentation
   - histomorphology

17. Discuss the cutaneous manifestations of the following diseases:
   - leukemia
   - malignant lymphoma
   - Langerhans cell histiocytosis
   - mastocytosis
   - sarcoidosis
   - diabetes mellitus
   - acanthosis nigricans
   - xeroderma pigmentosum
   - neurofibromatosis
   - acquired immunodeficiency syndrome (AIDS)

   in terms of:
   - clinical presentation
   - histomorphology
   - associated visceral diseases
   - clinical course
92 – BONES, JOINTS, AND SOFT TISSUE

The student will be able to:

1. Define and use in proper context:
   - alkaline phosphatase
   - Brodie abscess
   - callus
   - cancellous bone
   - chondrocyte
   - triangle
   - cortical
   - bone
diaphyseburnatione
   - piphysis
   - Felty syndrome Heberden node involucrum lamellar bone metaphysis osteoblast osteocalcin osteoclast osteocyte
   - osteoid osteomalacia osteopenia pannus Pott disease sequestrum synarthrosis synovium tophus woven bone

2. Discuss the following hereditary disorders, in terms of pathogenesis, morphology, and clinical presentation:
   - achondroplasia osteochondromatosis
   - osteopetrosis enchondromatosis
   - osteogenesis imperfecta

3. Describe the morphologic sequence of normal bone growth, as well as of repair following fracture of a long bone. Indicate the way(s) in which age, mobility, nutritional state, and infection influence the repair process.

4. Discuss the following non-neoplastic bone disorders, in terms of etiology, pathogenesis, morphology, and clinical findings and course:
   - osteoporosis renal osteodystrophy
   - Paget disease osteonecrosis
   - hyperparathyroidism osteomyelitis

5. Describe the following tumors (i.e., masses) of bone, joint, and soft tissue:
   - multiple myeloma primitive neuroectodermal tumor (PNET)
   - nonossifying fibroma ganglion
   - fibrous dysplasia synovial cyst
   - bone cysts (solitary and aneurysmal) pigmented villonodular synovitis
   - osteoma nodular fasciitis
   - osteoid osteoma myositis ossificans
   - osteoblastoma fibromatosis
   - osteochondroma fibrosarcoma
   - chondroma malignant fibrous histiocytoma
   - chondroblastoma lipoma
   - chondromyxoid fibroma liposarcoma
   - osteosarcoma rhabdomyosarcoma
   - chondrosarcoma leiomyoma
   - giant cell tumor of bone leiomyosarcoma
   - Ewing sarcoma synovial sarcoma
   - metastatic malignancy to bone

   in terms of:
   - biology (neoplastic vs. nonneoplastic, benign vs. malignant)
   - age distribution
   - etiology and pathogenesis
   - cell type and site of origin

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6. Compare osteoarthritis (degenerative joint disease) and rheumatoid arthritis, in terms of:
   - age and sex incidence
   - laboratory findings
   - etiology
   - morphologic findings
   - pathogenesis
   - clinical findings and course

7. Discuss the following disorders:
   - ankylosing spondylitis
   - infectious arthritis
   - Reiter syndrome
   - gout
   - psoriatic arthritis
   - calcium pyrophosphate crystal deposition disease
   - juvenile rheumatoid arthritis
   - in terms of:
     - age and sex incidence
     - etiology
     - pathogenesis
     - findings (laboratory, morphologic, clinical)
     - clinical course
93 - SKELETAL MUSCLE

The student will be able to:

1. Define and use in proper context:
   - arthrogryposis
   - chromatolysis
   - dermatomyositis
   - dystrophin
   - dystrophy
   - fasciculation
   - fiber type grouping
   - fibrillation
   - floppy infant syndrome
   - Gower maneuver
   - hypotonia
   - myopathy
   - myotonia
   - nemaline rod
   - neuropathy
   - pseudohypertrophy
   - rhabdomyolysis
   - ring fiber
   - target fiber
   - type I fiber
   - type II fiber
   - Werdnig-Hoffmann disease

2. Describe the structural features of normal skeletal muscle in terms of:
   - gross morphology
   - light microscopic appearance
   - electron microscopic appearance
   - histochemistry

3. Describe proper skeletal muscle biopsy procedure, in terms of:
   - choice of site
   - biopsy technique
   - techniques of fixation, processing, staining
   - common artifacts seen
   - limitations

4. Describe the neuromuscular apparatus, and list disease processes and histopathologic findings of diseases affecting the following components:
   - neuron
   - myelin
   - axon
   - neuromuscular junction
   - muscle
   - blood vessel
   - supporting tissue

5. Discuss the utility of the following:
   - clinical evaluation
   - electromyography
   - serum levels of:
     - creatine kinase (CK)
     - aldolase
     - aspartate aminotransferase (AST)
   - muscle biopsy
   - in the diagnosis of:
     - neurogenic disorders
     - dystrophic myopathies
     - inflammatory myopathies
     - congenital myopathies
     - vacuolar myopathies
     - metabolic myopathies

6. Discuss the following reactions of skeletal muscle:
   - atrophy
   - inflammatory infiltrates
   - fiber type grouping
   - perifascicular atrophy

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segmental necrosis  
vacuolation  
rhabdomyolysis  
myophagocytosis  

in the context of:
  - neurogenic influence on muscle  
  - degenerative changes in muscle  
  - reparative processes in muscle

7. Compare and contrast the following types of skeletal muscle disorders:

<table>
<thead>
<tr>
<th>Neurogenic disorders</th>
<th>Congenital myopathies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dystrophic myopathies</td>
<td>Endocrine myopathies</td>
</tr>
<tr>
<td>Inflammatory myopathies</td>
<td>Toxic myopathies</td>
</tr>
<tr>
<td>Vacuolar myopathies</td>
<td>Metabolic myopathies</td>
</tr>
</tbody>
</table>

in terms of:
  - etiology  
  - pathogenesis (including target cell affected)  
  - clinical presentation  
  - histopathologic findings  
  - prognosis

8. Compare and contrast the following types of muscular dystrophy:

- Duchenne  
- Becker  
- Limb girdle  
- Myotonic

in terms of:
  - mode of inheritance  
  - morphologic features  
  - age and sex incidence  
  - clinical manifestations  
  - muscles primarily involved  
  - prognosis  
  - pathogenesis

9. Discuss the following disorders involving skeletal muscle:

- Spinal muscular atrophy  
- Glycogenoses  
- Myasthenia gravis  
- Lambert-Eaton myasthenic syndrome  
- AIDS-associated myopathy  
- Viral myositis  
- Trichinosis  
- Cysticercosis  
- Polymyositis

in terms of:
  - etiology  
  - pathogenesis  
  - morphology  
  - clinical features
94 - NERVOUS SYSTEM

The student will be able to:

1. Define and use in proper context:
   agyria etat marbre neurofibrillary tangle
   AIDS dementia gemistocytic neuronophagia
   Alzheimer type II cell Gitter cell neuropathy
   amyloid angiopathy gliosis Nissl substance
   anencephaly glomeruloid body open head injury
   Antoni A pattern granulovacuolar degeneration ophthalmoplegia
   Antoni B pattern herniation pachygyria
   arrhinencephaly Hirano body pachymeningitis
   aseptic meningitis holoprosencephaly peripheral nervous system (PNS)
   astrocytosis hydropnencephaly phakomatosis
   ataxia hydrocephalus Pick body
   Bergmann gliosis hydrocephalus ex vacuo pleiocytosis
   central nervous system (CNS) inborn error of metabolism polymicrogyria
   cerebral kernicterus porencephaly
   cerebral palsy (CP) lacunar infarct presenilin
   cerebritis lacunar state prion
   cerebrospinal fluid (CSF) Lafora body prion protein (PrP)
   cerebrovascular accident (CVA) laminar necrosis radiculitis
   choreiform leptomeningitis Rosenthal fiber
   chromatolysis leukoencephalopathy rosette/pseudorosette
   closed head injury leukomalacia satellitosis
   concussion Lewy body schizencephaly
   contrecoup injury lissencephaly spina bifida
   contusion "mad cow" disease spongiform
   corpora amylacea megalencephaly status marmoratus
   coup injury meningitis storage disease
   cranial meningocoe stroke
   dementia meningoencephalitis syringomyelia
   demyelination meningomyelocele tabes dorsalis
   Duret hemorrhage meningovasculitis transient ischemic attack (TIA)
   dysmyelination microcephaly uleygia
   encephalitis multiple sclerosis plaque von Recklinghausen disease
   encephalocoele myelitis Wallerian degeneration
   encephalomyelitis Negri body watershed (border) zone
   encephalopathy neuritic plaque
   ependymitis neuritis

2. Describe the following CNS cells:
   neurons microglia
   astrocytes choroid plexus epithelial cells
   oligodendrocytes schwann cells
   ependymal cells

   in terms of:
   o derivation
   o morphology
   o function
3. Compare CNS myelin with PNS myelin, in terms of:
   • cells of elaboration
   • structure and function
   • reactions to injury and destruction
   • regenerative potential

4. Discuss normal CSF in terms of:
   • sites of formation
   • circulation patterns
   • sites of absorption
   • pressure
   • glucose and protein levels
   • cell types present

5. Describe the blood-brain barrier (BBB) in terms of:
   • physiologic definition
   • anatomic counterparts
   • morphologic alterations
   • areas of absence

6. Describe the following processes:
   - central chromatolysis
   - neuronophagia
   - axonal swelling
   - ischemic neuronal necrosis
   - gliosis
   - liquefactive necrosis
   - coagulative necrosis
   - caseous necrosis
   - nerve regeneration
   - segmental demyelination
   - dysmyelination

   in terms of:
   o etiology
   o pathogenesis
   o morphology
   o clinicopathologic significance

7. Compare and contrast the following types of cerebral edema:
   • cytotoxic
   • vasogenic
   • interstitial

   in terms of:
   o mechanism of formation
   o morphology
   o clinicopathologic significance

8. Compare and contrast the following types of herniation of the brain:
   • subfalcine (cingulate gyrus)
   • transtentorial (uncal)
   • foraminal (tonsillar)

   in terms of:
   o etiopathogenesis
   o morphology
   o clinical findings
   o sequelae (morphologic and clinical)
9. Correlate destructive lesions in specific areas of the CNS with corresponding functional consequences

10. Compare and contrast:
    - communicating hydrocephalus
    - non-communicating hydrocephalus
    - hydrocephalus *ex vacuo*

    in terms of:
    - etiopathogenesis
    - morphologic findings
    - clinical manifestations

11. Discuss the following congenital abnormalities:
    - anencephaly
    - Chiari type I malformation
    - Chiari type II (Arnold-Chiari) malformation
    - Dandy-Walker malformation
    - holoprosencephaly
    - porencephaly
    - encephalocele
    - spina bifida/meningomyelocele
    - lissencephaly
    - polymicrogyria
    - schizencephaly
    - agenesis of corpus callosum
    - syringomyelia (syrinx)
    - hydromyelia

    in terms of:
    - relative frequency
    - gestational age of occurrence
    - etiology
    - pathogenesis
    - morphology
    - clinical features

12. Compare and contrast the following inborn errors of metabolism:
    - Tay-Sachs disease
    - Niemann-Pick disease
    - Gaucher disease
    - mucopolysaccharidoses
    - Krabbe disease
    - metachromatic leukodystrophy
    - adrenoleukodystrophy
    - Leigh disease
    - Canavan disease
    - Wilson disease
    - galactosemia
    - phenylketonuria (PKU)

    in terms of:
    - genetics
    - metabolic abnormalities
    - effects on neurons and glia
    - morphology
    - clinical features

13. Describe the effects of hypoxia/ichemia on the late gestational/perinaral brain, including the pathophysiologic mechanisms underlying the following:
    - hydranencephaly
    - multicystic encephalopathy
    - germinal matrix hemorrhage
    - ulegyria
    - periventricular leukomalacia
    - cerebral palsy (CP)
    - etat marbre (status marmoratus)
14. Discuss the following processes:
   - cerebral contusion
   - diffuse axonal injury
   - epidural hematoma
   - subdural hematoma
   - subarachnoid hemorrhage
   - intracerebral hemorrhage

   in terms of:
   - etiology
   - pathogenesis
   - morphology
   - clinical course and prognosis

15. Compare and contrast the following types of central nervous system aneurysms:
   - saccular ("berry")
   - atherosclerotic
   - Charcot-Bouchard
   - mycotic

   in terms of:
   - incidence
   - etiology
   - pathogenesis
   - anatomic distribution
   - morphology
   - clinical presentation
   - complications

16. Compare and contrast the following types of CNS vascular malformations:
   - arteriovenous malformation
   - cavernous angioma
   - capillary telangiectasia

   in terms of:
   - anatomic location
   - morphology
   - clinical manifestations
   - complications

17. List the ways in which hypertension may cause destruction of brain tissue

18. Compare and contrast:
   - hypertensive encephalopathy
   - hypoxic encephalopathy
   - multiinfarct dementia

   in terms of:
   - etiology
   - pathogenesis
   - morphology
   - clinical features and course

19. Compare and contrast the following types of CNS infarct:
   - nonhemorrhagic (pale, anemic)
   - hemorrhagic (red)
   - border zone (watershed)
• incomplete
• spinal cord

in terms of:
  o predisposing conditions
  o etiology
  o pathogenesis
  o morphologic evolution
  o clinical features
  o complications

20. Compare and contrast the clinical presentations of infarcts of areas supplied by the following arteries:
• middle cerebral
• vertebrobasilar
• internal carotid

21. Describe the interrelationship between hypotension and watershed infarcts

22. Explain the basis of the reperfusion theory of causation of hemorrhagic cerebral infarcts

23. Compare and contrast:
• skull fracture
• parenchymal brain injury
• vascular brain injury

in terms of:
  o mechanisms
  o clinicopathologic effects

24. Compare and contrast open vs. closed head injury, in terms of complications and prognosis

25. Compare and contrast the following neuropathologic entities:
• pyogenic meningitis
• tuberculous/mycobacterial meningoencephalitis
• viral meningoencephalitis
• fungal meningitis
• neurosyphilis
• neuroborreliosis (Lyme disease)
• rickettsial infection
• protozoal infection

in terms of:
  o predisposing factors
  o etiology
  o pathogenesis
  o morphology
  o cerebrospinal fluid findings
  o clinical features and course

26. List the common bacterial agents of acute pyogenic meningitis, and the age group that each most frequently affects

27. Compare and contrast:
• brain abscess
• subdural empyema
• extradural abscess
in terms of:
  o etiology
  o usual locations
  o morphologic components
  o pathophysiologic consequences

28. Discuss the following types of viral meningoencephalitis:
  • arboviral encephalitides
  • herpes simplex viral encephalitis
  • varicella-zoster viral encephalitis
  • cytomegalovirus (CMV) encephalitis
  • poliomyelitis
  • rabies
  • human immunodeficiency virus (HIV) infections
    HIV meningoencephalitis (subacute encephalitis)
    vacuolar myelopathy
  • progressive multifocal leukoencephalopathy (PML)
  • subacute sclerosing panencephalitis (SSPE)

in terms of:
  o predisposing factors
  o epidemiology
  o etiology
  o pathogenesis
  o morphologic features
  o clinical manifestations
  o prognosis

29. Discuss the following prion diseases:
  • Creutzfeldt-Jakob disease (CJD)
  • variant CJD (vCJD, "mad cow" disease)
  • kuru
  • scrapie

in terms of:
  o etiology
  o pathogenesis
  o mode of transmission
  o host immune response
  o morphologic features
  o clinical manifestations and course

30. Compare and contrast the following degenerative diseases:
    Alzheimer disease          olivopontocerebellar atrophy
    Pick disease               Huntington disease
    Parkinson disease          spinocerebellar degeneration
    progressive supranuclear palsy amyotrophic lateral sclerosis (ALS)
    corticobasal degeneration  Friedreich ataxia
    striatonigral degeneration ataxia-telangiectasia
    Shy-Drager syndrome
31. Describe multiple sclerosis (MS) in terms of:
   - geographic distribution
   - etiology
   - age at onset
   - distribution of lesions
   - morphology
   - clinical course

32. Discuss the following nervous system disorders:
   - kernicterus
   - acute ethanol intoxication
   - chronic ethanol abuse
   - methanol poisoning
   - carbon monoxide poisoning
   - radiation damage
   - central pontine myelinolysis (CPM)

33. Discuss the following nutritional disorders:
   - Wernicke encephalopathy
   - Korsakoff psychosis
   - neuropathic beriberi
   - subacute combined degeneration

34. Explain the concepts of benignity vs. malignancy, as applied to central nervous system neoplasms

35. Compare and contrast the following neoplasms:
   - colloid cyst of third ventricle
   - choroid plexus papilloma
   - astrocytoma
   - anaplastic astrocytoma
   - pilocytic astrocytoma
   - fibrillary astrocytoma
   - glioblastoma multiforme
   - oligodendroglioma
   - ependymoma
   - neuroblastoma
   - ganglioneuroblastoma
   - ganglioneuroma
   - medulloblastoma
   - ganglioglioma
   - meningioma
   - hemangioblastoma
   - chordoma
   - germinoma
   - pineoblastoma
   - pineocytoma
   - craniopharyngioma
   - primary CNS lymphoma
   - neurofibroma
   - plexiform neurofibroma
schwannoma (neurilemoma) metastatic malignancy to CNS
malignant peripheral nerve sheath tumor
in terms of:
- genetics
- relative frequency
- age distribution
- etiopathogenesis
- common sites of origin
- radiologic findings
- morphology
- clinical features
- prognosis

36. Compare and contrast the following phakomatoses:
- neurofibromatosis type 1
- neurofibromatosis type 2
- tuberous sclerosis
- Sturge-Weber syndrome
- ataxia-telangiectasia
- von Hippel-Lindau syndrome
in terms of:
- incidence
- genetics
- morphologic manifestations
  - CNS
  - PNS
  - skin
  - visceral
- clinical features and course

37. Discuss the following disorders of the PNS:
- myasthenia gravis
- Guillain-Barré syndrome
- herpes zoster (shingles)
- hereditary neuropathies
- diabetic neuropathy
- AIDS-associated peripheral neuropathy
- hereditary motor & sensory neuropathy (HMSN)
  - type I [Charcot-Marie-Tooth disease (CMT) 1]
  - type III (Dejerine-Sottas disease)
- Refsum disease
- paraproteinemia-associated neuropathy
- spinal muscular atrophy
- compression neuropathy
- traumatic neuroma
- plantar (Morton) neuroma
in terms of:
- etiology (including genetics, if applicable)
- pathogenesis
- morphology
- clinical findings
95 – SPECIAL SENSE ORGANS

The student will be able to:

1. Define and use in proper context:
   - arcus senilis
   - arteriovenous nicking
   - astigmatism
   - blepharitis
   - blepharochalasis
   - blindness
   - buphthalmos
   - cataract
   - chalazion
   - cherry-red macula
   - cholesteatoma
   - coloboma
   - cotton-wool spots
   - cyclitic membrane
   - dacryocystitis
   - deafness
   - diabetic retinopathy
   - background
   - proliferative
   - drusen
   - ectropion
   - emmetropia
   - entropion
   - epiphora
   - esophoria
   - esotropia
   - exophthalmos
   - glaucoma
   - Goldenhar syndrome
   - hordeolum
   - iris bombe
   - iritis
   - keratic precipitate
   - keratitis
   - keratoconus
   - keratalgia
   - keratopathy
   - leukoma
   - mastoiditis
   - myopia
   - myringitis
   - nebuła
   - ophthamoplegia
   - otosclerosis
   - papilledema
   - phakomatosis
   - photophobia
   - phthisis bulbi
   - pinguecula
   - presbycusis
   - presbyopia
   - proptosis
   - pterygium
   - scotoma
   - sympathetic ophthalmia
   - synechia
   - tinnitus
   - uveitis
   - vertigo
   - xanthelasma
   - xerophthalmia

2. Discuss the anatomy of the orbit in general

3. Describe ocular findings in the following congenital conditions:
   - trisomy 13
   - trisomy 21
   - congenital rubella
   - congenital syphilis

4. Discuss the following inflammatory conditions of the eye and orbit:
   - conjunctivitis
     - acute (pink eye)
     - chronic
     - inclusion
   - trachoma
   - ophthalmia neonatorum
   - blepharitis
   - hordeolum
   - chalazion
   - pseudotumor
   - dacryocystitis
   - keratitis
   - iridocyclitis
   - granulomatous inflammation
   - sympathetic ophthalmia (uveitis)

   in terms of:
   - etiology (including most common organism, if applicable)
   - pathogenesis
   - morphology
   - natural course
5. Discuss the three major types of corneal stromal dystrophies, in terms of:
   • genetics
   • histomorphology
   • clinical course

6. Compare and contrast the following types of glaucoma:
   • congenital
   • primary angle-closure
   • secondary angle closure
   • open-angle
   in terms of:
     o etiology
     o morphology
     o clinical course

7. Discuss the following degenerative conditions:
   band keratopathy  pinguecula
   blepharochalasis   pterygium
   entropion          arcus senilis
   ectropion          keratoconus
   xanthelasma        keratomalacia
   in terms of:
     o etiopathogenesis
     o morphology
     o clinical significance

8. Discuss cataracts with regard to:
   • associated diseases
   • etiology
   • classification
   • morphology

9. Discuss the following diseases:
   • retinopathy of prematurity (retrolental fibroplasia)
   • retinitis pigmentosa
   • macular degeneration
   • retinal detachment
   in terms of:
     o etiology
     o morphology
     o ophthalmoscopic findings
     o clinical course

10. Compare and contrast the following vascular disorders:
    • central retinal artery occlusion
    • central retinal vein occlusion
    • hypertensive retinopathy
    • arteriosclerotic retinopathy
    • diabetic retinopathy
      background
      proliferative
in terms of:
  o incidence
  o etiopathogenesis
  o histomorphology
  o ophthalmoscopic findings
  o clinical course

11. State the ocular lesions associated with:
  • vitamin A deficiency
  • methanol toxicity

12. List the most frequent primary and metastatic malignancies of the:
  • lid
  • conjunctiva
  • uvea (uveal tract)
  • optic nerve

13. Discuss the following malignancies of the eye:
  • malignant melanoma
  • retinoblastoma
  • metastatic malignancy
  in terms of:
    o genetics
    o incidence (including age, race)
    o sites of origin
    o clinical presentation
    o morphology
    o prognosis

14. Discuss the following diseases of the optic nerve:
  • papilledema
  • optic neuritis
  • optic atrophy
  in terms of:
    o etiopathogenesis
    o morphology
    o prognosis

15. State:
  • the two most common causes of blindness in the world
  • the four most common causes of blindness in the United States

16. Describe the following congenital anomalies:
  • preauricular pit
  • preauricular tag
  • branchial cleft cyst
  in terms of:
    o embryonic developmental pathogenesis
    o morphologic features
    o clinical features
17. Discuss the following diseases of the external ear:
   - cauliflower ear
   - otitis externa
   - chondrodermatitis nodularis chronicis helicis
   - keloid
   - myringitis
   - aural polyps
   - neoplasms

   in terms of:
   - etiology
   - morphology
   - clinical course

18. Discuss the following diseases of the middle ear:
   - otitis media
   - cholesteatoma
   - chemodectoma

   in terms of:
   - etiopathogenesis
   - morphology
   - clinical course

19. Discuss the following diseases of the inner ear:
   - labyrinthitis
   - otosclerosis
   - Meniere disease
   - acoustic trauma
   - endolymatic duct tumor
   - acoustic schwannoma ("neuroma")

   in terms of:
   - associated syndromes (if any)
   - age incidence
   - etiopathogenesis
   - morphology
   - clinical features