

Pathology (Path 211)

1. **Name of Course** : Pathology
2. **Code and Number** : Path 211
3. **Credit Hours** : 10 credit hours, distributed as follows:
6 Hours theoretical
4 Hours Clinical, tutorial and practical
4. **Prerequisites** : Successful completion of the first year of the college of medicine courses.
5. **Intended students** : Students in the second year, College of Medicine.

6. **Course Description:**

The course is divided into general and systemic pathology, general pathology deals with the basic concept of the various disease processes in the body, systemic pathology deals with the disease process affecting various systems and specific organs in the body.

7. **Course objectives:**

Specific course objectives

By the end of the course, the medical student is expected to:

1. Learn the basic principles of disease processes (General Pathology) and to apply these principles to the study of particular diseases in various tissues, organs and systems of the body (Systemic Pathology)
2. Correlate the pathological changes with the clinical picture.
3. Observe and analyse pathology with clinical disciplines and microscopic levels.
4. Appreciate the role of pathology – whether applied or experimental – in medical research.
5. A few students may actually be encouraged to carry out small research projects as electives in the pathology department.

8.

8.1. Summary of course contents:

The course covers the following basic principles on pathology:

A. **General pathology:**

1. Inflammation and repair.
2. Degenerations, infiltration and necrosis.
3. Circulatory disorders.
4. Granulomatous diseases.
5. Neoplasia.
6. Immunopathology.

B. **Systemic Pathology:**

1. Cardiovascular system.
2. Respiratory system.
3. Alimentary system.
4. Hepatobiliary system and pancreas.
5. Urinary system.
6. Genital system.
7. Lymph nodes and lymphoid tissue.
8. Central nervous system.
9. Endocrine system.
10. Bone diseases.

C. **Haematology**

8.2 Details of Content:

The methods of teaching include lectures, practical classes, clinicopathological meetings, and tutorials.

A. **General Pathology:**

Inflammation and repair

1. Definition, causes, and manifestation of inflammation.
2. Local vascular response and chemotaxis.
3. The inflammatory exudates and chemical mediators.

4. Types and fates of acute inflammation.
5. Type and fates of chronic inflammation.
6. Repair and regeneration: Fibrous tissue formation. Healing in skin wounds (mechanism, control factors, impaired wound healing, complications). Healing of bone fracture.

Degeneration, infiltration and necrosis

- 1-2 Fatty, mucoid hyaline and fibrinoid changes.
3. Amyloidosis.
4. Pathological calcification and pigmentation.
5. Glycogen infiltration, disturbances of uric acid and urates.
6. necrosis and gangrene.

Circulatory disorders.

1. Hyperemia, venous congestion.
2. Thrombosis, embolism, infarction.
3. Hemorrhage, shock edema.

Granulomatous diseases

- 1-2. Tuberculosis (General and systemic)
3. Leprosy.
4. Sarcoidosis.
5. Schistosomiasis (general pathology, urinary, intestinal, hepatic).

Disorders of growth

- 1-2 Atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia, carcinoma in-situ.

Neoplasia

- 1-2. Definition, classification, characteristics of benign and malignant tumours.
3. Spread of malignant tumours.
4. Characteristics of carcinomas and sarcomas. Locally malignant tumours with examples.
5. Epithelial tumours, short account of papillomas, adenomas and carcinomas with examples.
6. Connective tissue tumours, muscle tumours, blood vessel tumours, melanocytic tumours.
7. Mixed tumours, hamartomas, teratomas, embryonic tumours.
- 8-9. Etiology of tumours (Carcinogens), theories of tumour formation (Oncogenesis).
10. Effects and complications of benign and malignant tumours.
11. Diagnosis of tumours and tumour markers.

Immunopathology

1. Immune complex diseases (with special reference to glomerulonephritis).
2. Auto-immune diseases.
3. Immunodeficiency diseases.
4. HLA and transplantation.

B. Systemic Pathology:

Cardiovascular system

1. Ischaemic heart disease, myocardial infarction.
2. Hypertension.
3. Rheumatic heart disease.
4. Endocarditis, pericarditis.
5. Vasculitis (Classification, polyarteritis, nodosa, Buerger's disease), aneurysms.
6. Atherosclerosis.

Respiratory system

1. Bronchiectasis, bronchial asthma.
2. Emphysema, pulmonary collapse.
3. The pneumonias.
4. The pneumonioses, pulmonary fibrosis.
- 5-6. Tumours of the upper respiratory tract, and tumours of the lungs.

Alimentary system

1. Tumours of the oral cavity, salivary glands and esophagus.
2. Peptic ulcer.
3. Tumours of the stomach.
- 4-5. Malabsorption (celiac disease, tropical sprue), Crohn's disease.
6. Ulcerative colitis, amebic and bacillary dysenteries.
7. Tumours of the small and large intestines.

Hepatobiliary system and pancreas

1. Hepatitis.
2. Cirrhosis.
3. Tumours of the liver.
4. Diseases of the gall bladder.
5. Diseases of the pancreas.

Urinary system

- 1-2. Glomerulonephritis, nephrotic syndrome.
3. Pyelonephritis.
4. Urinary tract obstruction, urolithiasis.
5. Tumours of the kidney and urinary bladder.

Genital system

1. Carcinoma of the cervix.
2. Endometrial hyperplasia, endometrial carcinoma.
- 3-4. Tumours and cysts of the ovary.
- 5-6. Breast hyperplasia and breast tumours.
7. Prostatic hyperplasia, and prostatic carcinoma.
8. Tumours of the testis.

Lymph nodes and lymphoic tissue

1. Hodgkin's lymphoma.
2. Non-Hodgkin's lymphoma.

Central nervous system

1. Meningitis, encephalitis.
2. Intracranial tumours, causes of space occupying lesions.

Endocrine system

1. Goitre, thyroiditis.
2. Tumours of the thyroid.
3. Tumours of the pituitary, parathyroid and adrenal glands.

Bone diseases

1. Osteomyelitis.
2. Tumours of the bone.

II. Tutorials:

A. Pathology:

Tutorials on relevant topics will be given.

B. Hematology

1. Hematopoiesis, classification of anaemia.
2. Iron deficiency anaemia.
3. introduction to haemolytic anaemia and membranopathies.
4. Enzymopathies.
5. Megaloblastic anaemia.
6. Alpha thalassaemia.
7. Beta-thalassaemia.
8. Sickle cell anaemia and other hemoglobin disorders.
9. Acquired hemolytic anaemia.
10. Blood groups, blood products and blood transfusion.

11. Hereditary and acquired platelets disorders.
12. Hereditary and acquired coagulation disorders.
13. Acute leukaemias.
14. Myeloproliferative disorders.
15. Lympho-proliferative disorders.

III. Histopathology Practicals:

A. General Pathology: Inflammation and repair.

- Fibrinous pericarditis.
- Acute suppurative appendicitis.
- Foreign body reaction (Pilonidal sinus)
- Granulation tissue.

Degeneration and infiltrations

- Fatty change of the liver.
- Amyloidosis of the liver.
- Amyloidosis of the kidney.
- Electron micrograph of amyloid fibrils.
- Dystrophic calcification.

Circulatory disorders

- Chronic venous congestion of the liver.
- Chronic venous congestion of the lung.
- Organizing thrombus.
- Recent myocardial infarction.
- Infarction of the kidney.

Granulomas

- Tuberculosis lymphadenitis.
- Miliary tuberculosis of the lung.
- Leprosy of the skin.
- Lepra bacilli (ZN stain).
- Bilharziasis of the rectum.
- Bilharziasis of the liver.

Hyperplasia

- Cystic hyperplasia of the endometrium.
- Cystic hyperplasia of the breast.

Benign tumours

- Benign melanoma (Nevus)
- Leiomyoma.
- Chondroma.
- Hemangioma.
- Fibroadenoma of the breast.

Malignant tumours.

- Basal cell carcinoma of the skin.
- Squamous cell carcinoma of the skin.
- Adenocarcinoma of the large intestine.
- Mucoïd carcinoma of the large intestine.
- Fibrosarcoma.

B. Systemic pathology

Cardiovascular system

- Acute rheumatic myocarditis.
- Rheumatic valvulitis.
- Coronary atherosclerosis.
- Thromboangitis obliterans (Buerger's disease)

Respiratory system

- Lobar pneumonia.
- Bronchopneumonia.
- Emphysema.
- Squamous carcinoma of the lung.

Alimentary system

- Pleomorphic adenoma of the salivary gland.
- Carcinoid tumour of intestine.
- Crohn's disease of the intestine.
- Ulcerative colitis.

Liver and gall bladder

- Chronic active hepatitis.
- Cirrhosis.
- Hepatocellular carcinoma.
- Chronic cholecystitis.

Urinary system (The Kidney)

- Post-streptococcal glomerulonephritis.
- Electron micrograph of immune deposits.
- Chronic pyelonephritis.
- Renal cell carcinoma.

Female genital system.

- Intraduct carcinoma of the breast.
- Invasive duct carcinoma of the breast.
- Paget's disease of the breast.
- Dermoid cyst of the ovary.

Male genital system

- Hyperplasia of the prostate.
- Seminoma of the testis.

Lymph nodes.

- Hodgkin's disease.
- Non-Hodgkin's lymphoma.

Nervous system

- Meningioma.
- Astrocytoma.

Endocrine system

- Simple nodular goiter.
- Hashimoto's thyroiditis.
- Papillary carcinoma of thyroid.

Bone

- Giant cell tumour of bone.
- Chondrosarcoma.

IV Mounted Museum specimens

A. General Pathology

Inflammation and repair

- Fibrinous pericarditis.
- Bronchiectosis.
- Empyema between lobes of the lung.
- Chronic cholecystitis with bone.
- Acute cholecystitis with stone.
- Pyonephrosis.
- Pyemic abscess of the kidney.
- Brain abscess.
- Acute suppurative appendicitis.

Degenerations and infiltrations.

- Amyloidosis of the liver.
- Amyloidosis of the spleen.

Circulatory disorders.

- Chronic venous congestion of the liver.
- Infarction of the liver.
- Myocardial infarction with mural thrombus.
- Infarction of the small intestine.

- Infarction of the kidney.
- Congestive Splenomegaly.
- Infarction of the spleen.
- Pulmonary embolus with infarction.

Granulomatous diseases

- Tuberculosis of the lung.
- Tuberculosis lymphadenitis.
- Tuberculosis of the kidney.
- Growth disorders and neoplasia.
- Renal carcinoma.
- Prostatic hyperplasia.
- Carcinoma of the esophagus.
- Carcinoma of the stomach.
- Lipoma of the small intestine.
- Papillary tumour of rectum and colon.
- Teratoma, dermoid cyst.
- Multiple leiomyomata.
- Carcinoma of the breast.
- Fibroadenoma of the breast.

**B. Systemic pathology:
Cardiovascular system**

- Fibrinous pericarditis.
- Vegetations of rheumatic mitral and aortic valves.
- Myocardial infarction.
- Left ventricular hypertrophy.
- Aneurysm of abdominal aorta.
- Atheroma of aorta.

Respiratory system

- Bronchiectasis.
- Bronchopneumonia.
- Lobar pneumonia.
- Bronchogenic carcinoma.
- Metastatic carcinoma lung.
- Emphysema.

Alimentary system

- Carcinoma of the esophagus.
- Chronic gastric ulcer.
- Chronic duodenal ulcer.
- Carcinoma of the stomach.
- Crohn's disease.
- Lipomas of the intestine.
- Ulcerative colitis.
- Carcinoma of the colon and rectum.

Hepatobiliary system

- Chronic venous congestion of the liver.
- Cirrhosis.
- Hepatoma.
- Metastatic carcinoma of the liver.
- Chronic cholecystitis with stones.

Urinary system

- Hydronephrosis.
- Pyonephrosis.
- Polycystic kidney.
- Renal carcinoma.
- Wilm's tumour.
- Carcinoma of urinary bladder.

Male genital system.

- Seminoma of the testis.
- Prostatic hyperplasia.

Female genital system

- Multiple leiomyoma.
- Mucinous cystadenoma of the ovary.
- Dermoid cyst of the ovary.

Breast

- Carcinoma of the breast.
- Fibroadenoma of the breast.

Lymphoreticular system.

- Congestive Splenomegaly.
- Infarct spleen.
- Hodgkin's disease – spleen.
- Non-Hodgkin's lymphoma spleen.
- Tuberculosis lymphadenitis.

Central nervous system

- Pontine haemorrhage.
- Meningioma of the dura.
- Brain abscess.

Endocrine system

- Nodular goiter.
- Adenoma of thyroid.
- Carcinoma of thyroid.
- Adrenal carcinoma.

Bone

- Giant cell tumours of femur.
- Osteogenic sarcoma.
- Chondrosarcoma.
- Ameloblastoma of mandible.

9. Evaluation of the Course

1. Three continuous assessment tests (MCQ).
2. One practical examination.
3. A final written examination (MCQ)
 - A. Assessment examination 40%
 - B. Final Examination. 60%

10. Reference Books

1. **Basic Pathology**
- Robbins and Kumar, W.B. Saunders Company.
2. **Essentials Haematology**
Title : Essential Haematology
Author : Hoffbrand and Pettit (latest)
Address of Publisher : Blackwell Scientific Publ. Oxford OX2 OEL, U.K.