

Forensic Histopathology

Chapter Outline

- Introduction
- Objectives
- Important lesions in forensic practice

INTRODUCTION

Histopathology in forensic practice is the science of studying the changes brought about in the human body by disease or a process which help in identifying the diseases or changes caused by the process which lead to the causation of that disease or terminal event or manner leading to the disease or death. It helps in establishing the circumstantiality and proves or disproves the point beyond reasonable doubt.

The histopathology is an integral part of forensic pathology. It helps in concluding the case in authentic way and stop unnecessary speculations on tissue pathology. Some diagnoses are possible only through the help of microscope. This exposure during post-graduation is must. A hasty curtailment of the histological investigation is frequently a relinquishment of knowledge and evidential possibilities which cannot later be recovered. Today in majority cases, cause of death is still being concluded without the use of histology, the reasons are diverse:

- Absence of specialized knowledge and understanding of the necessity of a histological examination
- Investigating officers and doctors conducting postmortem examination are interested in 'quick settlement' of a case
- An enquiry 'into a case appears sufficiently clear' from macroscopic findings alone
- There is no orientation of such examination among experts due to insufficient training.

OBJECTIVES

- Study of histopathology of natural diseases and some histological aspect of forensic cases

- Study of morbid anatomy and pathological changes in organs during postmortem examinations and follow-up these cases in histology lab
- Preparing of a histological slides
- Various methods of staining of histological slides
- Interpretation of findings
- Report writing
- Opinion expression in relation to medicolegal situations

IMPORTANT LESIONS IN FORENSIC PRACTICE

Cardiovascular System

- Myocarditis of different types
- Giant cell myocarditis
- Viral myocarditis
- Bacterial myocarditis
- Other type of myocarditis
- Myocardial infarction (dating of myocardial infarction)
- Ischemic heart disease
- Cardiomyopathy (primary disease of myocardium)
- Hypertrophic cardiomyopathy (HOCM)
- Dilated cardiomyopathy
- Constrictive cardiomyopathy
- Granuloma of heart ex-sarcoidosis or cardiac sarcoidosis
- Pericarditis
- Bacterial endocarditis
- Coronary atherosclerosis
- Dissection of aorta and coronary arteries
- Brown atrophy of heart
- Amyloidosis of heart

19. Atrial myxoma
20. Conduction system abnormalities

Central Nerves System

1. Meningitis (viral, bacterial)
2. Encephalitis, rabies encephalitis Negri bodies
3. Brain infarction
4. Intracerebral hemorrhage
5. Cerebral edema
6. Anoxic brain damage
7. Common brain tumor meningioma astrocytoma
8. TB meningitis
9. Subdural hemorrhage (acute and chronic, dating of subdural hemorrhage)
10. Alzheimer diseases
11. Parkinsonism
12. Brain contusions
13. Diffuse axonal injury
14. Fat embolism (features in the brain)
15. Air embolism (features in the brain)

Respiratory System

1. Bronchopneumonia
2. Lobar pneumonia, viral pneumonia
3. Lung infarction
4. Pulmonary embolism
5. Granuloma of lung, pulmonary TB, sarcoidosis, mucormycosis infections in organs
6. Pulmonary fibrosis
7. Pulmonary edema
8. Features of ARDS
9. Pulmonary asbestosis
10. Mesothelioma of lung (following chronic exposure to asbestosis)
11. Lung abscess
12. Amniotic fluid embolism
13. DIC features in the lung
14. Hyaline membrane disease
15. Emphysema of lung
16. Atelectasis of lung
17. Bronchiectasis
18. Bronchial asthma
19. Pneumoconiosis

Liver

1. Cirrhosis of liver
2. Fatty change
3. Macrovesicular fatty change
4. Microvesicular fatty change
5. Various types of liver necrosis

6. Hemochromatosis
7. Acute hepatitis
8. Chronic hepatitis
9. Various granuloma of liver

Pancreas

1. Acute pancreatitis
2. Acute hemorrhagic pancreatitis
3. Chronic pancreatitis

Kidney

1. Acute tubular necrosis
2. Acute pyelonephritis, chronic pyelonephritis
3. Acute glomerular nephritis
4. Microabscess in the kidney
5. Features of hypertension
6. Features of malignant hypertension
7. Features of diabetic nephropathy
8. Features of DIC
9. Renal infarction
10. Renal abscess
11. End-stage renal failure
12. Amyloidosis of kidney
13. Diabetic nephropathy

Eye

1. Retinal detachment (in case of child abuse)
2. Retinal hemorrhage
3. Vitreous hemorrhage

Ovary and Fallopian Tube

1. Ruptured ectopic pregnancy
2. Ruptured uterus
3. Hydatiform moles

Placenta

1. Placental infarction
2. Placenta accreta

HELLP Syndrome

1. Fatty liver in pregnancy
2. Microvesicular steatosis in Reye's syndrome

Intestine

1. Intestinal infarction
2. Thrombosis of mesentery artery
3. Acute appendicitis
4. Peritonitis

Stomach

1. Erosion of gastric mucosa, acute peptic ulcer, chronic peptic ulcer
2. Peritonitis

Wound: Contusion, Tear and Lacerations

1. Healing of wound
2. Scar
3. Electrocution (histopathology features in the skin tissues)
4. Ligature marks in neck
5. Contusion necrosis of brain
6. Lung contusion
7. Liver contusion
8. Intestinal contusion

Adrenal Gland

1. Adrenal hemorrhage
2. TB in the adrenal gland
3. Tumor in the adrenal gland

AIDS

1. Skin manifestation of AIDS
2. Opportunistic infection in the lung, pneumocystis carinii pneumonia, toxoplasmosis
3. Fungal infections, candidiasis, coccidioidomycosis, histoplasmosis
4. Bacterial infection, disseminated or extrapulmonary *Mycobacterium tuberculosis*, *Salmonella* infection
5. Viral infection cytomegalovirus (pulmonary, intestinal, retinitis, or CNS infection), herpes simplex virus, varicella-zoster virus, progressive multifocal leukoencephalopathy
6. Kaposi's sarcoma, non-Hodgkin's lymphomas, primary lymphoma of the brain
7. Neurological involvement
8. Secondary neoplasm

Suggested Further Reading

1. Curriculum for forensic histopathology by RC Path, UK, 2012.
2. Forensic Histopathology—Victoria Institute of Forensic Pathology.
3. Medical Council of India, Curriculum of MD Forensic Medicine and Toxicology.