Correlation between the type of schistosomal hepatic fibrosis and clinicopathological findings before and after splenectomy and devascularization of the stomach for schistosomal hepatosplenomegaly

Thesis

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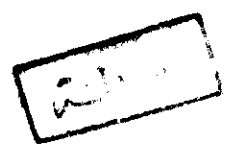
By

Mohamed Abdel Wahed Mekhamier
M.B.B.Ch. M.S. (Alex)



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Supervisors

Professor Dr. Ahamed Tawfic Souidan

Professor of Surgery
Faculty of Medicine
University of Ain Shams

Professor D. El Zarief Abdel Naby

Professor of Surgery
Faculty of Medicine
University of Ain Shams

Dr. Salwa Ibrahim El Haddad

Asst. Prof. of Pathology
Faculty of Medicine
University of Ain Shams

Dr. Ahamed Mohamed Lotfy

Asst. Professor of Surgery
Faculty of Medicine
University of Ain Shams

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To my father and mother

To my wife and my son Ahmed

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INTRODUCTION
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AIM OF THE WORK

INTRODUCTION AND AIM OF THE WORK

Haemorrhage from oesophageal varices is a life-threatening condition. As in other causes of gastro-intestinal bleeding, non-operative measures are currently the first line of treatment, but surgical intervention can be life saving[1]. (Copeland 1992).

The aim of this work is to evaluate the efficacy of splenectomy and gastroesophageal devascularization in the elective management of bleeding oesophageal varices in patients with schistosomal hepatic affection of the liver and to correlate between the type of schistosomal hepatic fibrosis and clinicopathological findings pre- and post-operative in schistosomal hepato-splenomegaly.

REVIEW OF LITRERATURE

Anatomy of the portal venous system

Portal blood flow in man is about 1000-1200 ml/min. (Sherlock s 1989)[2]. Portal oxygen content: the fasting arterio-portal oxygen difference is only 1.9 volumes percent (range 0.3-3.3 volumes percent) and the portal vein contributes 40 ml/min or 72% of the oxygen supply to the liver. During digestion, the arterio-portal venous oxygen difference increases due to increased intestinal utilization. (Tygstrup 1960)[3]. The afferent blood supply to the liver arises from two sources:

1- The hepatic artery accounts for about 1/3 of the hepatic blood flow.

2- The portal vein carries about 2/3 of the hepatic blood flow. (Tygstrup N 1961, Westaby D 1985)[3,4].

The portal venous system includes all veins which carry blood from the abdominal part of the digestive tract (except the lower end of the anal canal), the spleen, the pancreas and the gallbladder to the liver. From these viscera blood is conveyed to the liver via the portal vein entering the liver at the porta hepatis dividing into two main branches one to each lobe. In the liver each branch ramifies into hepatic sinusoids from which blood is conveyed to the inferior vena cava via the hepatic veins. (Tygstrup N 1961, Westaby D 1985)[3,4].

Embrylogy of the portal vein

The portal vein derives from the omphalo-mesentric vein which bring blood from the yolk sac and the intestine to the liver. The omphalic portion regresses with the disappearance of the yolk sac: with the growth of the intestine, the mesentric portion persists and become the tributaries of the portal vein. The stem formed by the omphalo-mesentric trunk is arranged in a

figure of "8" around the first and third portion of the duodenum. (Rappaport 1975)[5].

Anatomy of the portal vein

The portal vein formed by the union of the superior mesentric and splenic vein behind the neck of the pancreas at the level of the second lumber vertebrae[6,7]. The average diameter is 0.9 cm with a range of 0.8-1.4 cm[8]. Table I[9] shows the variations in length and diameter of the portal vein and its main tributaries.

The vein inclines slightly to the right as it passes upward behind the superior part of the duodenum, the bile ducts and the gastro duodenal artery and in front of the inferior vena cava. It then ascends in the right border of the lesser omentum in front of epiploic foramen to reach the right end of the porta hepatis where it divides into right short and wide branch and left longer and narrower branch. In the lesser omentum it is behind the bile duct and the hepatic artery, the former to the right of the later. There is no anastomosis between the macroscopic branches, but abundant intercommunications exist at the sinusoidal level[6].

1- The right branch

Receives also the cystic vein or veins which drain the gallbladder and then enter the right lobe of the liver.

2- The left branch

The legamentam teres join it and contain within it one or more potential veins (umbilical and paraumblical veins) that are remnants of the foetal circulation running from the umbilicus to the left portal vein[10,11]. Douglass (1960)[12] reported that the portal vein contains no valves.

Table I. The variations in length and diameter of the portal vein and its main tributaries[9].

Vein	Average surgical length/cm	Average anatomical length/cm	Greatest surgical length/cm	Smallest surgical length/cm	Average diameter /cm	Greatest diameter /cm	Smallest diameter /cm
Portal	4.02	7.34	7.0	2.0	1.09	1.59	0.47
Splenic	-	10.50	-	-	0.43	1.27	0.12
Superior mesentric	3.39	6.08	15	1.0	0.78	1.21	0.25
Inferior mesentric	-	5.79	-	-	0.24	-	-

After purcell H.K. and his team (1951).

Stream-lines in the portal vein

There is no consistent pattern of hepatic distribution of portal inflow: sometimes splenic blood goes to the left lobe and sometimes to the right lobe. Crossing-over of the blood stream can occur in the human portal vein. Flow is probably stream-lined rather than turbulent[13].

The intra-hepatic distribution of the portal vein

Ramification at the hilium

Three patterns are described[14].

Type A- 73% of the portal vein branches right and left from the portal trunk.

Type B- 22% there is a trifurcation with the left branch, the right anterior and right posterior all arising at the hepatic helium.

Type C- 4% there is independent branching of the right posterior branch from main trunk[14].

Anomalies of the portal vein

1- The portal vein may empty directly in the inferior vena cava[15].

2- The vein and its tributaries may be located anterior to the pancreas and the first part of the duodenum in which circumstances it is frequently associated with situs invertus[15] and this leading to duodenal obstruction[16].

3- Post-natal stricture of the portal vein due to spreading of the post natal oblitrative process of the umbilical vein[17].

4- Agenesis of the vein, a bifid vein and valves present in the vein[18].

Tributaries of the portal vein

1- Splenic vein.
2- Superior mesentric vein.
2- Left gastric vein
4- Right gastric vein.
5- Para-umbilical veins.
6- Cystic vein or veins.

1- Splenic vein

This vein (0.9 cm diameter) formed by confluence of six major trunks. The point of confluence varies considerably. It is commonly between the helium of the spleen and the tail of the pancreas about 3-5 cm from the midpoint of the helium. However it may occurs behind the pancreas[12].

In 7.7% the superior polar vein is excessively long and join the splenic trunk relatively distant from the helium and proximal to the point of confluence of the other splenic tributaries[12]. The splenic vein regularly lies in a distant groove on the posterior surface of the pancreas below the level of the splenic artery. Sometimes it may embedded in the pancreatic tissues. Draining into it an average of seven small pancreatic veins[12].

Tributaries of the splenic vein

a- Short gastric veins

4 or 5 in number they drain the fundus and the left part of the greater curvature of the stomach. The short gastric veins empty into the splenic system of veins usually not directly but rather the substance of the spleen.

Major types and variations of short gastric veins

1- 62% they terminated into the upper posterior portion of the spleen or its hilus.

2- 27% they terminated in the lower anterior portion of the spleen.

3- 10.9% they were not identified[19].

b- Left gastro-epiploic vein

It receives branches from both surfaces of the stomach and from the greater omentum[19].

c- Pancreatic veins

3-13 small tribularies, average number was 7. They drain the body and the tail of the pancreas.