Helicobacter pylori infection in patients with HCV related liver cirrhosis and its association with portal hypertensive gastropathy severity

Thesis

Submitted by

Nabil Mohamed MohamedAbdelgawad

M.B.B.ch faculty of medicine- Alexandria University

In partial fulfillment of master degree in internal medicine

Under supervision of

Professor Dr. TarekMagedElsakaty

Professor of internal medicine

Faculty of medicine- Ain Shams University

Professor Dr. Marcel WiliamKeddeas

Professor of internal medicine

Faculty of medicine- Ain Shams University

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بسم الله الرحمن الرحيم

قال رب اشرح لي صدرى ويسر لي أمرى
واحلل عقدة من لسانى يفقهوا قولي

صدق الله العظيم

طه ٢٥-٢٨

To soul

of My Parents

To my family

Mona MoamenMennaYomna

Acknowledgment

Praise to "Allah", the Most Gracious and the Most Merciful Who Guides Us to the Right Way.

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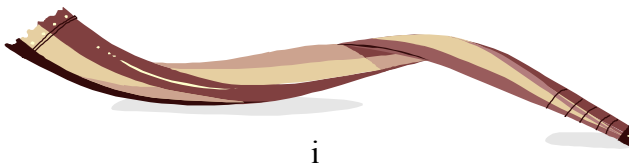

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AD	Alzheimer's disease
AITP	Autoimmune thrombocytopenic purpura
ALP	Alkaline phosphatase
ALT	Alanine aminotransferase
ANG-II	Angiotensin II
AST	Aspartate aminotransferase
AVB	Acute variceal bleeding
BID	Twice a day
CAD	Coronary artery disease
CBC	Complete blood count
CCB	Calcium channel blockers
CEUS	Contrast-enhanced ultrasound
CO	Carbon monoxide
CSF	Cerebrospinal fluid
CVD	Cardiovascular disease
DM	Diabetes mellitus
ECs	Endogenous cannabinoids
EIA	Enzyme immunoassay
ET-1	Endothelin-1
EV	Esophageal varices
FHVP	Free hepatic venous pressure
FIO_2	Fraction of inspired oxygen
GE	Gastroesophageal
GIT	Gastrointestinal tract
H. Pylori	Helicobacter pylori
HBV	Hepatitis B virus
HCC	Hepatocellular carcinoma

HCV	Hepatitis C virus
HO-1	Haem-oxygenase enzymes
HO-2	Haem-oxygenase enzymes
HPS	Hepatopulmonary syndrome
HSC	Hepatic stellate cells
HVPG	Hepatic venous pressure gradient
IDA	Iron deficiency anaemia
INR	International normalized ratio
LS	Liver stiffness
LSPS	Spleen size-to-platelet ratio score
MALT	Mucosa-associated lymphoid tissue
MDCT	Multi detector computed tomography
MELD	Model of end stage liver disease
mPAP	Mean Pulmonary artery pressure
MRE	Magnetic Resonance Elastography
MRI	Magnetic resonance imaging
NAFLD	Nonalcoholic fatty liver disease
NO	Nitric oxide
NSAIDs	Nonsteroidal anti-inflammatory drugs
OD	Once daily
OLT	Orthotopic liver transplantation
PAH	Pulmonary arterial hypertension
PaO_2	Partial pressure of arterial oxygen
PAO_2	Partial pressure of alveolar oxygen
PAWP	Pulmonary artery wedge pressure
PCR	Polymerase chain reaction
PGI_2	Prostacyclin
PH	Portal hypertension
PHG	Portal hypertensive gastropathy

POPH	Portopulmonary hypertension
PPI	Proton pump inhibitors
PT	Prothrombin time
PTT	Partial thromboplastin time
PVR	Pulmonary vascular resistance
RAAS	Renin-angiotensin-aldosterone system
RHC	Right heart catheterization
SAT	Stool antigen test
SEC	Sinusoidal endothelial cells
SS	Spleen stiffness
TGF-beta	Transforming growth factor- beta1
TIPS	Transjugular Intrahepatic Portosystemic Shunt
TNF	Tumor necrosis factor
TTDE	Transthoracic Doppler echocardiography
UBT	Urea breath test
VEGF	Vascular endothelial growth factor
WHVP	Wedged hepatic venous pressure

INTRODUCTION

Cirrhosis is a major health problem with high incidence and prevalence worldwide. It is associated with alterations in the gastrointestinal mucosa, with increased risk for peptic ulcer disease(Rabinovitz M, 1990).

In cirrhosis, portal hypertension results from both an increase in resistance to portal flow and an increase in portal venous inflow. The initial mechanism is increased sinusoidal vascular resistance secondary to deposition of fibrous tissue and subsequent compression by regenerative nodules (fixed component) and active vasoconstriction (functional component), which is caused by a deficiency in intrahepatic nitric oxide (NO), as well as enhanced activity of vasoconstrictors(garcia-Taso, 2012).

Portal hypertensive gastropathy (PHG) is one of the clinically important gastric mucosal lesions because it may cause acute or chronic gastrointestinal blood loss leading to anemia. It is characterized by endoscopic appearance of the gastric mucosa that is classically described as a mosaic-like pattern that resembles snake skin, with or without red spots(Thuluvath P, 2002).

Infection by H. pylori is highly prevalent, especially in low socioeconomic strata of developing countries(HM., 2007). , being

responsible for lesions like gastroduodenal erosions and ulcers. In patients with liver cirrhosis, their prevalence is controversial, as well as the existence of associations with PHG(Pellicano R, 2000, CJ., 1998, Yeh JL, 2001).

AIM OF THE WORK

The aim of this work isto prove the relation between Helicobacter pylori (H.Pylori) infection and its association with portal hypertensive gastropathy (PHG) severity in patients with HCV related liver cirrhosis.

PORTAL HYPERTENSION

Portal vein is the vein that transfers blood from one capillary network to another. The hepatic portal vein receives blood from capillaries of gastrointestinal organs and the spleen and delivers it to the sinusoids of the liver(Derreckson, 2014).

The portal system consists of all the veins that carry blood from the abdominal part of the alimentary tract except lower rectum and anal canal. It also receives drainage from the pancreas, spleen and gall bladder(Agarwal and Jain, 2008).

Portal hypertension is persistent elevation of portal venous pressure (normal = 2–5mmHg).Minor elevations of portal pressure (6–10mmHg) do not result in esophageal varices but higher pressures may doVariceal hemorrhage may occur when portal pressure exceeds 12mmHg(Carey, 2011).

Anatomy of portal circulation

The portal vein starts at the level of the second lumbar vertebra and is formed from the union of the superior mesenteric and splenic veins. It is approximately 8 cm long and lies anterior to the inferior vena cava, posterior to the neck of the pancreas and obliquely to the right. It ascends behind the first part of the duodenum, the common bile duct and gastroduodenal artery. At

this point, it is directly anterior to the inferior vena cava. It enters the right border of the lesser omentum, ascends anterior to the epiploic foramen to reach the right end of the portahepatis, and then divides into right and left main branches which accompany the corresponding branches of the hepatic artery into the liver(Susan Standring, 2008).

The superior mesenteric vein is formed by tributaries from the small intestine, colon and head of the pancreas, and irregularly from the stomach via the right gastroepiploic vein. The splenic veins (5 – 15 channels) originate at the splenic hilum and join near the tail of the pancreas with the short gastric vessels to form the main splenic vein. This proceeds in a transverse direction in the body and head of the pancreas, lying below and in front of the artery. It receives numerous tributaries from the head of the pancreas, and the left gastroepiploic vein enters it near the spleen. The inferior mesenteric vein, bringing blood from the left part of the colon and rectum, usually enters its medial third. it enters the junction of the superior mesenteric and splenic veins(Burroughs, 2011).

As portal pressure rises above 10–12 mmHg, the compliant venous system dilates and collaterals occurwithinthesystemic venous system.Collateralsat the gastroesophagealjunction between left gastric and esophageal vein lead to esophageal varices, whichare superficial in position and tend to ruptureeasily. In the