The Pancreas

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Anatomy

The pancreas is situated in the retroperitoneum.It's divided into a head,a body and tail.The head lies within the curve of the duodenum.

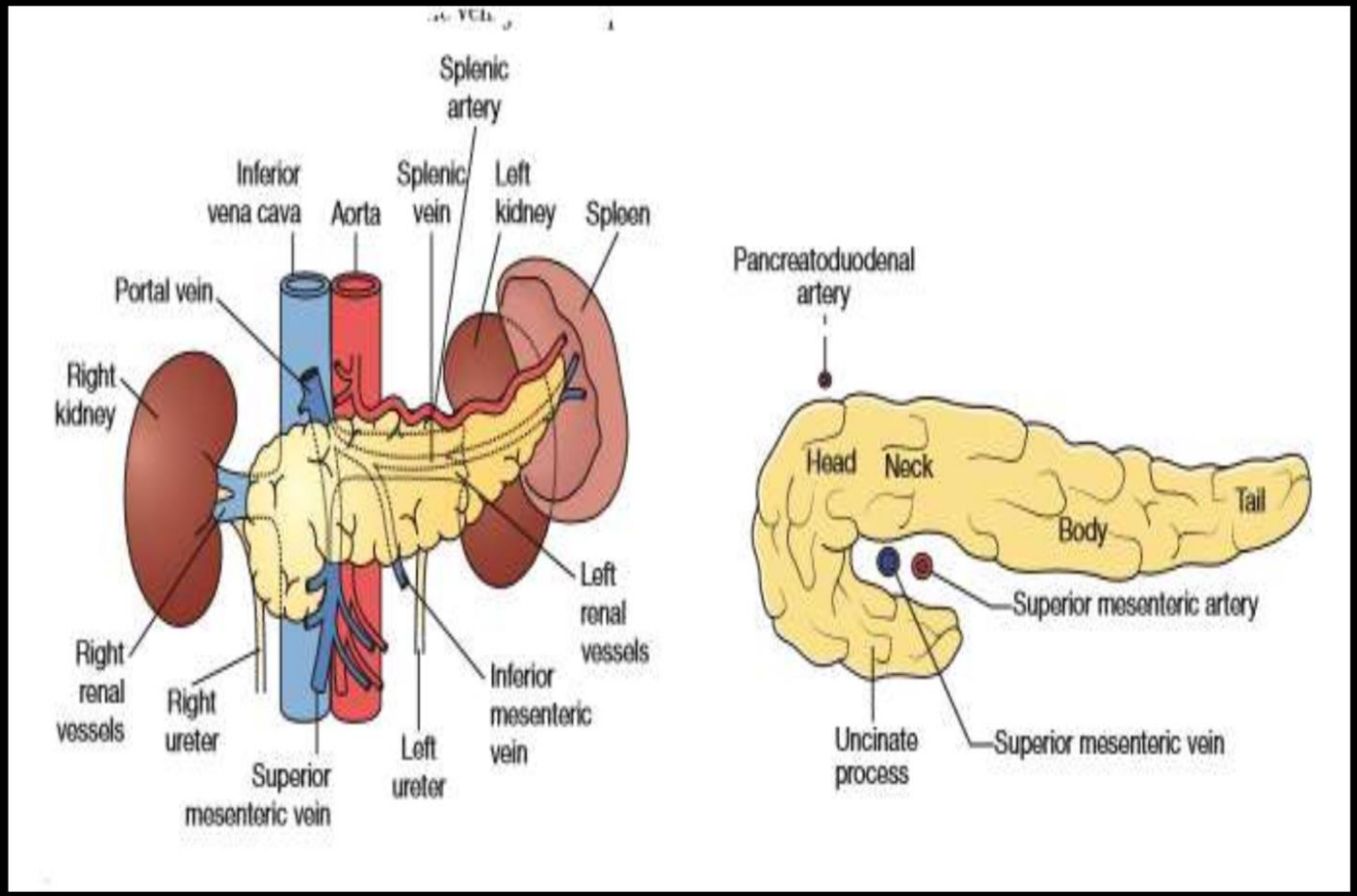
The aorta and the superior mesenteric vessels lie behind the neck of the gland. Islets of Langerhans consist of different cell types:

a)75% are B cells (producing insulin);

b)20% are A cells (producing glucagon);

c)the remainder are D cells (producing

in). (a)


Splenic artery
Inferior vena cava
Aorta
Splenic vein
Left kidney
Spleen
Portal vein
Right kidney
Left renal vessels
Right renal vessels
Right ureter
Inferior mesenteric vein
Superior mesenteric vein
Left ureter
Pancreatoduodenal artery
Head
Neck
Body
Tail
Superior mesenteric artery
Uncinate process
Superior mesenteric vein

Physiology

In response to a meal, the pancreas secretes digestive enzymes in a bicarbonate-rich fluid. Vagal stimulation increases the volume of secretion. It also has an endocrine function by secretion of insulin to regulate serum levels of blood glucose. So it has both endo- and exocrine functions.

Investigation of the pancreas.

1- Serum enzyme levels: amylase & lipase

2- Pancreatic function tests

3- Morphology

Ultrasonography

Computed tomography (CT)

Magnetic resonance imaging (MRI)

Endoscopic ultrasonography (EUS)

Plain radiography

-Chest

-Upper abdomen

Diseases of the Pancrease

1- ***Cystic fibrosis*** is an inherited condition. It occurs most frequently among white people, in whom it is the most common inherited disorder. CF is a multisystem disorder of exocrine glands that affects the lungs, intestines, pancreas and liver and is characterised by elevated sodium and chloride ion concentrations in sweat. The mother may notice that the child is salty when kissed. Most of the organ damage is due to blockage of narrow passages by thickened secretions.

2- INJURIES TO THE PANCREAS

External injury: The pancreas is not frequently damaged in blunt abdominal trauma but when it occurs it is often associated with injuries to other viscera, especially the liver, the spleen and the duodenum. Penetrating trauma to the upper abdomen or the back carries a higher chance of pancreatic injury. The most important factor that determines treatment is whether the pancreatic duct has been disrupted. CT and ERCP are the most useful tests.

--- Patient may recover with conservative management.

--- Surgery is indicated if the main pancreatic duct is disrupted.

3- PANCREATITIS:

Pancreatitis is inflammation of the pancreatic parenchyma. It is divided into acute,which presents as an emergency, and chronic,which is a prolonged and frequently lifelong disorder resulting from the development of fibrosis within the pancreas.

Causes of acute pancreatitis

- Gallstones
- Alcoholism
- Abdominal trauma
- Following biliary, upper gastrointestinal or cardiothoracic surgery
- Ampullary tumour
- Drugs (corticosteroids, oestrogens)
- Hypercalcaemia
- Hypertriglyceridaemia
- Autoimmune pancreatitis
- Viral infections (mumps)
- Malnutrition
- Idiopathic

Clinical presentation

- Pain
- Nausea,repeated vomiting & Hiccups.
- Tachypnoea is common.
- Tachycardia is usual.
- Hypotension may be present.
- The body temperature is often normal but frequently rises as inflammation develops.

Management of severe acute pancreatitis:

- Admission ICU
- Analgesia
- Aggressive fluid rehydration
- Supplemental oxygen
- Monitoring of vital signs, central venous pressure, urine output and blood gases.
- Frequent monitoring of haematological and biochemical parameters (including liver and renal function, clotting factors, serum calcium, blood glucose)
- Nasogastric drainage
- Antibiotics if cholangitis suspected;
- Supportive therapy for organ failure if it develops
- Enteral (nasogastric) feeding.

4- Pancreatic abscess

It is a circumscribed intra-abdominal collection of pus, usually in proximity to the pancreas.

Endoscopic internal drainage or, failing that, percutaneous drainage with the widest possible drains is the treatment, along with appropriate **antibiotics** and **supportive care**.

Very occasionally, open drainage of the abscess may be necessary.

5- Pseudocyst

A pseudocyst is a collection of amylase-rich fluid enclosed in a well-defined wall of fibrous or granulation tissue. Pseudocysts typically arise following an attack of mild acute pancreatitis, lie outside the pancreas.

Treatment

a)resolve spontaneously

b)drainage : percutaneous, endoscopic and surgical.

Chronic pancreatitis

It is a progressive inflammatory disease in
which there is irreversible destruction of pancreatic tissue. Its clinical course is characterised by severe pain and, in the later stages, exocrine and endocrine pancreatic insufficiency.

Causes:

1- High alcohol consumption is the most frequent cause of chronic pancreatitis, accounting for 60–70% of cases.
2- Duct obstruction resulting from stricture formation after trauma.
3- After acute pancreatitis or even occlusion of the duct by pancreatic cancer.
4- Congenital abnormalities.
5- Infantile malnutrition.
6- Unexplained idiopathic cases.

Clinical features

1. Severe pain.
2. Nausea is common during attacks and vomiting.
3. Weight loss is common.
4. Steatorrhoea in more than 30% of patients with chronic pancreatitis.
5. Loss of endocrine function and the development of diabetes.

Medical treatment of chronic pancreatitis

1- Help the patient to stop alcohol consumption and tobacco smoking.
2- Alleviate abdominal pain.
3- Eliminate obstructive factors (duodenum, bile duct, pancreatic duct).
4- Nutritional and pharmacological measures:-
- Diet: low in fat and high in protein and carbohydrates.
- Pancreatic enzyme supplementation with meals.
- Correct malabsorption of the fat-soluble vitamins and vitamin B12.
- Steroids (only in autoimmune pancreatitis, to relieve symptoms).
- Reducing gastric secretions may help.

5- Treat diabetes mellitus.
6- The role of surgery is to overcome obstruction and remove mass lesions..

CARCINOMA OF THE PANCREAS

More than 85% of pancreatic cancers are *ductal adenocarcinomas.*

Clinical features

1- Painless jaundice secondary to obstruction of the distal bile duct is the most common.

2- Associated with nausea and epigastric discomfort.

3- Pruritus.

4- Dark urine and pale stools with steatorrhoea are common accompaniments of jaundice.

5- Weight loss

Treatment Surgical resection.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