RECENT TRENDS IN THE DIAGNOSIS AND MANAGEMENT OF ACUTE PANCREATITIS

ESSAY

Submitted by

Mohamed Abd El-Monem M. Khalil

(M.B., B.Ch.)

Supervised by

Dr. Ahmed Mohamed Lotfy

Ass. Professor of General surgery

Faculty of Medicine

Ain Shams University

Assist on supervision

Dr. Emad Abd El-Aziz Hussein

Lecturer of General Surgery

Faculty of Medicine

Ain Shams University

Faculty of Medicine

Ain Shams University

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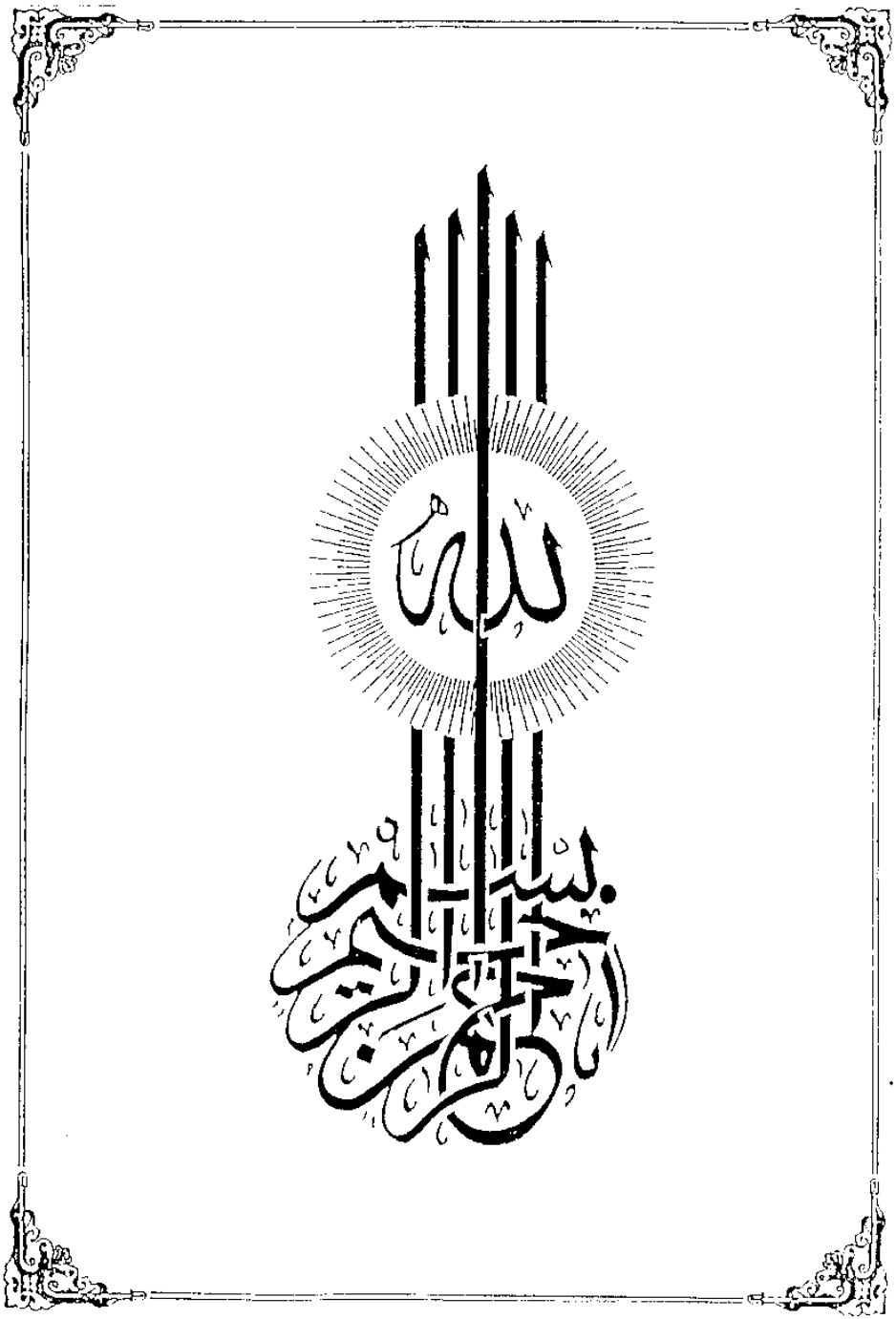

TO MY PARENTS

To my parents, to whom I owe my life and existence. To whom I without, would have done nothing in my life. I thank you for evcry success in my career beside my life itself.

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CHAPTER (1)
Anatomy and physiology of the pancreas

GENERAL DESCRIPTION

The pancreas is a digestive gland with a duct system that empties the exocrine secretion into the second part of duodenum ***(Mc Minn, 1990).***

The name pancreas is derived from the Greek "**Pan**" (all) and "**Kreas**" (flesh), the gland weighs about 80 gm and is situated retroperitoneally ***(Mann & Russell, 1992).***

In the total absence of the pancreas, lack of the normal degree of fat break-down is the most obvious defect. The presence of the pancreas simply makes digestion more rapid and efficient ***(Mc Minn, 1990).***

GROSS ANATOMY OF PANCREAS

The gland is of soft consistancy, and its surface is finely lobulated. It is tapering from a big head to a narrow tail, its whole length being over 15 cm (6 inches) ***(Last, 1988).***

The pancreas is located in the epigastric and left hypochondriac regions and its right part lies across the bodies of L1 to L3 vertebrae, and it has a head, neck, body, and tail ***(Moore, 1992).***

The head and tail lie back in the paravertebral gutters, while the neck and body are curved boldly foward over the anterior vena cava and aorta in front of the first lumber vertebra ***(Mc Minn, 1990).***

THE HEAD OF THE PANCREAS

It is the broadest part of the pancreas, is moulded to the C-shaped concavity of the duodenum, which it completely fills. It lies over the inferior vena cava and right & left renal veins at the level of L2 vertebra. Its posterior surface is deeply indented, and sometimes tunnelled, by the terminal part of bile duct. The lower part of the Posterior surface is prolonged, wedge-shaped to the left, behind the superior mesenteric vein and artery, in front of the aorta; this is the uncinate process ***(Last, 1988).***

THE NECK OF THE PANCREAS

About 2 cm long, is continuous with the superior left portion of the head and merges imperceptibly into the body of pancreas. The neck is grooved posterioly by the superior mesenteric vessels. Its anterior surface is covered with periotneum and is adjacent to the pylorus of the stomach. The superior mesenteric vein joins the splenic vein posterior to the neck of pancreas to form portal vein ***(Moore, 1992).***

THE BODY OF THE PANCREAS

Sloping gently upwards across the left renal vein and aorta, left crus of diaphragm, left psoas muscle and lower pole of the left suprarenal gland, to the hilum of the left kidney. Its upper border crosses the aorta at the origin of the coeliac trunk. The tortuous splenic artery passes to the left along the upper border of the body and tail. Because pancreas usually slopes slightly upwards, its whole length is not necessarily seen in one C.T. scan. The transverse mesocolon is attached towards the lower part of the anterior surface; the body lies therefore, behind the lesser sac, where it forms part of the stomach bed ***(Schwartz, 1990).***

THE TAIL OF THE PANCREAS

It passes forward from the anterior surface of the left kidney at the level of the hilum. Accompanied by splenic artery, vein and lymphatics it lies within the two layers of the lienorenal ligament and thus touches the hilum of the spleen ***(Last, 1988).***

THE PANCREATIC DUCTS

The main pancreatic duct begins at the tail of the pancreas and runs through the substance of the gland, recieving tributaries in a herring-bone pattern. The main duct is embedded rather superficially beneath the posterior surface of the pancreas. When the main pancreatic duct is joined by the parts of the duct in the head and uncinate process, it becomes Y-shaped. Within the head, the main pancreatic duct turns inferiorly and comes into close relationship with the bile duct ***(Moore, 1992).***

BLOOD SUPPLY OF THE PANCREAS

The main vessel is the splenic artery, which supplies the neck, body and tail. One large branch is named the arteria pancreatica magna. The head is supplied by the superior and inferior pancreaticoduodenal arteries. Venous return is by numerous small veins into the splenic vein and, in the case of the head, by the superior pancreaticoduodenal vein into the portal vein and by the inferior pancreatcicoduodenal vein into the superior mesenteric ***(Mc Minn, 1990).***

LYMPHATIC DRAINAGE OF THE PANCREAS

The lymph vessels of the pancreas follow the blood vessels. Most of them end in the pancreaticosplenic nodes that lie along the splenic artery on the superior border of the pancreas, but some vessels end in the pyloric lymph noeds. Efferent vessels from these nodes drain to the coeliac, hepatic and superior mesenteric lymph nodes ***(Moore, 1992).***

NERVE SUPPLY OF THE PANCREAS

The sympathetic nerve supply is from the splanchnic nerves and the parasympathetic supply is from the vagus. Afferent pain fibres are carried from thc vagus. Afferent pain fibres are carried by the sympathetic nervous system but bilateral sympathectomy is not effective in alleviating pain of chronic pancreatitis or pancreatic carcinoma because intercostal nerves and retroperitoneal tissue also become involved. Motor fibres are carried by both sympathetic and parasympathetic systems ***(Decker et al., 1986).***

ANATOMY OF THE DUCT SYSTEM

The extrahepatic biliary system begins with the hepatic ducts and ends at the stoma of the common bile duct in duodenum. ***(Schwartz, 1990)***

RIGHT HEPATIC DUCT (R.H.D.)

In each individual liver segment, the smaller bile ducts unite to form a single channel called the segmental bile duct. ***(Lindner, 1987)***

In 75% of individuals, the right anterior and posterior segmental ducts join to form a true right hepatic duct, i.e. a single channel carrying the whole bile output of the right lobe; in remaining 25%, there is no true right hepatic duct, the segmental ducts emptying into the left hepatic duct separately. ***(Kune & Sali, 1980)***

The length of the true right hepatic duct varies from 0.5 to 1.5 cm. ***(Lindner, 1987)***

LEFT HEPATIC DUCT (L.H.D.)

Unlike the right lobe, the left lobe of the liver is always drained by a single channel, the true left duct and in most cases, all its tributaries are intrahepatic ***(Kun & Sali, 1980).***

The average length is 1.7 cm. Normally, the right and left hepatic ducts are of equal size, although in patients with chronic obstructive biliary

disease, the left duct, for unknown reasons, is larger than the right duct. ***(Skandalakis et al., 1992)***

COMMON HEPATIC DUCT (C.H.D.)

The right and left hepatic ducts emerge from the porta hepatis and unite near its right margin in a Y-shaped manner to form the common hepatic duct ***(Mc Minn, 1990).***

The length of common hepatic duct varies from 1.0 to 7.5cm. The diameter of the duct is about 0.4cm ***(Skandalakis et al., 1992).***

The site of union of the cystic and common hepatic ducts is usually on the right side of the common hepatic duct about 1 cm above the duodenum, to form the common bile duct ***(Last, 1988).***

CYSTIC DUCT

It connects the neck of the gall bladder to the common hepatic duct. It is about 5 cm long, with a diameter that varies from 3 to 12 mm. It usually runs dorsaly, to the left, and inferiorly to join the common hepatic duct ***(Lindner, 1987).***

The cystic duct contains a series of 5 to 12 crescent-shaped folds of mucosa similar to those seen in the neck of the gall bladder.
(Skandalakis et al., 1992)

THE COMMON BILE DUCT (C.B.D.)

It is formed by the junction of the common hepatic and the cystic duct. Its length varies inversely with the length of the common hepatic duct and it is usually from 5 to 15 cm long. Its normal diameter is 8mm. ***(Decker et al., 1986)***

The common bile duct is divided into:

(1) Supraduodenal segment:

It is 2.5 cm length. It lies in the free edge of the lesser omentum, in front of the portal vein and to the right of the hepatic artery, here it may be incised (choledochotomy) for removal of a stone or insertion of a drainage tube ***(Mc Minn, 1990).***

Multiple L.nodes lies close to this part of C.B.D., and when enlarged, they may be mistaken for gall stones when the duct is palpated. ***(Lindner, 1987)***

(2) Retroduodenal segment:

It is 1.0 to 3.5 cm. long. The duct may be free or partially fixed to the duodenum ***(Skandalakis et al., 1992)***..

The gastroduodenal artery lies to the left of it, the portal vein lies posterior to the duct and the inferior venal cava is behind these. ***(Decker et al., 1986)***

(3) Pancreatic segment:

It is from 2 to 3 cm length. It is related to the head of pancreas. It may be entirely retropancreatic, or it may lie within the substance of the posterior portion of the pancreatic head, being covered posteriorly by a thin layer of the pancreatic tissue ***(Lindner, 1987).***

(4) Intramural segment (Intraduodenal):

Just before passing through the duodenal wall, the common bile duct lies posterior and slightly superior to the major pancreatic duct. ***(Schwartz, 1990)***

It takes an oblique path averaging 1.5 cm through the duodenal wall. Here it recieves the main pancreatic duct inferiorly.
(Skandalakis et al., 1992)

During the passage of the common bile duct and the pancreatic duct through the duodenal wall, the septum between their two lamina is lost, and together they form a true common channel that opens through a single ostium on the major duodenal papilla. ***(Lindner, 1987)***

In 20% of cases, the septum between the lumina of the two ducts persists throughout the entire passage of the ducts through the duodenal wall, in such cases there is no common channel. ***(Mann & Russell, 1992)***

ANATOMY OF THE DISTAL COMMON BILE DUCT AND PANCREATIC DUCT

The distal portion of the common bile duct and major pancreatic ducts parallel each other as they pass obliquely through the medial wall of the second portion of the duodenum. The pancreatic duct usually entered the common duct 2 to 3 mm proximal to its termination and was always medial to the common duct for the entire intramural course. As these ducts pass obliquely through the duodenal wall, they are surrounded by muscular fibres that can contract and compress both ducts.

Glisson in 1681 Stated: "*All return into the ductus communis is prevented by annular fibres which block not only the opening itself, but the whole stanting tract*".

Oddi in 1988, described the sphincter that bears his name. This structure surrounds the papilla of vater. Oddi noted that this sphincter could be made to contract by vagal stimulation, mechanical irritation, or application of dilute hydrochloric acid to either gastric or duodenal mucosa. This sphincter was intimately associated with duodenal wall musculature.

In 1936, **Boyden** described a submucosal muscular sheath that surrounds both ducts. It can contract independently or with the intestinal musculature. It is divided into 3 portions, all of which blend with the duodenal wall muscle. The superior sphincter of Boyden encircles the ducts where they enter the intestine above. The submucosal sphincter surrounds the intramural portion of the ducts, and the inferior sphincter encircles the