EFFECT OF SCLEROTHERAPY OF OESOPHAGEAL VARICES ON PORTAL VENOUS PRESSURE

M.S. Thesis By

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Submitted in Partial Fulfillment of
M.S. Degree in Tropical Medicine

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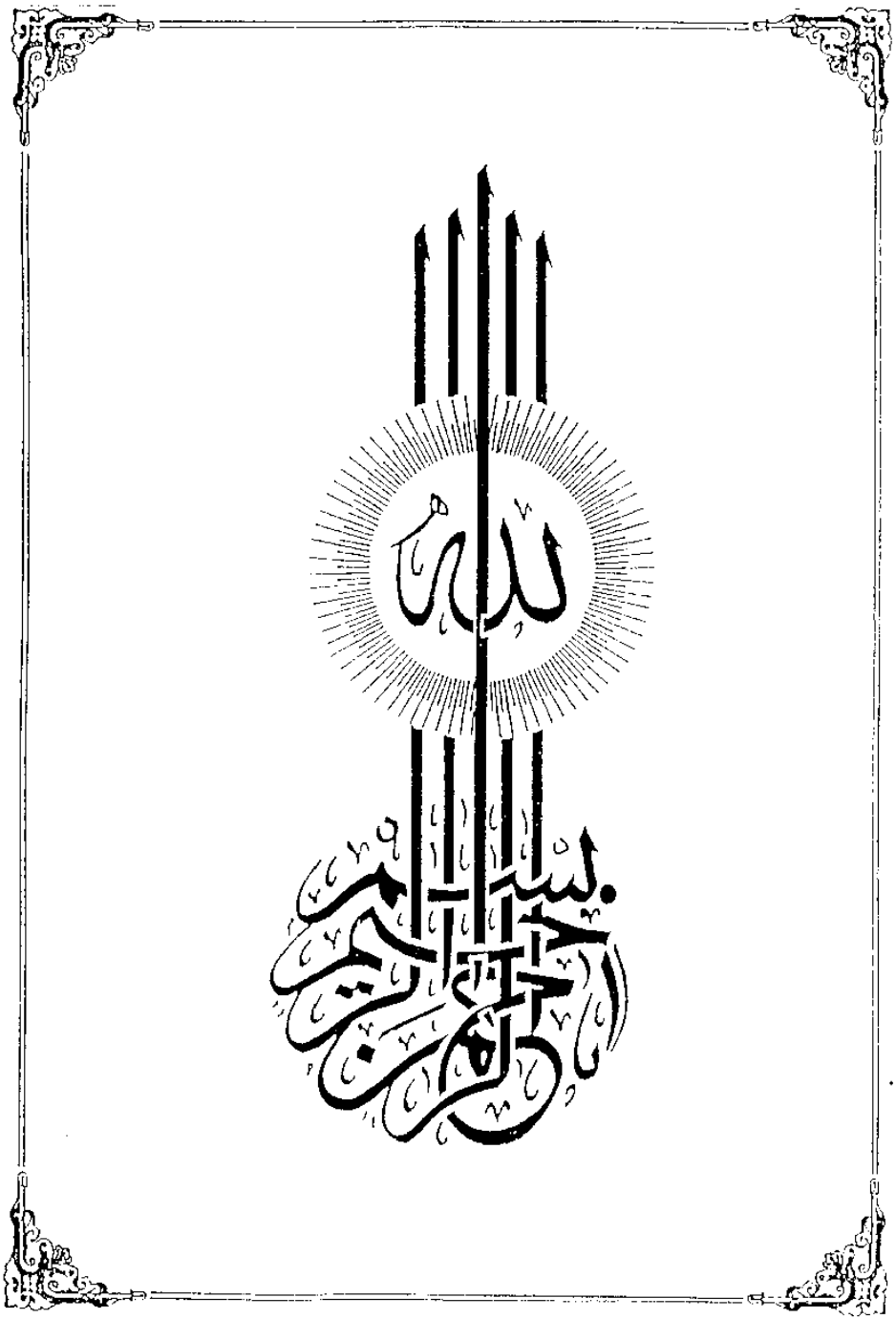

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ACKNOWLEDGEMENT

I would like to express my deep gratitude to Prof. Nooman Hasseeb, Professor and Head of the Dept. of Tropical Medicine, Ain Shams University for his continuous encouragement.

I am greatly honoured to express my deep gratitude to Prof. Salah Saif El-Din, Professor of Tropical Medicine, Ain Shams University for his kind help, sincere advice, valuable supervision and continuous encouragement during this work.

I am deeply grateful to Dr. Maamoun Ashour, Assistant Professor of Tropical Medicine, Ain Shams University. He gave me much of his time and experience, keenly supervised my work and guided every step till it was completed.

I would like to thank Dr. Ahmed El-Dorry, Lecturer of Radiology, Ain Shams University for his kind help in the sonographic part of the work.

I also wish to thank Prof. Mohamed F. Abdel Wahab, Professor of Tropical Medicine, Ain Shams University and Dr. Zakaria Mohran, Lecturer of Tropical Medicine, Ain Shams University for their kind guidance.

Finally, I wish to thank all the members of the Tropical and Radiology Departments for all the help they offered.

INTRODUCTION

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INTRODUCTION

Portal hypertension occurs as a result of many pathological conditions of which bilharziasis constitutes the most common cause in Egypt (Abaza, 1973).

Portal hypertension results in the development of oesophageal collateral channels (oesophageal varices) which may rupture with consequent haematemesis and/or melena (Sherlock, 1983). Bleeding from oesophageal varices threatens the life of many patients in Egypt (Hussein and Rifaat, 1964).

Endoscopic injection sclerotherapy had gained wide acceptance in the treatment of variceal haemorrhage as many authors had reported encouraging results in both acute and long-term management of bleeding oesophageal varices (Sivak et al., 1981).

Real time abdominal ultrasonography is perhaps the first choice procedure for the diagnosis of portal hypertension and demonstration of intra-abdominal collateral veins (Sutton, 1980).

As oesophageal varices act as safe collaterals that may help to decompress the portal system by shunting portal blood into the systemic veins, so obliteration of such

varices by injection sclerotherapy may lead to an increase in the portal pressure and appearance of new collaterals in other sites.

The aim of this work is to assess the effect of obliteration of oesophageal varices by injection sclerotherapy on the portal venous pressure and manifestations of portal hypertension.

REVIEW OF LITERATURE

ANATOMY OF THE OESOPHAGUS

The oesophagus is a muscular tube extending from the lower end of the pharynx to the cardiac end of the stomach. It is about 10 inches (25 cm.) long (Mahran et al., 1974). It begins in the neck at the lower border of the cricoid cartilage opposite the sixth cervical vertebra and ends at the cardiac orifice of the stomach at the level of the eleventh thoracic vertebra (Last, 1973a).

The oesophagus has three parts: cervical, thoracic and abdominal parts. The cervical part is about 2 inches (5 cm.) in length and lies in the lower part of the neck. The thoracic part lies partly in the superior and partly in the posterior mediastinum. The abdominal part is very short and joins the stomach immediately (El-Rakhawy, 1976).

The oesophagus is constricted at 4 places: (a) at its commencement, 6 inches (15 cm.) from the incisor teeth, (b) where it is crossed by the aortic arch, 9 inches (22.5 cm.) from the incisor teeth, (c) where it is crossed by the left main bronchus, 11 inches (27.5 cm.) from the incisor teeth and (d) where it pierces the diaphragm, 15-16 inches (37.5 - 40 cm.) from the incisors. The sites of these constrictions are clinically important in connection with the passage of instruments along the oesophagus (Davies and Coupland, 1967).

Blood Supply and Venous Anatomy of the Oesophagus:

The upper oesophagus, from the cricoid cartilage down to the level of the arch of aorta in the superior mediastinum, is supplied by the inferior thyroid arteries, the middle portion by oesophageal branches from the descending thoracic aorta, and the lower part by the oesophageal branches of the left gastric artery (Last, 1973a).

Venous return from the upper part of oesophagus is to the bronchiocephalic veins, from the middle part is to the azygos veins, and from the lower part is by oesophageal tributaries of the left gastric vein. Thus, an anastomosis exists in the lower part of oesophagus, between portal and systemic venous systems and gives rise to varices in cases of portal hypertension (Last, 1973a).

Kitano et al. (1986), have demonstrated four layers of veins in the oesophagus, intra-epithelial channels which drain into a superficial venous plexus which is connected to larger deep intrinsic veins. Perforating veins connect the deeper veins with the adventitial plexus, the fourth layer. The intra-epithelial channels consist of fine vessels running radially within the epithelium of the oesophagus and join the superficial venous plexus at right angles immediately below the epithelium. The deep intrinsic veins lie deep to the superficial venous plexus and

constitute three to five main trunks. It is the deep intrinsic veins that become massively enlarged and develop into tortuous variceal channels.

Although varices may develop through the entire length of oesophagus, yet they are usually confined to the distal few centimetres of the oesophagus. This is probably attributed to the difference in venous anatomy between the distal and the more proximal portions of the oesophagus. The veins of the lower 3-5 cm. of the oesophagus lie chiefly in the lamina propria, that is, between the muscularis mucosa and the basement membrane of the epithelium. Being close to the oesophageal lumen, they are probably at most risk to rupture. On the other hand, the veins of the proximal part of oesophagus are deeply protected in the submucosa (Spence, 1984).

THE PORTAL VENOUS SYSTEM

Anatomy of the Portal Venous System:

The liver receives its major blood supply from the hepatic arteries, branches of the common hepatic artery and from the portal vein. Under pathological conditions, the liver may receive arterial supply from hypertrophied phrenic arteries, but normally such tributaries are not important (Richardson and Withrington, 1981).

The portal system includes all veins which carry blood from the abdominal part of the alimentary tract, the spleen, pancreas and gall bladder. The main veins which are responsible for the formation of this system are the portal vein, the splenic vein, the superior and inferior mesenteric veins (Sherlock, 1985).

The tributaries of the portal vein discharge their blood into the sinusoids of the liver where it is only separated from the liver cells by a single layer of phagocytic endothelial cells (Romanes, 1975). The liver sinusoids receive blood as well from intrahepatic branches of the hepatic artery. These sinusoids drain into the central lobular veins of the liver which drain via the hepatic veins to the inferior vena cava (Ganong, 1977).

Although there are anatomical variations in the various branches of the portal system, the portal vein itself

usually begins at the level of the second lumbar vertebra (posterior to the head of the pancreas) by the union of the splenic and the superior mesenteric veins. It then ascends behind the bile duct and the hepatic artery. It ends at the porta hepatis by dividing into two branches, one to each of the corresponding lobes of the liver. The right branch is joined usually by the cystic veins before its entrance into the liver. The left branch gives branches to the caudate and quadrate lobes of the liver and is also connected to a fibrous cord, the ligamentum teres, which is a remnant of the obliterated umbilical vein (it runs in the free border of the falciform ligament)(Last, 1973b). The small paraumbilical veins run together with the ligamentum teres and connect the portal vein with the veins around the umbilicus. These veins may become prominent in cases of portal hypertension. A second fibrous cord, the ligamentum venosum, is a vestige of the obliterated ductus venosus and connects the inferior vena cava with the left portal vein (Davies and Coupland, 1969).

The length of the portal vein ranges from 6-8 cm., its diameter is about 1.2 cm. and has no valves (Reynolds, 1969).

The splenic veins (5-15 channels) originate at the splenic hilum and join near the tail of the pancreas with the short gastric vessels to form the main splenic vein. This proceeds in a transverse direction in relation to the

body and head of pancreas, lying below and infront of the artery. The inferior mesenteric vein which drains blood from the left part of the colon and rectum, usually enters its medial third. Occasionally, however, it enters the junction of superior mesenteric and splenic veins (Sherlock, 1985).

The superior mesenteric vein is very variable, having from ten to twenty five tributaries. It collects blood from the small intestine, the caecum, the descending and transverse parts of the colon, it usually begins in the right iliac fossa by the union of its numerous tributaries and ascends in the mesentery until the neck of the pancreas to meet the splenic vein (Gardner et al., 1975).

Hepatic Blood Flow:

The liver receives about one-fourth of the cardiac output in resting adults (1500 ml./min.). Eighty percent of its flow reaches the liver via the portal vein and twenty percent via the hepatic artery (Ganong, 1977).