

Portal Hypertensive Colopathy

Thesis

Submitted for Partial Fulfillment of The Requirements of
M.SC
Degree in Tropical Medicine

By

Mohammad Sha'baan Mahfouz

M.B.B.Ch
Cairo University

Supervised by

Prof.Dr. Nabil Mostafa Khalil El Kady

Professor of Tropical Medicine
Cairo University

Dr. Sherif Hamdy Mahmoud

Lecturer of Tropical Medicine
Cairo University

Dr. Dina Omar Mahmoud

Lecturer of Pathology
Cairo University

**Faculty of Medicine
Cairo University**

2008

Acknowledgement

First of all, Thanks to **GOD**, without his will, nothing could have been achieved.

My gratitude to **Prof. Dr. Nabil El Kady** Professor of Tropical Medicine, Cairo University, for his support and endless advices and help. I wish one day to have his way of thinking and part of his perfectionism and part of his knowledge.

I would like to thank **Prof. Dr. Sameh Labib**, The head of endoscopy unit, Cairo University, for the facilities he gave to me to perform this work.

I owe special thanks to **Dr. Sherif Hamdy**, Lecturer of Tropical Medicine, Cairo University, for his patience, unflinching help, advice and strict supervision. Without his guidance, this work would have never come to light.

I would like to express my deepest gratitude to **Dr. Nagla Zayed**, Lecturer of Tropical Medicine, Cairo University, for her strict supervision and revision of this work, her valuable comments, efforts and collaboration were the causes to complete this work properly, so no words can express my gratitude to her.

I would like to thank **Dr. Dina Omar**, Lecturer of pathology, Cairo University, for her effort, time, kindness, and generous help, without her help this work could not be done.

I would like to thank my family for their endless support and care for my whole life. They were always helping and encouraging me to continue and finish this work. I really owe to them so much.

Last, but certainly not least, I owe to the patients included in this study. May God alleviate their sufferings and may all our efforts be just for their own benefit.

Table of contents

Abstract	1
Introduction	2
Aim of the work	5
Review of literature	6
Chapter (1) Anatomic considerations of the normal portal venous system	6
Chapter (2) Pathophysiology of portal hypertension	12
Chapter (3) Assessment of portal hypertension	43
Chapter (4) Colonic mucosal changes in portal hypertension	58
Patients and methods	73
Results	85
Discussion	115
Summary and conclusion	122
References	125
Arabic summary	154

List of tables

Table (1): Agents with contractile or relaxing effects on hepatic stellate cells	28
Table (2): Internal hemorrhoids: grading and management.	61
Table (3): Demographic data of the studied patients.	85
Table (4): Clinical presentation of the studied patients.	86
Table (5): Blood counts of the studied patients.	87
Table (6): Biochemical liver profile of the studied patients.	87
Table (7): kidney function tests of the studied patients.	87
Table (8): Child scoring of the studied patients .	88
Table (9): Aetiology of liver cirrhosis in the studied patients.	88
Table (10): Abdominal Sonographic data of the studied patients.	89
Table (11): upper endoscopic data of the studied patients.	90
Table (12): Grading of colopathy of the studied patients according to colonoscopic findings.	92
Table (13): Histopathological changes in rectal mucosa.	92
Table (14): Histopathological changes in sigmoid mucosa.	93
Table (15): Relation between lower GIT bleeding and colopathy.	94

Table (16): Relation between lower GIT bleeding and severity of colopathy.	95
Table (17): Relation between lower GIT bleeding and the presence of hemorrhoids.	96
Table (18): Relation between lower GIT bleeding and rectal varices.	97
Table (19): Relation between lower GIT bleeding and angiodysplasia.	99
Table (20): Relation between lower GIT bleeding and hyperaemic colonic mucosa.	100
Table (21): Relation between Child score and colonoscopic lesion.	102
Table (22): Relation between Child score and severity of colopathy.	103
Table (23): Relation between presence of esophageal varices and colopathy.	104
Table (24): Relation between grade of esophageal varices and presence of colopathy.	105
Table (25): Relation between gastric varices and presence of colopathy.	105
Table (26): Relation between PHG and presence of colopathy.	106
Table (27): Relation between histopathological changes and presence of endoscopic colopathy.	106
Table (28): Relation between laboratory data and presence of colopathy .	107
Table (29): Relation between PLT and angiodysplastic lesion.	108

Table (30): Relation between sclerotherapy or band ligation and presence of colopathy.	108
Table (31): Relation between sclerotherapy or band ligation and histopathological changes.	109

List of figures

Figure (1): The anatomy of the portal venous system.....	8
Figure (2): The sites of the portal-systemic collateral circulation in cirrhosis of the liver.....	11
Figure (3): <i>Contributing factors to portal hypertension</i>	18
Figure (4): Increased intrahepatic resistance in cirrhosis.....	20
Figure (5): Colonoscopic findings of the studied patients.....	91
Figure (6): Relation between lower GIT bleeding and the presence of Hemorrhoids.....	96
Figure (7): Relation between lower GIT bleeding and rectal varices.....	98
Figure (8): Relation between lower GIT bleeding and Angiodysplasia.....	99
Figure (9): Relation between lower GIT bleeding and hyperaemic colonic mucosa.....	101

Figure (10): Relation between Child score and presence of colopathy.....102

Figure (11): Relation between histopathological changes and presence of endoscopic colopathy.....107

List of pictures

Picture (1): F3 esophageal varices extending high in the esophagus.....	110
Picture (2): Large multilobulated fundal varix.....	110
Picture (3): PHG.....	111
Picture (4): Liver cirrhosis with ascites.....	111
Picture (5): Patent paraumbilical vein.....	112
Picture (6): PHC with mild inflammatory infiltrate.....	112
Picture (7): PHC with vascular ectasia and inflammatory infiltrate.....	113
Picture (8): Active colitis.....	113
Picture (9): Rectal erythema.....	114
Picture (10): Colonic telangiectasia.....	114
Picture (11): Colonic angiodysplasia.....	114
Picture (12): Rectal varices.....	114

List of abbreviation

ALT:	Alanine transaminase
ANG II :	Angiotensin II
ANP :	Atrial natriuretic peptide
AST:	Aspartate transaminase
AT 1:	Angiotensin receptor 1
AV:	Atrioventricular
CO ₂ :	Carbon dioxide
CO:	Carbon monoxide
C GMP:	Cyclic Guanosine Monocyclase
CNS :	Central nervous system
CSPH :	Clinically significant portal hypertension
C.T. :	Computerized tomography
DNA :	Deoxy ribonucleic acid
EDRF:	Endothelin derived growth factor
EIS:	Endoscopic injection sclerotherapy
ET:	Endothelins
EUS :	Endoscopic ultrasound
EVL:	Endoscopic variceal ligation
FHVP:	Free hepatic venous pressure
GFR:	Glomerular filtration rate
HCV :	Hepatitis C virus
HGF:	Hepatocyte growth factor
HSC:	Hepatic stellate cells.
HT :	Hydroxytryptamine

HVPG :	Hepatic venous pressure gradient
IGF:	Insulin like growth factor
IMN:	Isosorbide mononitrate
IV:	Intravenous
LGV:	Left gastric vein.
LPS:	Lipopolysaccharide
L/ min.:	Litre/ minute
MRA:	Magnetic resonance angiography
M RNA:	Messenger ribonucleic acid
NIEC:	North Italian endoscopic Club
N/e NOS:	Neuronal /endothelial nitric oxide synthase.
NO :	Nitric oxide
PDGF :	Platelet Derived Growth Factor
PF:	Portal fibroblast/ platelet factor
PHC:	Portal hypertensive colopathy
PHG:	Portal hypertensive gastropathy
PHT:	Portal hypertension
PSS:	Portosystemic shunts
P.V.:	Portal vein.
RCTs:	Randomized controlled trials
SMV:	Superior mesenteric vein
S.V.:	Splenic vein
TGF:	Transforming growth factor
TIMPs :	Tissue inhibitor metalloproteins
TIPS :	Transjugular intrahepatic portosystemic shunts

TPA : Tissue plasminogen activator
UPA : Uroplasminogen activator
VEGF: Vascular endothelial growth factor
WHVP: Wedged hepatic venous pressure

Abstract

Aim: In patients with liver cirrhosis and portal hypertention, portal hypertensive colopathy is thought to be an important cause of lower gastrointestinal hemorrhage. In this study, we evaluated the prevalence of colonic mucosal changes in patients with liver cirrhosis and its clinical significance. **Methods:** We evaluated the colonoscopic findings of 40 patients with liver cirrhosis and portal hypertension. All patients underwent upper GIT endoscopy to detect the presence of esophageal varices, cardiac varices, and congestive gastropathy, as well as a full colonoscopy to detect changes in colonic mucosa with endoscopic biopsy from the rectum and sigmoid as well as from areas with lesions excluding angiodysplastic area. **Results:** Colonic lesions were found in 29 patients (72.5%), including hemorrhoids in 17 patients (42.5%), diffuse hyperaemic colonic mucosa in 16 patients (40%), angiodysplastic lesions in 13 patients (32.5%) and rectal varices in 7 patients (17.5%). Bleeding per rectum was detected in 8 patients (20%), significant correlation between rectal bleeding and the presence of hemorrhoids, rectal varices and severity of colopathy has been found in this study. histopathological changes were detected in 34 patients (85%). Significant correlation between presence of colonoscopic lesions and histopathological changes were demonstrated by this study. The prevalence of portal hypertensive colopathy increased with worsening Child-Pugh class and with the presence of esophageal varices. Angiodysplastic lesions but not portal hypertensive colopathy was statistically correlated with platelet count. **Key words:** Portal hypertension - Colopathy

Introduction

Portal hypertension is a frequent complication of chronic liver disease, detected not only in schistosomiasis but also in cirrhosis of any etiology (*Ito et al., 1995*).

Various vascular abnormalities have been observed in the mucosa of upper gastrointestinal tract of cirrhotic patients, including gastroesophageal varices and gastric antral vascular ectasia. These vascular lesions account for most of the upper gastrointestinal bleeding in cirrhotic patients (**Gostout et al., 1993 and Viggiano et al., 1992**).

Other parts of the GI mucosa such as the duodenum and jejunum (*Gupta et al.,1996 and Misra et al.,1997*) and the colon (portal hypertensive colopathy) (*Bini et al.,2000 and Misra et al.,2003*) have also been noted to be affected because of portal hypertension. There are reports of bleeding from mucosal lesions in the colon, anorectal and colonic varices. (*Misra et al.,2002*). Thus, it appears that the entire GI tract that drained by the portal venous system is affected in patients with portal hypertension (portal hypertensive intestinal vasculopathy) (*Misra et al., 1996*).

In patients with portal hypertension, colonic mucosal erythema and ectasia, colorectal varices and hemorrhoids have been described. All these