

Histopathology Practical and Slide numbers

Note:

The following is a guideline of the main microscopic features to the provided glass slides and is not meant to be a full description. Students are advised to examine the microscopic appearances and to draw labelled diagrams. Different sections may be used for examination.

Cardiovascular System:

31. **Acute rheumatic myocarditis:** Section of cardiac muscle shows:
- Aschoff bodies in the intermuscular fibrous septa. They are oval in shape and seen in relation to blood vessels.
 - Each consists of a focus of fibrinoid necrosis, few lymphocytes, macrophages and few small giant cells with one or several nuclei (Aschoff giant cell).
32. **Rheumatic valvulitis:** Section of fragments of endocardial valve shows:
- Irregular endocardial surface , no endocardial lining and focal fibrin deposits.
 - The valve is thickened by dense hyalinized fibrous tissue with vascularization and chronic inflammatory cell infiltrate.
33. **Coronary atherosclerosis:** Cross section of a coronary artery shows:
- Partial occlusion of the lumen by an atheromatous plaque.
 - The plaque consists of dissolved, cholesterol clefts, hyaline fibrous tissue and some blood capillaries.
 - The internal elastic lamina is thin and fragmented.
 - Pressure atrophy of the media opposite atheromatous plaque.

34. **Thromboangitis obliterans (Buerger's disease):** Section of the skin and subcutaneous tissue shows marked hyperkeratosis with inflammatory exudate in epidermis:

- Large number of small blood vessels in the dermis show occlusive organized thrombi with recanalization and fibrosis around blood vessels.
- Some blood vessels show recent organizing thrombi while others show infiltration of the wall and surrounding tissue by chronic inflammatory cells.

Respiratory system:

35. **Lobar pneumonia:** Section of the lung shows diffuse consolidation.

- All the alveoli are filled with fibrinous exudate containing fibrin threads, polymorphs, macrophages and red cells.
- Alveolar walls are congested.
- Pleura is covered by fibrinous exudate

36. **Bronchopneumonia:** Section of the lung shows foci of inflammatory consolidation surrounding bronchioles.

- Bronchioles are filled with an inflammatory exudate and show ulceration of mucosa, focal inflammation and necrosis of walls.
- Alveoli surrounding the bronchiole are filled with fibrin threads polymorphs and few macrophages.
- Surrounding lung parenchyma shows congestion and edema.

37. **Emphysema:** Section of lung shows:

- Increase in the size of air spaces.
- Decrease in number of air spaces and their walls are thinned.
- Some of the alveolar septae are ruptured and the ruptured septa project with in air spaces on the form of spurs.
- Alveolar blood vessels show reactive thickening of their walls.

38. **Squamous cell carcinoma of the lung:** Section of the lung shows one small bronchus and tumour masses.

- Tumour consist of trabeculae and sheets of moderately differentiated squamous cells with little connective tissue stroma.
- Neoplastic squamous cells show pleomorphism, hyperchromatism, individual cell keratinization, mitoses and areas of necrosis.
- Peribronchial and perivascular lymphatics are occluded by tumour cells.

Alimentary system:

39. **Pleomorphic adenoma of the salivary gland:** Section shows an incomplete fibrous capsule separating the tumour from normal salivary gland:

- Tumour shows mixed cellular components like epithelial, myoepithelial, chondroid and myxoid elements.
- Epithelial areas show small ducts, acini & strands or sheets of cells.
- Myxoid areas are formed of loose myxomatous tissue and chondroid areas consists of pale blue matrix.

40. **Carcinoid of the small intestine:** Section of small intestine shows surface ulceration and an infiltrating tumour mass in mucosa and submucosa.

- Tumour consist of alveolar groups and clumps of small uniform polygonal cells having centrally placed round nuclei and abundant granular cytoplasm.

41. **Crohn's disease of the intestine:** Section of small intestine shows alternating normal and ulcerating mucosa.

- All layers of intestinal wall show transmural chronic inflammatory cell infiltrate, lymphoid aggregates and mild fibrosis.
- Subserosa contains few epithelioid granulomas.

42. **Ulcerative colitis:** Sections of large bowel wall show a few relatively superficial ulcers lined by acute inflammatory exudate. Marked oedema and vascular congection are seen in lamina propria.

The mucosa adjacent to the ulcers contains several crypt abscesses and there is evidence of goblet cells depletion in many glands. No granulomas or glandular dysplasia are noted.

Liver and gallbladder

43. **Chronic hepatitis:** Sections from this liver biopsy show moderate chronic inflammatory cells infiltration consisting of lymphocytes and histiocytes in both portal tracts and liver parenchyma. Piecemeal necrosis, hepatocytes swelling and “spotty” hepatocytes necrosis are also noticed. No evidence of cirrhosis or malignancy noted.
44. **Cirrhosis of the liver:** Section of liver show:
- Loss of lobular architecture and formation of regenerative nodules of variable size and shape, surrounded by fibrous tissue.
 - Each nodule consists of liver cells without any arrangement and with no central vein.
 - Large number of proliferated bile ducts and chronic inflammatory cells are present in fibrous tissue.
45. **Hepatocellular carcinoma:** Sections show tumour consisting of:
- Thick cords, trabeculae and nests of malignant liver cells separated by sinusoidal spaces.
 - Malignant liver cells are pleomorphic, binucleated or forming giant cells with hyperchromatic nuclei.
 - Mitoses are numerous.
 - Areas of haemorrhage and necrosis are present.
46. **Chronic cholecystitis:** Section of gallbladder wall shows:
- Irregular mucosal folds and foci of ulceration in mucosa.
 - Wall is penetrated by mucosal glands which are present in muscle coat (Rokitansky-Aschoff sinuses).
 - All layers show chronic inflammatory cells infiltration & fibrosis.

Urinary system

47. **Post streptococcal glomerulonephritis:** Section of kidney shows:
- The glomeruli are enlarged, lobulated and hypercellular with obliteration of capsular space.
 - Cellularity is due to proliferation of endothelial and mesangial cells with some neutrophils.
 - Many capillaries appear obliterated.
 - Tubules show degenerative changes.

48. **Chronic pyelonephritis:** Section of kidney reveals that:
- The glomeruli show varying degrees of sclerosis and periglomerular fibrosis.
 - The tubules show varying degrees of atrophy. Some tubules are dilated and filled with eosinophilic hyaline casts resembling colloid (thyroidization).
 - Interstitial tissues shows chronic inflammatory cells infiltrate and fibrosis.
49. **Clear cell carcinoma of the kidney:** Section of the kidney shows:
- Compressed kidney tissue at the margin of the tumour masses.
 - Tumour cells are large polygonal with clear cytoplasm (dissolved glycogen and lipid) and piknotic nuclei.
 - Cells are arranged as alveolar groups or tubules with papillary formations separated by thin fibrovascular septae.
 - Cells show pleomorphism and mitosis.
 - Areas of haemorrhage and necrosis are present.

Female Genital

50. **Intraductal carcinoma of the breast:** Section of breast tumour shows:
- Large ducts are distended by neoplastic epithelial cells which are pleomorphic with large hyperchromatic nuclei and mitoses.
 - Cells are forming imperfect acini and shows a cribriform pattern.
 - Small groups of cells in the center of many ducts are necrotic.
 - No invasion of basement membrane of the ducts.
51. **Invasive duct carcinoma of the breast:** Section of breast tumour shows:
- Cord, sheets and nests of tumour cells surrounded by dense fibrous tissue stroma containing scattered lymphocytes.
 - Tumour cells are round to polygonal with deeply stained nuclei and occasional mitoses.
 - Focal tumour cell necrosis.
 - Tumour cells are invading breast adipose tissue.
 - Few tumour cells form duct-like structures.

52. **Paget's disease of the breast:** Section of breast and skin shows:

- Ulceration and invasion of epidermis by ductal carcinoma cells (Paget cells), present between basal cells in elongated rete pegs.
- Paget cells are large, anaplastic cells having pale cytoplasm, hyperchromatic nuclei with occasional mitoses.
- Paget cells are present either singly or in small groups of two or three surrounded by a clear zone or halo.
- Deeper tissue shows intraductal proliferation of neoplastic epithelial cells.

53. **Dermoid cyst of the ovary:** Section of the cyst wall shows:

- Stratified squamous epithelium with underlying appendages (sweat glands, sebaceous glands, hair follicles), columnar ciliated epithelium, mucous and serous glands and structures from other germ layers such as bone and cartilage, lymphoid tissue, smooth muscle and large area of brain tissue containing neurons and glial cells.

Male genital system

54. **Hyperplasia of the prostate:** Section of prostate shows:

- Nodular hyperplasia of glandular and fibromuscular stromal tissue.
- Each nodule shows large number of glands of variable sizes lined by tall columnar epithelium and some are cystically dilated.
- Eosinophilic hyaline corpora amylacea is present in some glands.
- There is increase in fibromuscular stroma around the glands with focal chronic inflammatory cell infiltration.

55. **Seminoma of the testis:** Section of the testis shows a malignant tumour consisting of sheets of malignant cells showing large vesicular nuclei and prominent nucleoli. The clusters of malignant cells are separated by fibrous septae and groups of lymphocytes. Foci of necrosis are present and there are multinucleated tumour cells representing syncytiotrophoblasts with several scattered blood vessels.

Lymph nodes

56. Hodgkin's lymphoma (mixed cellularity): Section of lymph node shows:
- Loss of normal lymph node architecture and infiltration of the lymph node by mixed inflammatory cells consisting of lymphocytes, plasma cells, histiocytes and many eosinophils. Neoplastic Reed-Sternberg cells showing binucleated and multinucleated forms with large nuclei and prominent eosinophilic nucleoli are seen.
57. Non-Hodgkin's lymphoma (diffuse large cell lymphoma): Section of the lymph node shows:
- Loss of normal nodal architecture.
 - Diffuse infiltration by large neoplastic and monotonous lymphoid cells having large vesicular nuclei with two or more nucleoli, little cytoplasm and many mitoses.

Central nervous system

58. Meningioma: Section of tumour shows:
- Whorls of fibrocellular tissue.
 - Cells are oval, spindle shaped or elongated and lack mitosis.
 - Psammoma bodies (spherical calcified particles) are also seen within the tumour.
59. Astrocytoma: Section of brain tumour shows:
- Increased areas of cellularity formed of well differentiated astrocytes and glial fibres.
 - Cells have round to oval nuclei with numerous cytoplasmic processes and/or occasional cells show large and hyperchromatic nuclei.
 - Small areas of haemorrhage and necrosis are also present.

PATHOLOGY MUSEUM

Cardiology system

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

Respiratory system

- RS Bronchiectasis.
- RS Bronchopneumonia.
- RS Lobar pneumonia.
- RS Bronchogenic carcinoma.
- RS Metastatic carcinoma of the lung.
- RS Empyema.

Alimentary system

- GUT Carcinoma of the esophagus.
- GUT Chronic gastric ulcer.
- GUT Chronic duodenal ulcer.
- GUT Carcinoma of the stomach.
- GUT Crohn's disease.
- GUT Lipoma of the intestine.
- GUT Ulcerative colitis.
- GUT Carcinoma of the colon and rectum.
- GUT Familial polyposis.
- GUT Colon carcinoma

Hepatobiliary system

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

Urinary system

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

Male genital system

- MGS Seminoma of the testis.
- US Prostatic hyperplasia.

Female genital system

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

Breast

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

Lymphorecticular system

- SP Congestive splenomegaly.
- SP Infarction of the spleen.
- SP Hodgkin's disease - spleen.
- SP Non-Hodgkin's lymphoma spleen.
- LN Tuberculous lymphadenitis.

Central nervous system

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

NOTE: The students are asked to study the gross pathology of all specimens related to lecture topics. Jars showing the gross pathology are usually discussed during the tutorials and are kept in the museum for future examinations. Students are also encouraged to examined these jars outside the tutorial hours.

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