Study Of Oesophageal Dysmotility And Ph Metery In Patients With Bleeding And Non Bleeding Oesophageal Varices

Thesis Submitted For Partial Fulfillment of the M.D. Degree in Internal Medicine By

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Acknowledgement

It gives me a great pleasure to express my deep thanks and sincere gratitude to **Prof. Dr. Ali Monis**, Professor of Internal Medicine and Gastroenterology and hepatology, Ain Shams University. I am indebted to him for his close supervision, valuable instructions, encouragement and thorough revision of this work.

J would like also to express my sincere gratitude and respect to **Prof. Dr. Kholid Hasson Hemida**, Professor of Internal Medicine, Ain Shams University for his guidance, valuable support, precious instructions and encouragement throughout this work.

J am very grateful to **Dr. Samir Abd El-Hamid Ghait** Assistant Professor of Internal Medicine, Ain Shams University, for his continuous supervision, stimulating suggestions, constant advise throughout this work.

J also offer my sincere thanks to **Dr. Sameh Mohamed Ghalu**, Lecturer of Jnternal Medicine, Ain Shams University, for his generous cooperation, sincere guidance and for his help in the revision of this work.

J would like to display my very indebtedness to Dr. Waffa Kamal El-Din, Lecturer of Internal Medicine, Ain Shams University for her valuable advise and kind encouragement.

Many thanks and special regards to **Dr. Magdy El-Gunaidy**, Assistant Professor of Internal Medicine, Ain Shams University for his participation in the practical part of the work.

J am also very grateful to all staff members of Motility Unit, Ain Shams University for their great help.

Ahmed Said Abd El-Hleem

Abstract

Introduction:

The aim of the study was to evaluate oesophageal dysmotility and gastro-oesophageal reflux disease (GERD) in patients with bleeding and non bleeding oesophageal varices (OV) using the state of the art equipment and the prolonged ambulatory pH metery.

Methods:

70 patients with liver cirrhosis classified into three groups; 20 patients without esophageal varices (control group), 20 patients with different grades esophageal varices with no history of variceal bleeding (group I), 30 patients with different grades of esophageal varices with history of variceal bleeding (group II). All patients exposed to full clinical and laboratory assessment, abdominal sonar, upper GIT endoscopy, beside motility study and prolonged ambulatory pH monitoring.

Results:

Significant decrease in the amplitude of motor waves and increase in the peristaltic waves duration in the lower half of the body of the oesophagus, beside significant increase in the incidence of GERD among patients with high grade esophageal varices with further increase in the presence of previous history of variceal bleeding. Non significant changes in lower esophageal sphincter (LES) was also observed.

Conclusion:

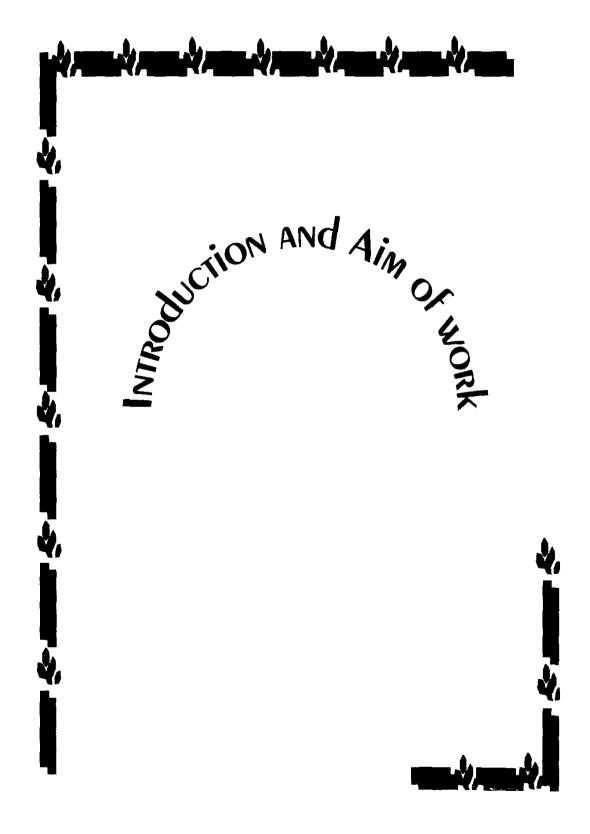
Esophageal varices alter oesophageal motility which in turn compromises the natural mechanism, resulting in prolonged acid contact time and thus oesophageal mucosal injury. Also the combination of oesophageal dysmotility and GERD increases the incidence of variceal bleeding and rebleeding.

List of Abbreviations

DES	Diffuse esophageal spasm
DSRS	Distal spleno-renal shunt
EVL	Endoscopic variceal band ligation
GERD	Gastro-esophageal reflux disease
ISMN	Isosorbid 5 mononitrate
LES	Lower esophageal sphincter
NANC	Non adrenergic non cholinergic
NEMD	Non-specific esophageal motility disorders
ov	Esophageal varices
PCHG	Porto-caval HTLV-I graft
PSS	Progressive systemic sclerosis
TIPS	Trans-jugular intra-hepatic porto-systemic shunt
UES	Upper esophageal sphincter

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Introduction:

Despite different therapeutic modalities of variceal bleeding such as sclerotherapy, band ligation, transjugular intrahepatic portosystemic shunt and medical treatment, it remains a major problem and many prove fatal in up to 50% of patients depending on the severity of the underlying disease.

Compared with non variceal hemorrhage, patients with variceal rebleeding will experience more complications and higher rebleeding and death rates (Laine, 1991).

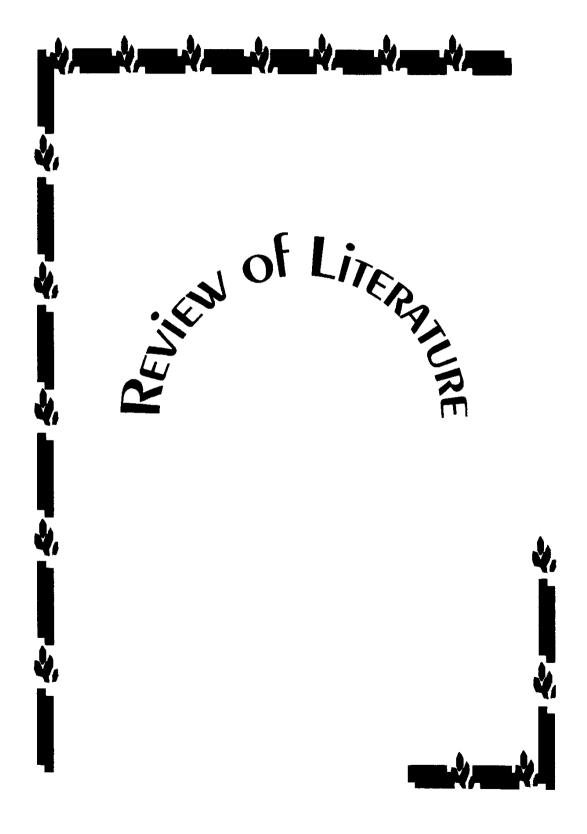
Esophageal motility abnormalities in patients with esophageal varices are rarely studied and usually are not addressed in the clinical setting. Furthermore, there are little informations on the effects of esophageal varices per se and liver cirrhosis on esophageal peristalsis and competency of lower esophageal sphincter (LES) and the integrity of acid clearance mechanism of the esophagus (Ronnie et al., 1997).

The previous studies on esophageal manometery in patients with liver cirrhosis with or without endoscopic evidence of esophageal varices confounded by selection

bias, lack of adequate standardization of variceal grading and disease severity. In addition, reliance on radiological tests for esophageal motility evaluation has limited the usefulness of these studies (Ronnie et al., 1997).

Aim of the Work:

In this study we are trying to present recent and clear data on the effects of esophageal varices on the esophageal motility, competency of LES and esophageal reflux disease, obtained by state of the art motility equipments and prolonged ambulatory pH monitoring. These are beside the adequate standardization of variceal grading, disease severity and overcoming the effects of injection sclerotherapy on the results of the study.



Anatomy and Physiology of the Esophagus

Anatomy of the Esophagus

Gross Anatomy:

The esophagus is a muscular tube, approximately 24 cm in length, that passes through the mediastinum, connecting the pharynx above and the stomach below. It extends from the pharynx, at the 6th cervical vertebra, to the gastro-esophageal junction, just below the diaphragm at the level of the 11th thoracic vertebra.

At both the pharyngeo-esophageal junction and the esophago-gastric junction, there are sphincters that normally occlude the lumen, except during the act of swallowing.

In adult subject, the distance from the incisor teeth to the upper esophageal sphincter usually varies from 15-18 cm. The distance from the incisor teeth to the lower esophageal sphincter in 40 subjects studied by *Lerche* (1950) averaged 40 cm in men, with a range 36 to 50 cm, and 37 cm in women, with a range of 32 to 41 cm.

Musculature of the Esophagus:

The musculature of the esophagus consists of an outer longitudinal muscle layer and an inner circular layer. The longitudinal muscle layer originates as 2 distinct bundles arising from the posterior surface of the

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of the sphincter being situated below the diaphragm. The high-pressure zone of the lower esophageal sphincter, as determined by intubation studies, usually measures 15 to 35 mmHg. The length of the high pressure zone is 3 to 4 cm. Its proximal end is normally located approximately 40 cm from the incisor teeth.

Nerve Supply:

The innervation of the esophagus can be divided extrinsic and intrinsic components. The extrinsic is composed of the vagus nerve and the supply sympathetic fibers derived from the cervical and thoracic sympathetic ganglia. The intrinsic nerve supply is composed of the plexuses of Aurbach and Meissner. The vagus nerve, providing the parasympathetic nerve supply to the esophagus, carry both afferent and efferent fibers. There is evidence suggesting that the upper esophageal sphincter has a double innervation from nuclei in the nucleus ambiguus and the dorsal motor nucleus of the vagus nerve in the medulla. The sympathetic nerve fibers supplying the esophagus are derived from the superior and inferior cervical sympathetic ganglia and the fourth and fifth thoracic ganglia and from preganglionic fibers from the greater and lesser splanchnic nerves. These fibers intercommunicate with fibers of the vagus nerves, thus forming mixed parasympathetic-sympathetic nerves. The intrinsic innervation is arranged as elsewhere in the gastro-intestinal tract. The myenteric plexus (Auerbach's) lies between the longitudinal and circular muscle layers; submucosal plexus (Meissner's) also be may demonstrated (Ekberg and Lindstrom, 1987).

Endoscopic Features:

Several landmarks are important for the endoscopic evaluation of the esophagus. The esophagus begins at the lower border of the cricopharyngeus muscle (upper esophageal sphincter), which is approximately 16 cm teeth. About 7 cm below the from the incisor cricopharyngeus muscle, 23 cm from the incisor teeth, the arch of the aorta crosses the esophagus and its left side, producing a shallow impression on the left anterior wall. Mild flattening of the mucosal folds and transmitted cardioaortic pulsations may be seen at this point. Several centimeters below this, about 25 cm from the incisor teeth, the left main bronchus generally causes an impression on the left anterior aspect of the esophagus. The junction between stratified squamous and columnar epithelium occurs at the cardia. As noted, the transition from stratified squamous to columnar epithelium is marked by a change from a pale color of the mucosa in the former to a deeper red with a velvety appearance in the latter. The overall length of the esophagus varies to some degree, but the average distance to the cardiac from the incisor teeth is approximately 40 cm (Song et al., 1991).

Physiology of the Esophagus:

Although esophageal function is limited, the mechanisms responsible for normal esophageal function are complex and, as yet, only partially understood. It is the only digestive organ in which the musculature undergoes a transition from striated muscle under voluntary control to involuntary smooth muscle. The