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# ALL INDIA INSTITUTE OF MEDICAL SCIENCES (AIIMS RAJKOT)

## MBBS (UG) CURRICULUM PATHOLOGY



## Syllabus for 2<sup>nd</sup> Professional MBBS PATHOLOGY

### **OBJECTIVES**

A MBBS student at the end of training in Pathology will be able to:

1. Understand the concepts of cell injury and changes produced thereby in

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- different tissues and organs and the body's capacity for healing.
2. Understand the normal homeostatic mechanisms, the derangements of these mechanism and the effects on human systems.
  3. Understand the etiopathogenesis, the pathological effects and the clinico-pathological correlation of common infectious and non-infectious diseases.
  4. Understand the concept of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
  5. Correlate normal and altered morphology (gross and microscopic) of different organ systems in different diseases to the extent needed for understanding of disease processes and their clinical significance.
  6. Have a knowledge of common immunological disorders and their resultant effects on the human body.
  7. Have an understanding of the common haematological disorders and the investigations necessary to diagnose them and determine their prognosis.
  8. Perform and interpret in a proper manner the basic clinico-pathological procedures.
  9. Know the principles of collection, handling and dispatch of clinical samples from patients in a proper manner.

## **COURSE CONTENTS**

### **(A) General Pathology**

#### **1. Introduction to Pathology**

#### **2. Cell Injury**

- a) Cell injury: Causes and Mechanism: Ischemic, Toxic.
- b) Reversible cell injury : Types, morphology: Swelling, vacuolation, hyaline, fatty change.
- c) Irreversible cell injury : Types of Necrosis

#### **3. Amyloidosis and Calcification**

- a) Calcification : Dystrophic and Metastatic
- b) Amyloidosis : classification, Pathogenesis, Morphology

#### **4. Inflammation and Repair**

- a) Acute inflammation : Features, causes, vascular and cellular events.
- b) Morphologic variants of acute inflammation
- c) Inflammatory cells and Mediators
- d) Chronic inflammation : Causes, types, nonspecific and Granulomatous with examples
- e) Wound healing by primary and secondary union, factors promoting and delaying the process

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- f) Healing at specific sites including bone healing

## **5. Circulatory Disturbances**

- a) Edema : Pathogenesis and types
- b) Chronic venous congestion : Pathogenesis and changes in Lung, Liver, Spleen
- c) Thrombosis and Embolism : Formation, Fate and Effects
- d) Infarction : Types, common sites, Gangrene
- e) Shock : Pathogenesis, Types, Morphologic changes
- f) Derangements of Fluid and electrolyte imbalance

## **6. Growth Disturbances and Neoplasia**

- a) Atrophy, Hypertrophy, Hyperplasia, Hypoplasia, Metaplasia, Malformation, Agenesis, Dysplasia
- b) Neoplasia : Classification, Histogenesis, Biologic Behaviour : Benign and Malignant; Carcinoma and Sarcoma
- c) Malignant Neoplasia : Grades and Stages, Local and distant spread
- d) Carcinogenesis : Environmental carcinogens, chemical, viral, occupational, Heredity and cellular oncogenes
- e) Tumour and Host Interactions : Systemic effects including paraneoplastic syndromes, Tumor immunology
- f) Laboratory diagnosis : Cytology, Biopsy, Tumor markers

## **7. Infectious Diseases**

- a) Tuberculosis, Leprosy and Syphilis
- b) AIDS : Aetiology, modes of transmission, diagnostic procedures and handling of infected material and health education.

## **8. Miscellaneous Disorders**

- a) Genetic diseases
- b) Disorders of Pigment and Mineral metabolism such as bilirubin, melanin, hemosiderin

## **(B) Systemic Pathology**

### **1. Cardiovascular Pathology**

- a) Rheumatic fever and Rheumatic Heart Disease : Pathogenesis, Morphology and effects
- b) Infective Endocarditis : Causes, Pathogenesis and Morphology

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- c) Atherosclerosis and Ischemic Heart Disease; Myocardial Infarction
  - d) Hypertension and Hypertensive Heart Disease
  - e) Pericarditis and other pericardial diseases
  - f) Cardiomyopathy

## **2. Respiratory Pathology**

- a) Inflammatory diseases of bronchi : chronic bronchitis, bronchiectasis & chronic obstructive lung disease
- b) Pneumonias : Lobar, Broncho, Interstitial
- c) Pulmonary suppuration including lung abscess : Etiopathogenesis and Morphology
- d) Pulmonary Tuberculosis : Primary and Secondary, Morphologic types including pleuritis
- e) Emphysema : Types, pathogenesis
- f) Tumors : Benign; Carcinoid, Malignant; Squamous cell, Oat cell, Adeno, etiopathogenesis.
- g) Occupational lung disorders : anthracosis, silicosis, asbestosis, mesothelioma

## **3. Urinary Tract Pathology**

- a) Renal structure, basis of impaired function, urine analysis
- b) Glomerulonephritis : Classification, Primary Proliferative and Non Proliferative
- c) Secondary Glomerulonephritis : SLE, Purpura, Polyarteritis, Amyloidosis, Diabetes
- d) Nephrotic Syndrome
- e) Acute Renal Failure : Acute tubular and cortical necrosis
- f) Progressive renal failure and end stage renal disease
- g) Pyelonephritis, Reflux Nephropathy, Interstitial Nephritis
- h) Renal tumors : Renal cell carcinoma, Nephroblastoma
- i) Renal vascular disorders, kidney changes in Hypertension
- j) Urinary bladder : cystitis, carcinoma

## **4. Pathology of the Gastro-Intestinal Tract**

- a) Oral Pathology : Leukoplakia; Carcinoma oral Cavity and Esophagus
- b) Salivary gland tumors : Mixed, Adenoid cystic, Warthin's
- c) Peptic ulcer : Etiopathogenesis and complications; gastritis: types
- d) Tumors of stomach : Benign; Polyp, Leiomyoma, Malignant; Adenocarcinoma,

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Lymphoma

- e) Inflammatory bowel disorders.
- f) Tumours and Tumor like condition of the large and small intestine : Polyps, Carcinoid, Carcinoma, Lymphoma
- g) Pancreatic tumors : Endocrine, Exocrine and periampullary

**5. Hematopathology**

- a) Constituents of blood and bone marrow, Regulation of hematopoiesis
- b) Anaemia : classification and clinical features; clinical and lab. approach to diagnosis
- c) Nutritional anaemias : Iron deficiency anaemia, Folic Acid/Vit B 12 deficiency anaemia including pernicious anaemia
- d) Hemolytic Anaemias : Classification and investigation
- e) Hereditary hemolytic anaemias : Thalassemia, sickle cell anaemia
- f) Hereditary hemolytic anaemias : hereditary spherocytosis, G-6-PD deficiency
- g) Hemostatic disorders : Platelet deficiency; ITP, Drug induced, secondary
- h) Coagulopathies : Coagulation factor deficiency; hemophilia, DIC and anticoagulant control
- i) Leukocytic disorders : Leukocytosis, leukopenia, leukemoid reaction
- j) Acute and chronic Leukemia : Classification, Diagnosis
- k) Multiple myeloma and dysproteinemias
- l) Blood transfusion : grouping and cross matching, untoward reactions, transmissible infections including HIV and hepatitis
- m) Blood groups
- n) Indications of blood transfusion
- o) Blood component therapy
- p) Transfusion reactions

**6. Liver and Biliary Tract Pathology**

- a) Jaundice : Types, Pathogenesis and Differentiation
- b) Hepatitis : Acute and Chronic, Etiology, Pathogenesis and Pathology
- c) Cirrhosis: Etiology, Postnecrotic, Alcoholic, Metabolic, Pathology, Morphology (Macronodular, Micronodular, Mixed), complications
- d) Tumors of Liver : hepatocellular and metastatic carcinoma, tumor markers
- e) Diseases of the gall bladder : Cholecystitis, Cholelithiasis, Carcinoma

**7. Lymphoreticular System**

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- a) Hodgkin's and Non-Hodgkin's Lymphomas : Classification, Morphology
  - b) Diseases of the spleen : Splenomegaly causes and effects

#### 8. **Reproductive System**

- a) Diseases of cervix : cervicitis, cervical carcinoma, etiology, types and cytologic diagnosis
- b) Diseases of uterus : endometritis, endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumors
- c) Ovarian & Trophoblastic tumors.
- e) Diseases of the breast : Mastitis, abscess, Fibrocystic disease, Neoplastic lesions :  
Fibroadenoma, Carcinoma, Phyllodes tumor
- f) Prostate : Nodular Hyperplasia and Carcinoma
- g) Ovarian and testicular tumors

#### 9. **Osteopathology**

- a) Osteomyelitis : Acute, Chronic, Tuberculous, Mycetoma
- b) Metabolic bone disease: Rickets/Osteomalacia, Osteoporosis, Hyperparathyroidism
- c) Tumors : Primary, Osteosarcoma, Osteoclastoma, Ewing's Sarcoma, Chondrosarcoma; Metastatic

#### 10. **Endocrine Pathology**

- a) Diabetes Mellitus : Types, Pathogenesis, pathology
- b) Nonneoplastic lesions of thyroid : Iodine deficiency goiter, autoimmune thyroiditis, thyrotoxicosis, myxedema
- c) Tumors of thyroid – adenoma, carcinoma : Papillary, Follicular, Medullary, Anaplastic

#### 11. **Neuropathology**

- a) Structural Organization, specific cell types, and reaction patterns
- b) Inflammatory disorders : Pyogenic and tuberculous meningitis, brain abscess, tuberculoma
- c) CNS tumors – primary : glioma and meningioma (excluding histopathology) and metastatic
- d) CSF and its disturbances : cerebral edema, raised intracranial pressure

#### (C) **Practicals**

- a) Identify and interpret the gross and/or microscopic features of common

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- disorders as given above.
- b) Perform with accuracy and reliability basic haematological procedures such as haemoglobin estimation, total and differential WBC count and peripheral blood smear staining, examination and report.
  - c) Calculate the indices and interpret the relevant significance.
  - d) Perform a complete examination of the urine and detect any abnormalities
  - e) Grouping of blood, HB Estimation
  - f) Collect and dispatch clinical samples from patients in a proper manner
  - g) Interpret abnormal biochemical laboratory values of common diseases.

### **TEACHING AND LEARNING METHODOLOGY**

Department stresses on teaching basic fundamentals of the disease process and the applied aspects relevant to the clinical subjects.

#### **General Pathology**

Taught with the help of Didactic lectures on specific topics, followed by Practicals pertaining to that topic. Besides microscopic examination, fresh specimens obtained at autopsy or surgical operations are shown.

#### **Systemic Pathology**

The following tools are employed:

- i) Didactic lectures: discussing a particular topic at length in an one hour lecture
- ii) Paraclinical seminars: are conducted by a combined team of pathologist and a clinician who discuss the pathophysiology and clinical aspects of the particular disease entity.
- iii) Case studies: The significant and common diseases are discussed in the form of a representative clinical case in which the clinical features, the course of the disease in that particular patient and relevant laboratory investigations are discussed by a clinical faculty in an interactive manner in small groups. This is followed by demonstration of the gross and microscopic features of the disease in that case by the pathologist. This is followed by clinico-pathologic correlation.
- iv) Practical  
Deals with demonstration of gross, and/or microscopic features of the disease entities.
- v) Clinical case demonstration

Patients of a particular disease are demonstrated to the students by a clinical faculty in the ward, discussing the clinical features in the patient which provides them a real-life experience of studying a disease as it presents in a patient.

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By a combination of above modalities/tools, student learns applied aspects of the disease process.

**TEXT-BOOKS RECOMMENDED**

1. Robbin's Pathologic Basis of Diseases, 11<sup>th</sup> Edition, Kumar, Abbas, Aster, ELSEVIER Publication
2. Essentials of Clinical Pathology by Shirish Kawthalkar, 2<sup>nd</sup> Edition, JAYPEE Publication
3. Essential of Rubin's Pathology by Emanuel Rubin, Howard M. Reisner 7th edition, Wolters Kluwer
4. Textbook of Pathology by Dr Harsh Mohan, 9<sup>th</sup> edition, JAYPEE Publication
5. Atlas and Textbook of Pathology by Tejinder Singh, 4<sup>th</sup> edition. Avichal Publication
6. Pathology Illustrated by Fiona Roberts, 8<sup>th</sup> edition. ELSEVIER Publication.

**EXAMINATION: As Per Institutional Guidelines**

**Theory Papers** :Comprise of various types of MCQ (Single Response, Multiple True-false, Matching,Reason-Assertion, Multiple Completion), Structured Long Answer Question , Short Answer Questions (SAQ) & Short notes.

**Practicals** :Include Conventional urine examination, Hematology exercises, Histopathology exercise, Blood grouping and Objective StructuredPractical Examination (OSPE),Spotting exercise