

Evaluation of Magnifying Narrow Band Imaging Endoscopy in Portal Hypertensive Gastropathy in Cirrhotic Patients

Thesis

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List of contents

Title	Page
• List of Figures.....	
• List of Tables	
• List of Abbreviations.....	
• Introduction	1
• Aim of the work.....	3
• Review of Literature:	4
▪ Chapter I: Portal Hypertension	
○ Anatomy of the Portal Venous System	4
○ Definition of Portal Hypertension	5
○ Pathophysiology of Portal Hypertension	6
○ Classification of Portal Hypertension.....	7
○ Diagnosis of Portal Hypertension	8
○ Treatment of portal hypertension	11
○ Complications of Portal Hypertension	11
- Ascites	11
- Esophagogastric Varices	14
○ Management of Portal Hypertension and Esophageal Varices	22
- Prevention of formation of varices (pre-primary prophylaxis	22
- Prevention of first variceal hemorrhage (primary prophylaxis	23
- Management of Acute Variceal Bleeding	28
❖ Supportive Measures	29
❖ Pharmacotherapy with vasoactive agents ..	30

List of contents (Cont...)

Title	Page
❖ Endoscopic therapy	33
❖ Management of gastric variceal bleeding .	35
- Prevention of Recurrent Variceal Hemorrhage (Secondary prophylaxis	37
▪ Chapter II: Gastrointestinal mucosal lesions in portal hypertension	45
○ Portal hypertensive gastropathy	45
- Epidemiology	46
- Pathophysiology	48
- Histology	50
- Description and Classification of PHG	51
- Natural history of portal hypertensive gastropathy	53
- Clinical picture	54
- Diagnosis	54
- Management	55
○ Gastric Antral Vascular Ectasia	61
- Incidence and Pathogenesis	62
- Clinical picture	64
- Diagnosis and Differential diagnosis	64
- Treatment	65
▪ Chapter III: Narrow-band imaging (NBI)	71
○ Principles and technical background	71
○ NBI Image	74
○ Clinical application of NBI endoscopy	76

List of contents (Cont...)

Title	Page
- Esophagus	76
- Stomach	79
❖ Chronic gastritis	81
❖ Portal hypertensive gastropathy	82
❖ Gastric neoplasia	84
- The large bowel	86
○ Atlas of NBI in different gastrointestinal lesions ..	87
○ Recent Advances in Image- enhanced Endoscopy	91
- High-resolution magnification endoscopy	92
- Contrast enhancement using dye (chromoendoscopy)	93
- Digital chromoendoscopy (CVC)	94
- Fuji Intelligent Chromo Endoscopy (FICE) ...	95
- Autofluorescence endoscopy (AFI)	96
- Confocal laser endomicroscopy (CLE)	97
- Optical coherence tomography (OCT).....	98
- Newer imaging advancements	99
○ Atlas of recent advances in endoscopy	100
● Subjects and methods	103
● Results	109
● Discussion	132
● Summary	143
● Conclusion and Recommendations	146
● References	147
● Arabic Summary	---

List of Abbreviations

AASLD	American association for the study of liver disease.
AFI	Autofluorescence endoscopy.
APC	Argon plasma coagulation.
BE	Barretts esophagus.
bpm.	Beat per minute.
CCD	Color charge-coupled device.
CE	Capsule endoscopy.
CLE	Columnar epithelium.
CLE	Confocal laser endomicroscopy.
CLE	Confocal laser endomicroscopy.
CME	Conventional magnifying endoscopy.
CV	Collecting venules.
CVC	Computed Virtual chromoendoscopy.
EBL	Elastic banding ligation.
EGD	Eosophagogastrordeudenoscopy.
ESD	Endoscopic submucosal dissection.
EV	Esophageal Varices.
EVB	Esophageal variceal bleeding.
EVL	Endoscopic variceal ligation.
FHVP	Free hepatic venous pressure (FHVP)
FICE	Fuji Intelligent Chromo Endoscopy.
GAVE	Gastric vascular ectasia.
GERD	Gastrosophageal reflux disease.
GOV	Gastroesophageal varices.
Hb	Hemoglobin level.
HP	Helicobacter pylori.
HPSA	Helicobacter pylori stool antigen.
HRME	High resolution magnification endoscopy.
HVPG	Hepatic venous pressure gradient.
IGV	Isolated gastric varices.
IPCL	The intra papillary capillary loop pattern.
ISMN	Iso-sorbide mono-nitrate.
IV	Intravenous.
IVC	Inferior vena cava.

List of Abbreviations (Cont...)

LBC	Light blue crest.
ME	Magnifying endoscopy.
ME-NBI	Magnifying endoscopy with narrow band imaging.
MLP	Mosaic like pattern.
MPEC	Multipolar electrocoagulation.
MS	Microsurface structure.
MV	Microvascular architecture.
NBI	Narrow-band imaging.
Nd:YAG	Neodymium:Yttrium garnet laser.
NERD	Non-erosive reflux disease.
NO	Nitric oxide.
NRH	Nodular regenerative hyperplasia.
NSBB	Non selective β -blockers.
OBI	Optimal band imaging.
OCT	Optical coherence tomography.
OCT	Optical coherence tomography.
PC/SD	Platelet count / splenic diameter.
PHG	Portal hypertensive gastropathy.
PO	Per oral.
PVD	Portal vein diameter.
RF	Radiofrequency.
RGB	Red-green-blue.
SAAG	Serum-ascites albumin gradient.
SCC	Squamous cell carcinoma.
SECN	Sub-epithelial capillary network pattern.
TIPS	Trans-jugular intra-hepatic portosystemic shunt.
VEGF	Vascular endothelial growth factor.
WHVP	Wedged hepatic venous pressure.
WLE	White light endoscopy.

List of Figures

Fig. No.	Title	Page
Review		
1.	The anatomy of the portal venous system.....	5
2.	Normal esophagus in NBI	87
3.	Barrett's esophagus (a) WLE. (b) NBI	87
4.	NBI image of (a) Barrett with dysplasia. (b) Adenocarcinoma arising from Barrett esophagus.....	87
5.	NBI image of (a) Fundic mucosa. (b) Pyloric mucosa	88
6.	NBI image of gastric ulcers	88
7.	NBI image of PHG	88
8.	NBI image of (a) GAVE. (b) Gastric cancer.....	89
9.	NBI image of (a) Normal colon. (b) Ceacum.....	89
10.	NBI image of colonic adenoma	89
11.	NBI image of (a) Crohn's colitis. (b) Ulcerative colitis.....	90
12.	NBI image of colon cancer.....	90
13.	Gastric cancer (a) WLE. (b) Chromoendoscopy	100
14.	Early esophageal cancer. (a)WLE. (b) AFI.....	100
15.	Early gastric cancer. (a) WLE. (b) I-scan.....	100
16.	Confocal laser endomicroscopy. (a)Normal (b) Cancer esophagus.	101
17.	Blood vessel orientation. (a) WLE. (b) FICE.....	101
18.	Gastric cancer (A) FICE. (B) Magnified view.....	101
19.	Colonic inflammation by OCT	102
20.	Colonic high grade dysplasia by OCT	102

List of Figures (Cont...)

Fig. No.	Title	Page
Results		
1.	Normal appearance of gastric mucosa. (a) WLE (b) NBI	115
2.	Normal antral mucosa. (a) WLE. (b) Magnified NBI	115
3.	Reddening mucosa. (a) WLE. (b) NBI.....	115
4.	Magnified NBI view of the antral mucosa	116
5.	Mosaic-like pattern. (a) WLE. (b)NBI.....	116
6.	Red spots. (a) WLE. (b) NBI.....	116
7.	Magnified NBI view of red spots	117
8.	Close view of dilated capillaries and intra-mucosal hemorrhage.....	117
9.	ROC curve to determine cut off value for best sensitivity and specificity of platelet count in differentiation between patients with and without PHG by WLE	126
10.	ROC curve to determine cut off value for best sensitivity and specificity of platelet count/ splenic diameter in differentiation between patients with and without PHG by WLE.....	127
11.	ROC curve to determine cut off value for best sensitivity and specificity of different markers in differentiation between patients with and without PHG by WLE	128

List of Figures (Cont...)

Fig. No.	Title	Page
12.	ROC curve to determine cut off value for best sensitivity and specificity of different markers in differentiation between patients with and without PHG by WLE	129
13.	ROC curve to determine cut off value for best sensitivity and specificity of platelet count/ splenic diameter in differentiation between patients with and without PHG by NBI	130
14.	ROC curve to determine cut off value for best sensitivity and specificity of different markers in differentiation between patients with and without PHG by NBI.....	131

List of Tables

Tab. No.	Title	Page
Review		
1.	Vasoactive agents used in the management of acute hemorrhage	31
2.	Comparison between PHG and GAVE	65
Results		
1.	The Descriptive data of studied groups	110
2.	Comparison between both studied groups as regard laboratory data and sonographic findings.	112
3.	Comparison between both studied groups as regard UGI finding and PHG.....	118
4.	Comparison between cases with and without PHG by WLE as regard laboratory and sonographic data.....	119
5.	Comparison between cases with and without PHG by WLE as regard presence of ascites, varices, presence of PHG by NBI and PVD	120
6.	Comparison between cases with and without PHG by NBI as regard laboratory and sonographic data.....	121
7.	Comparison between cases with and without PHG by NBI as regard presence of ascites, varices, presence of PHG by WLE and PVD	122
8.	Validity of different laboratory markers in prediction of PHG with WLE and NBI	124
9.	Validity of radiological and endoscopic markers in prediction of PHG with WLE and NBI	125

Introduction

Portal hypertension is one of the main consequences of cirrhosis. It can result in severe complications, including bleeding of esophagogastric varices as well as spontaneous bacterial peritonitis or hepatorenal syndrome as complication of ascites (*Dib et al., 2006*).

The gastric mucosa of patients with portal hypertension is frequently subject to many endoscopic alterations, including Portal hypertensive gastropathy (PHG) and gastric antral vascular ectasia (GAVE), and these findings may cause gastrointestinal bleeding in those patients (*Hayashi and Saeki, 2007*).

PHG is the term used to describe the endoscopic appearance of gastric mucosa with characteristic mosaic-like pattern with or without red spots; and the pathogenesis of PHG was proven to involve venous congestion with gastric mucosal capillary dilation and these findings was difficult to be seen by conventional endoscopy (*Hayashi and Saeki, 2007*).

The narrow band imaging system is an endoscopic imaging technique for the enhanced visualization of mucosal microscopic structure and capillaries of the superficial mucosal layer, by changing the spectral features of the illumination used in the video endoscope system (*Tahara et al., 2009*).



The narrow band imaging system obtain its images by using narrower bands of red, blue and green filters (R/B/G), which are different from conventional red, blue and green filters (*Tahara et al., 2009*).

In endoscopic examination, lesions are identified by changes in color and irregularity of mucosal surface (*Tajiri et al., 2002*).

The depth of penetration into the mucosa depends on the wave length used superficial for blue band and deep for red band and intermediate for green band (*Sambougi et al., 2000*).

Combing narrow band imaging with magnifying system allow very clear images of the capillaries of the mucosal surface and microvascular architecture of the gastric mucosa in patients with liver cirrhosis (*Sano et al., 2004*).



Aim of the Work

To evaluate the endoscopic microvascular architecture of the gastric mucosa in patients with liver cirrhosis by using the magnifying narrow band imaging system.



Portal Hypertension

Anatomy of the Portal Venous System

The portal vein is formed by the union of superior mesenteric vein and the splenic vein just posterior to the head of pancreas at about the level of the second lumbar vertebra. It extends slightly to the right of the midline for a distance of 5.5-8 cm before entering the liver at porta hepatic and then divides into right and left portal branches, which enter the corresponding lobes of the liver (*Burroughs et al., 2011*).

The superior mesenteric vein is formed by tributaries from the small intestine, right colon and head of the pancreas and irregularly from the stomach via the right gastroepiploic vein. The splenic veins (5- 15 channels) originate at splenic hilum and join near the tail of pancreas with the short gastric vessels to form the main splenic vein, which proceeds in a transverse direction. The left gastroepiploic vein joins the main splenic vein near the spleen. The inferior mesenteric vein, bringing blood from left part of the colon and rectum, usually enters its medial third. Occasionally, however, it enters the junction of superior mesenteric and splenic veins (*Burroughs et al., 2011*).

Additional contribution to the portal venous blood flow is provided by the left gastric (coronary) vein which drains the lesser gastric curvature and the gastroesophageal junction into the proximal part of portal vein (*Krige and Beckingham, 2001*).