MANAGEMENT OF BLEEDING OESOPHAGEAL VARICES

An Essay

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"M.S."

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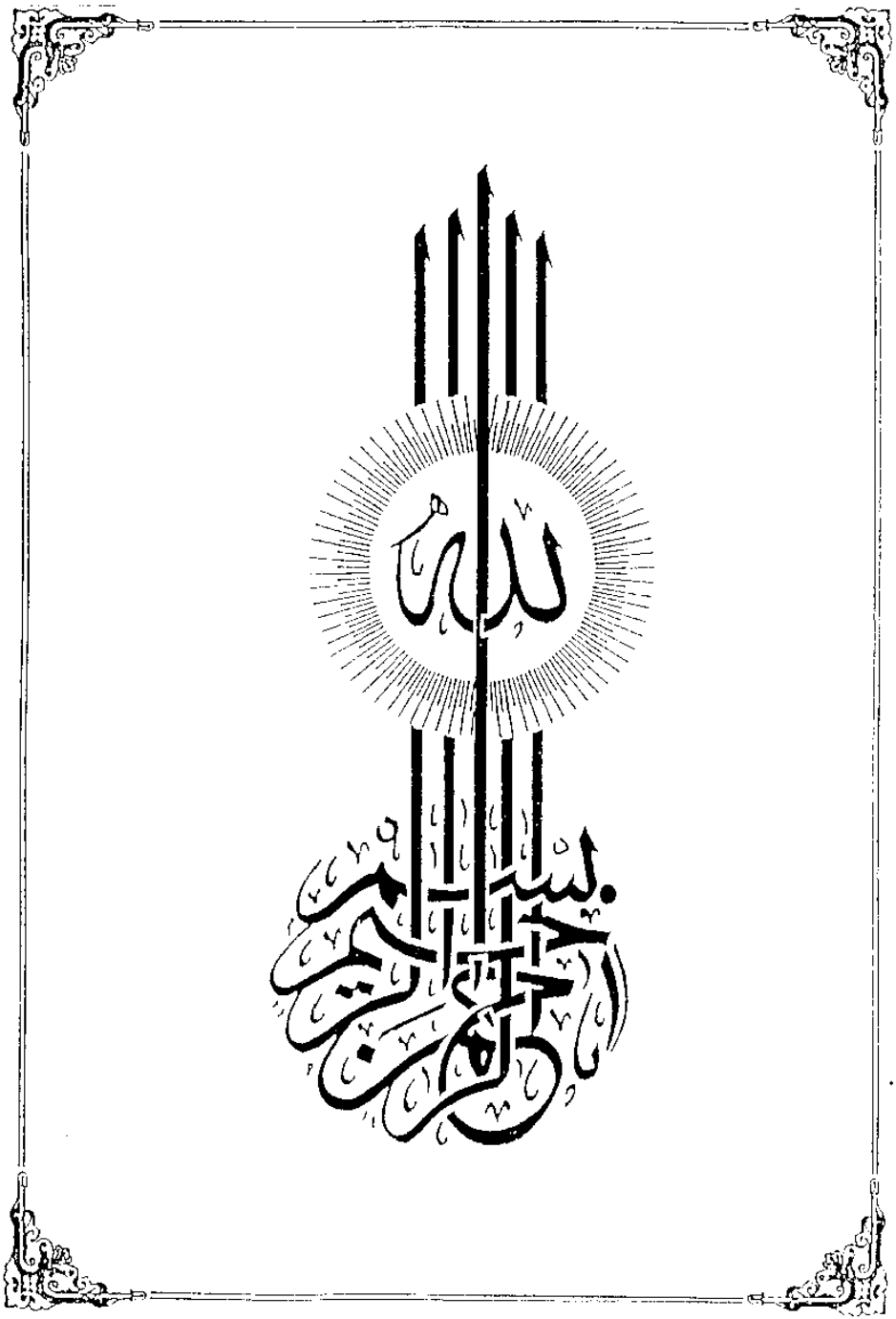
To the memory of my parents whom I have never seen.

To the poor patients and to the poor people to whom I belong.

To my beloved Egypt which I want to give much.



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INTRODUCTION

Bleeding from oesophageal varices is one of the most dramatic, urgent, frightening and life threatening events for a patient with cirrhosis *(Iain E Gillespie, 1986)*.

Bleeding from oesophagogastric varices is a dramatic complication of portal hypertension. The severity of bleeding can vary from minor and intermittent episodes to massive and lethal exsanguination *(Harris, 1986)*.

This spectrum explains divergent estimates of mortality rate from the first bleeding ranging from 30% to 80% *(Novis et al., 1976, Graham & Smith 1981)*.

Further bleeding is common, and within 12 months has occurred up to 70% patients *(Clark et al., 1980)*. The management of acute bleeding can be medical or surgical, with sclerotherapy of the varices being an option receiving most recent attention *(Harris, 1986)*.

About half of patients with massive bleeding from varices die as a result of the acute event. The high death rate reflects not only the amount and rate of haemorrhage but also the frequent presence of severely compromised liver functions and other systemic disease that may or may not be related to alcoholism *(Way, 1985)*.

Bleeding from oesophageal varices is one of the major health problems in Egypt. In addition to other causes of portal hypertension, hepatic schistosomiasis is exceedingly contributing. The combination of prevalence and young age affections makes this potentially lethal condition, a national problem *(Nasef and Abulata, 1978)*.

The following review will therefore concentrate on attempting to outline current practice and progress. It is bleeding with its attendant complications, which

kills most of these patients. Without appropriate treatment only 50% will survive their first bleed to leave hospital and only 25% overall will survive 2 years. Two-thirds of cirrhotic patients may present for the first time with a feature of decompensated cirrhosis such as a haemorrhage *(Saunders et al.. 1981).*

The diagnosis having been made, what is the method of choice for arresting the bleeding and minimizing the chances of recurrence? *(Iain E Gillespie. 1986).*

Two major clinical challenges therefore present themselves:

1. The control of acute bleeding and the prevention of immediate potential complications.
2. The prevention of any subsequent bleeding and thus, possibly, the improved survival of patients who have bled.

Ideally all patients at risk from variceal bleeding should be managed at centres with every available facility and the appropriately skilled personnel to enable the various treatment options to be properly assessed with prospective trials *(Mc Laren and I Taylor, 1985).*

BLOOD SUPPLY OF THE OESOPHAGUS

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The Arterial Supply

The cervical portion of the oesophagus from the cricoid cartilage down to the level of the arch of the aorta in the superior mediastinum is supplied by the inferior thyroid arteries.

The thoracic portion of the oesophagus is supplied by the oesophageal branches from the aorta itself (4-5 in number) and by the oesophageal branches of the bronchial arteries. Supplemental vessels comes from arteries on the abdominal side of the diaphragm.

The abdominal portion of the oesophagus is supplied by the oesophageal branches of the left gastric artery and the left inferior phrenic artery *(Last, 1984)*.

The Venous Drainage

The oesophageal veins are classified into intrinsic and extrinsic groups.

a) Intrinsic Oesophageal Veins

They lie within the wall of the oesophagus and is further subdivided into:

1. Subepithelial venous plexus.
2. Submucous venous plexus.
3. Perforating venules.

1. Subepithelial Venous Plexus

A network of thin-walled veins that lie within the lamina propria just beneath the surface epithelium of the oesophagus. At the extreme ends of the oesophagus these venules assume a more linear arrangement with scanty cross anastomosis and becomes continuous with the subepithelial mesh-work of the pharynx above and the subglandular plexus of the stomach below. The lower vascular continuity with gastric venules establishes a link between systemic and portal circulations.

2. Submucous Venous Plexus

It lies in the submucosa just deep to the muscularis mucosa. Shortly above the cardia, the veins are free due to loose connective tissue framework poorly supporting them.

They are 10-15 longitudinal veins with numerous cross anastomosis, these constitute the submucosal venous plexus.

At the upper end of the oesophagus, opposite the cricoid cartilage these veins terminate in the pharyngolaryngeal venous plexus whose individual vessels normally display a varicose appearance. At its lower end, the submucous veins increase in number, become tortuous, occasionally valved, and lie in a loose connective tissue frame work that affords little support, a condition pertinent to the sequential development of the oesophageal varices, then they extend across the cardia to blend with the submucosal plexus of the stomach which is formed of a fine longitudinal capillary bundle of vessels.

This gastric submucous venous plexus drains into 2-4 branches that penetrate the gastric musculosa and serosa to unite with the coronary vein before it receives

the peri-oesophageal tributaries, *(Kegaries, 1934)*. Kegaries noted that of the cardio-oesophageal junction, submucous oesophageal veins are strongly supported by increased thickness in the muscularis mucosa, adherent mucosa at this location to the underlying muscle layer forming a barrier compared of interlacing elastic fibres and connective tissue consistent with the demonstration of *Ibrahim and Khairy (1960)*. In contrast with the subserosal area at the same plane, where such barrier is absent, thus allowing a free communication between the stomach and oesophageal venous systems.

3. Perforating Venules

These are rather large vessels that have their origin in the longitudinal submucous plexus and perforate the muscular coats to reach the exterior of the oesophagus, where they are arranged on its lateral borders close to the vagi nerves.

They also receive tributaries from the musculosa, extending in either direction and uniting in two or three to form the extrinsic veins. Valves may be present at the site of their exit from the muscular coat directing the circulation from within outwards, *(Bulter 1951)*.

b) Extrinsic Oesophageal Veins

Bulter (1951) Found a superficial venous plexus (peri-oesophageal) which is well developed, this could generally be distinguished into the venae comitantes of the vagus nerves and extrinsic set proper.

1. Extrinsic Set Proper

Extrinsic venous drainage from the lower part (abdominal oesophagus) is carried by oesophageal tributaries of the left gastric vein, which empties into the portal vein. They are 3-4 in number and as they join the coronary vein. They deviate to the right to leave the lesser omentum, and as they traverse the diaphragm, small extrinsic veins of the oesophagus drain into the superior and inferior phrenic veins. Thus the exist of these extrinsic veins in the lower reaches of the oesophagus, an anastomosis between portal and systemic venous systems. This anastomosis level with the central tendon (8th thoracic vertebra) well above the oesophageal hiatus in the diaphragm. In case of portal hypertension (portal obstruction) varicosities of these veins occur, and their rupture may give rise to serious or fatal haemorrhage, *(Last 1984).*

Veins that drain the middle part (thoracic oesophagus) are generally arranged longitudinally on its right and left sides and are 8-10 in each location, almost all of them empty into the azygos system.

Veins that drain the upper part (cervical oesophagus) runs laterally to end in the inferior thyroid veins and medially to terminate into the pretracheal venous plexus (bracheo-cephalic veins) *(Barlow et al.. 1951 and Warren et al.. 1967).*

2. Venae Comitantes of The Vagus Nerves

These consist of two longitudinal trunks, right or posterior and left or anterior. They arise as branches of the left coronary vein in close proximity to the right and left vagi nerves at the lower end of the abdominal oesophagus and receiving tributaries from the venous plexus of the oesophagus.

The right posterior trunk terminates in the vena azygos major, right posterior bronchial vein and venous plexus on the surface of the right bronchus.

The left or anterior trunk drains into hemiazygos vein and left posterior bronchial vein, and thus these venous channels represent a connection between the portal and superior vena caval systems *(Calabresi and Abelmann, 1957)* (Fig. 1).

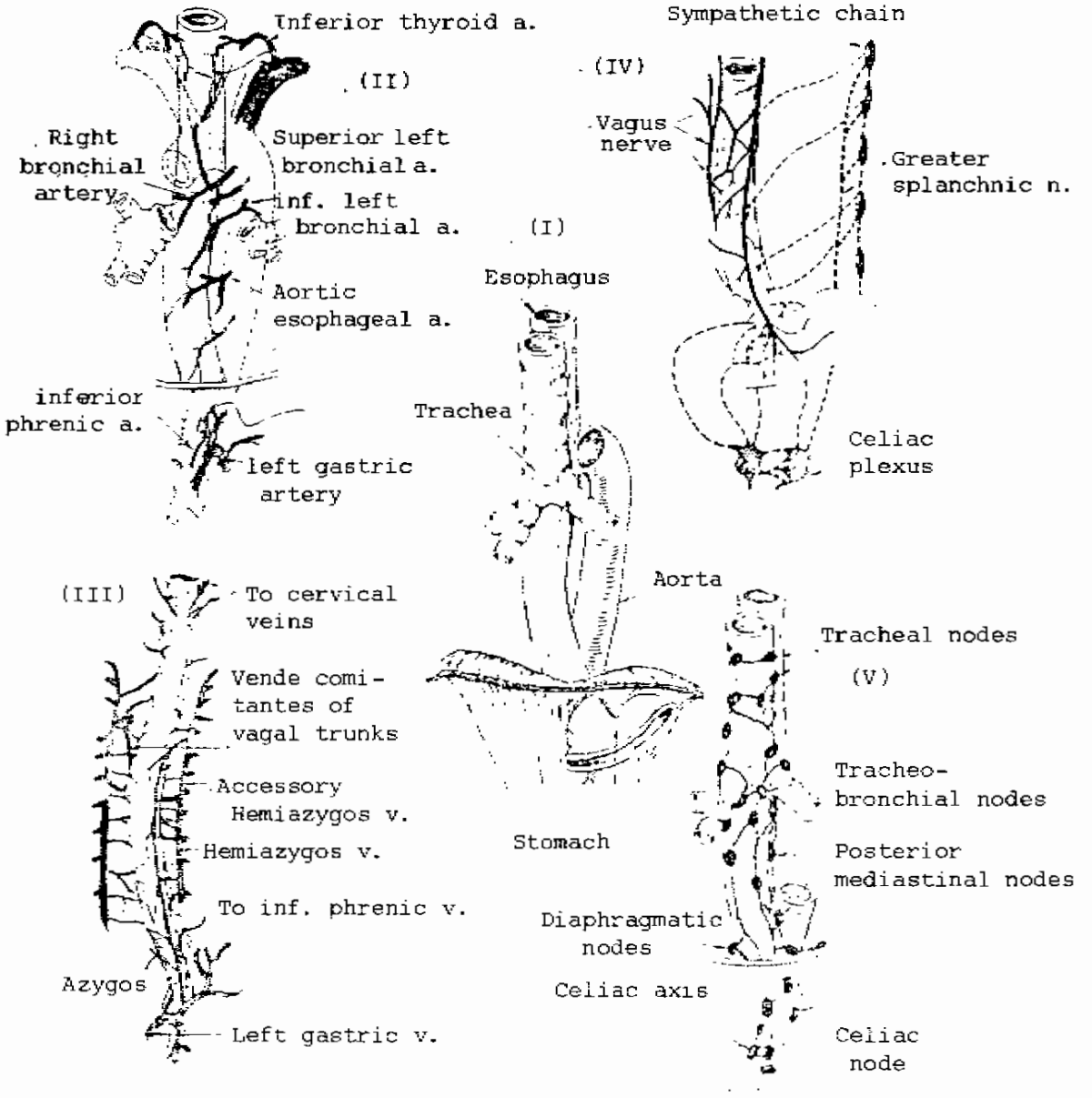

Fig. (1): ANATOMY OF THE HUMAN ESOPHAGUS.

(I) Relations of the esophagus.
(II) Arterial supply of the esophagus.
(III) Venous drainage of the esophagus.
(IV) Innervation of the esophagus.
(V) Lymphatic drainage of the esophagus.

(From Ellis, F.H.: The Esophagus, Cristopher's Textbook of Surgery, W.B. Saunders Co., 12th ed., edited by Sabiston, D.C., 1981; pp. 1152-1175)