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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بسم الله الرحمن الرحيم

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صدق الله العظيم

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1999

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 and Aim of work

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

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.

Review of Literature

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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Musculature of the Esophagus:

The musculature of the esophagus consists outer longitudinal muscle layer and an inner cir layer. The longitudinal muscle layer originates distinct bundles arising from the posterior surface o 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 into extrinsic and intrinsic components. The extrinsic supply is composed of the vagus nerve and the 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; a submucosal plexus (Meissner's) may also be 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 from the incisor teeth. About 7 cm below the 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