5 Pancreas and biliary system

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PANCREAS

The normal pancreas consists of ducts, acini, interstitium and islets of Langerhans. The ducts are lined by low columnar epithelium containing goblet cells; endocrine cells may be present in the larger ducts. The acini are composed of rounded groups of pyramidal cells with eosinophilic cytoplasm containing zymogen granules around a central lumen. These cells lie on a supporting basal lamina. The interstitium consists of fine connective tissue bands in which there are interlobular and periductal blood vessels, lymphatics and nerves.

The islets of Langerhans are of variable shape and size with a capillary core surrounded by pale cuboidal cells. The hormone content can be identified by immunostains: insulin-containing cells lie in the centres of the lobules, while those containing glucagon and pancreatic polypeptide predominate at the periphery. Alterations in the pattern of endocrine cells in the islets occur in diabetes. Endocrine cells may appear increased in number in the head of the pancreas normally and in nesidioblastosis. Amyloid deposition in islets may be an age-related event and occurs in diabetes mellitus type II. Inclusion bodies may be found in cytomegalovirus and other viral infections.

Specimens from the pancreas are seldom received outside specialist centres. Biopsy specimens may be taken to establish whether there is a neoplasm of the pancreas, either as open biopsy at laparotomy, through an endoscope, especially if the tumour is ampullary, or percutaneously under radiological guidance.

Large specimens comprise tissues from pancreatoduodenectomy (Whipple’s operation), distal pancreatectomy and total pancreatectomy. Frozen section diagnosis may be required to confirm suspicions raised by preoperative biopsies and ancillary investigations. Frozen sections may also be taken of possible metastatic deposits found at laparotomy. Partial pancreatectomy is usually the treatment for islet cell tumours,
as most occur in the body and tail of the pancreas, but Whipple’s operation is occasionally necessary to remove a tumour in the head of the pancreas.

Clinical information

- age and sex of the patient;
- symptoms and their duration: jaundice, malabsorption, abdominal pain, dizziness, fainting, mental confusion;
- alcohol intake;
- history of previous pancreatitis;
- findings on CT, MRI, angiography, ERCP;
- results of biochemical investigations: liver function tests, blood glucose, hormone measurements, serum amylase;
- family history of endocrine disorders, especially of the pituitary, parathyroids and pancreas (MEA 1).

Pancreatic biopsies for the diagnosis of neoplasia

These are almost always taken for lesions of the exocrine pancreas. Chronic pancreatitis can mimic neoplasia clinically and radiologically as it may form a mass in the head of the gland. On biopsy similar confusion can arise: pancreatic adenocarcinoma is often desmoplastic and can closely resemble chronic pancreatitis in which there is distortion of acini and ducts by dense fibrosis.

**Microscopical report**

If a neoplasm is present, the report should comment on the:

- type:
  - cystadenoma: microcystic, serous, mucinous;
  - adenocarcinoma and subtypes: adenosquamous, mucinous, papillary cystic;
  - anaplastic carcinoma;
  - acinar cell carcinoma;
  - squamous cell carcinoma — probably metastatic;
  - giant cell tumour;
  - pancreatoblastoma;
  - lymphoma (NHL or Hodgkin’s);
- differentiation;

*contd.*