GASTROINTESTINAL ISCHEMIA

Essay
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Master Degree
in
GENERAL SURGERY

By
AHMED ELSAYED ELKHOLI
(M.B. B.Ch.)

Supervised by
Prof. Dr. MAGED ZAYED
Professor of General Surgery
Faculty of Medicine - Ain Shams University

Dr. REFAAT REFAAT KAMEL
Lecturer of General Surgery
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
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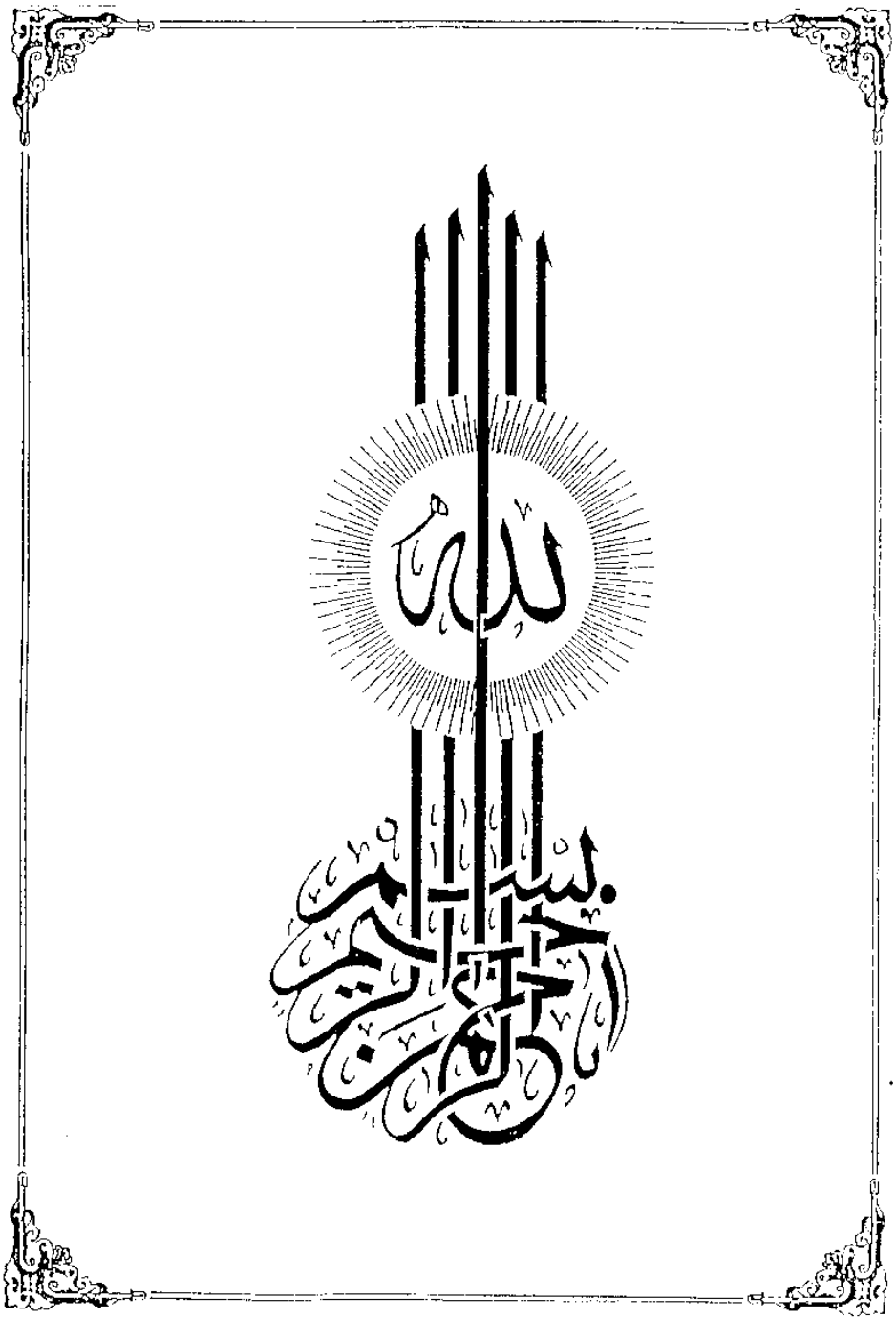

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To My Family

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INTRODUCTION

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INTRODUCTION

Gastrointestinal tract circulation recieves about a fourth of the cardiac output under resting condition. Therefore, it is one of the largest circulation in the body in terms of blood flows. The coeliac artery and superior mesenteric artery (SMA) are the two principal visceral vessels supplying the liver & biliary tract, the spleen, pancreas, omentum & all gastrointestinal tract except oesophagus, rectum & large intestine to mid transverse colon, the inferior mesentric artery supplies the splenic flexture of the colon, descending colon segmoid colon & the rectum. Gastrointestinal tract (GIT) ischemia is either acute or chronic, Arterial or venous, occlusive or non occlusive. Acute intestinal Ischemia is recognized with increasing frequency, patient with this condition represents about one in every 1000 hospital admission. Acute intestinal Ischemia is of particular interest to surgeons not only because of the magnitude of this problem but also because the policy of early recognition and bowel revascularization may favourably influence outcome for affected patient, acute occlusive schemia whether thrombotic or embolic is the most common cause of intestinal ischemia, acute non occlusive intestinal Ischemia result from decrease splanchnic blood flow due to decrease cardiac output as in shock.

Chronic intestinal ischemia defined and diagnosed by Mikkelsin as intestinal Angina which is due to arteriosclerosis of mesenteric vessels which common among elderly.

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Aim Of The Work

The aim of the work is to spotlight GIT ischemia as regard diagnosis, clinical presentation, early and recent trend at its management. Whether acute or chronic, arterial or venous, occlusive (thrombotic or embolic) or non occlusive.

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ANATOMY

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Surgical Anatomy Of The Blood Supply Of The Gastrointestinal Tract

Discussion of anatomy of the blood supply to the GIT must be qualified with knowledge that the incidence of normal anatomic variation is great and that the number of possible combinations of variation from normal is even greater **(SHACKELFORD's 1992)**

Three ventral branches of the aorta celiac. SMA. IMA are responsible for blood adequacy to the gut.

The Celiac Artery:

Is the artery of the foregut and its three branches supply the alimentary canal down to the opening of the bile duct, and the derivatives, liver, spleen and pancreas. It arises from the front of the aorta high on the poserios abdominal wall between the crurae of the diaphragm opposite the body of the 12th thoracic vertebra. It is a short wide trunk (about 1.25 cm) flanked by the celiac group of preaortic lymph nodes The celiac ganglia of the sympathetic system lie one on each side and they send nerves to the artery which are carried along all its branches. The artery appears at the upper border of the pancreas and divides immediately into its three branches. behind the peritoneum of the posterior abdominal wall of the omental bursa (Fig 1), the splenic artery passes to the left, the left gastric and hepatic arteries pass in opposite direction to each other, the former upwards to the oesophageal opening, the latter down to the pylorus, and each one raises a fold in the peritoneum .

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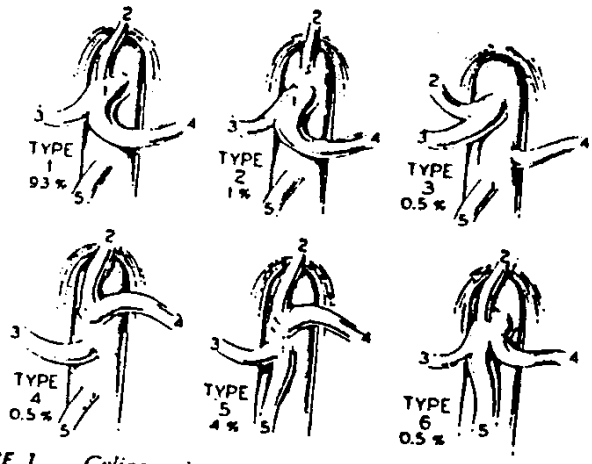

FIGURE 1 *Celiac axis variations. 1, Celiac axis; 2, Left gastric artery; 3, Common hepatic artery; 4, Splenic artery; 5, SMA. (From Ruzicka, F.F., and Rossi, P.: Normal celiac and hepatic arteriogram. N.Y. State J. Med., 23:3032, 1968.)*

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The left gastric artery runs behind the peritoneum from the upper border of the pancreas across the left crus of the diaphragm to the oesophageal hiatus. It gives off two or three oesophageal branches which ascend through the oesophageal opening of the diaphragm and anastomose with the aortic oesophageal arteries and supply the lower reaches of the oesophagus in the posterior mediostinum. It now enters between the two leaves of the lesser omentum and turns to the right along the lesser curvature. It breaks into two parallel branches which anastomose end on with the two branches of the right gastric artery. The two arteries give off branches at right angles. These sink into the anterior and posterior walls of the stomach and anastomose very freely with similar branches from the arteries of greater curvature such anastomosis between arteries in the gut wall cease beyond the stomach. In the small and large intestines the vasa recta that enter the gut wall are end arteries.

The splenic artery arises at the upper border of the pancreas and passes to the left. It is very tortuous the crests of its waves appear above the pancreas, the troughs lie hidden behind its upper border. The artery runs behind the peritoneum and passes with its vein and the tail of the pancreas across the left crus and left psoas muscle to the hilum of the left kidney where it turns forward in the lieno-renal ligament to the hilum of the spleen **(Last, 1986)**. The splenic artery is the main source of arterial supply to the pancreas. Several branches supply that gland. One large branch is named the arteria pancreatica magna.

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The pancreatic branches of the splenic artery are numerous small vessels supplying the neck, body and tail of the pancreas. The dorsal pancreatic artery which may arise from the superior mesenteric, middle colic, hepatic or the celiac artery, descends behind the pancreas and divides into right and left vessels. The former, usually two in number run between the neck and the uncinate process of the gland and form a prepancreatic arterial arch with a branch from the anterior superior pancreaticduodenal. The left branch of the dorsal pancreatic artery becomes the transverse pancreatic artery. The transverse pancreatic artery takes origin in 10% of cases from the gastroduodenal, the right gastroepiploic or the superior pancreaticduodenal artery. It may arise directly from SMA. Branches of the transverse pancreatic artery are the pancreatic rami, the posterior epiploic arteries, and occasionally a colic branch which extends to the left colic flexure **(Ruzicka & Rossi, 1970).**

The short gastric arteries 5 to 7 in numbers (vasa brevia) arise from the end of the splenic artery or from the left gastro-epiploic artery. They pass between the layers of the gastrosplenic ligament; and are distributed to the fundus of the stomach, anastomosing with branches of the left gastric and left gastro-epiploic arteries.

The left gastro-epiploic artery, the largest of the branches of the splenic artery arises near the hilus of the spleen and runs obliquely downwards, forwards and to the right. It sends several branches through the gastrosplenic ligament to be distributed to about the upper third of the greater curvature.

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Its terminal part gives off a large omental branch which runs down wards and to the right in the greater omentum, and itself curves forwards at a higher level to join the right gastroepiploic artery. The arteries that supply the greater omentum are the epiploic (omental) branches of the right and left gastro-epiploic arteries.

The Hepatic Artery:

The hepatic artery is accompanied by the hepatic plexus of nerves and is first directed forwards and to the right to the upper surface of the superior part of the duodenum passing below the medial end of the epiploic foramen. It then crosses in front of the portal vein, and ascends between the layers of the lesser omentum and in front of the epiploic foramen, to the portohepatis where it divides into right and left branches to supply the corresponding lobe of the liver. In the lesser omentum the hepatic artery lies in front of the portal vein and on the left of the bile duct and its right branch crosses behind (occasionally in front of) the common hepatic duct. In over 90% of cases, the hepatic artery arises from the coeliac axis. It may come from the superior mesenteric or from the aorta directly. **(Lee Mc Gregor's synopsis of surgical anatomy pg. 55).**

The right gastric artery arise from the common hepatic artery above the superior part of the duodenum, it descends in the lesser omentum to the pyloric end of the stomach, and passes from right to lift along the lesser curvature supplying the upper parts of the anterior and posterior surfaces of the stomach.

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