

# **Insulin Resistance As A Non Invasive Predictor of Esophageal Varices in Patients with Chronic Liver Diseases**

A thesis submitted for partial fulfillment of master degree in internal medicine.

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## **List of Abbreviations**

<b>AASLD:</b>	American Association for the Study of Liver Disease
<b>ALT:</b>	Alanine Aminotransferase
<b>APC:</b>	Argon plasma coagulation
<b>AST:</b>	Aspartate Aminotransferase
<b>BRTO:</b>	Balloon-Occluded Retrograde Transvenous Obliteration
<b>BUN:</b>	Blood Urea Nitrogen
<b>Cb:</b>	Color blue
<b>CHA:</b>	Coded Harmonic Angio
<b>CRS:</b>	Cherry Red Spot
<b>CT:</b>	Computerized Tomographic
<b>CTP</b>	Child Tourqote Pugh
<b>Cw:</b>	Color white
<b>DM:</b>	Diabetes Mellitus
<b>DR:</b>	Diffuse Redness
<b>ELISA:</b>	Enzyme-linked immunosorbent assay
<b>EV:</b>	Esophageal varices
<b>EVL :</b>	Endoscopic variceal ligation

<b>EVS :</b>	Endoscopic variceal sclerotherapy
<b>EVSL:</b>	Endoscopic variceal scleroligation
<b>FHVP:</b>	Free hepatic venous pressure
<b>GGT:</b>	Gamma Glutamyl Transferase
<b>GIT:</b>	Gastrointestinal tract
<b>GOV:</b>	Gastroesophageal varices
<b>GRS:</b>	Gastrorenal shunt
<b>GTT:</b>	Glucose tolerance testing
<b>GVL:</b>	Gastric variceal ligation
<b>GVS:</b>	Gastric Variceal Sclerotherapy
<b>GVs:</b>	Gastric varices
<b>HBs Ag:</b>	Hepatitis B surface antigen
<b>HCS:</b>	Hematocystic Spots
<b>HCV Ab:</b>	Hepatitis C virus antibody
<b>HCV:</b>	Hepatitis C virus
<b><u>HFCS:</u></b>	High fructose corn syrup
<b>HOMA:</b>	Homeostatic model assessment
<b>HVPG:</b>	Hepatic venous pressure gradient

<b>IGT:</b>	Impaired glucose tolerance
<b>IGV:</b>	Isolated gastric varices
<b>IR:</b>	Insulin Resistance
<b>ISDN:</b>	Isosorbide dinitrate
<b>ISMN:</b>	Isosorbide 5-mononitrate
<b>IVC:</b>	Inferior vena cava
<b>LAR:</b>	long acting release
<b>MDSL:</b>	Mini-Detachable Snare Ligation
<b>OGTT:</b>	Oral Glucose Tolerance Test
<b><u>PCOS:</u></b>	Polycystic ovary syndrome
<b>PT:</b>	Prothrombin time
<b>QUICKI:</b>	<u>Quantitative insulin sensitivity check index</u>
<b>ROC :</b>	Receiver Operating Characteristic
<b>RWM:</b>	Red Wale Markings
<b>S.C:</b>	Subcutaneous
<b>SAAG:</b>	Serum-Ascites Albumin Concentration Gradient
<b>SI:</b>	Splenic index
<b>SMS:</b>	Somatostatin
<b>tGLVP:</b>	Terlipressin, Triglycyl-Lysine Vasopressin



<b>TIPS:</b>	Transjugular Intrahepatic Portosystemic Shunt
<b><u>TNF-<math>\alpha</math></u>:</b>	Tumor Necrosis Factor Alfa
<b>WHVP:</b>	Wedge hepatic venous pressure

# **Introduction**

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Esophageal varices (EV) are extremely dilated sub-mucosal veins in the lower esophagus. EV are most often a consequent of portal hypertension, commonly due to cirrhosis. Patients with esophageal varices have a strong tendency to develop bleeding. Esophageal varices are diagnosed with endoscopy (*Biecker et al., 2005*).

Normal portal pressure is approximately 9 mmHg compared to an inferior vena cava pressure of 2-6 mmHg. This creates a normal pressure gradient of 3-7 mmHg. If the portal pressure rises above 12mmHg, this gradient rises to 7-10 mmHg. A gradient greater than 5 mmHg is considered portal hypertension (*Arguedas, 2003*).

In patients with Child A HCV cirrhosis, two simple, easy-to-get tests, namely the platelet/spleen ratio and insulin resistance (IR) measured by Homeostatic model assessment (HOMA), regardless of the presence of diabetes, significantly predict the presence of esophageal varices , outweighing the contribution given by transient elastography (*D'Amico and Morabito, 2004*).

Insulin resistance (IR) is commonly associated with hepatitis C virus (HCV) infection, and development of IR can occur early in the course of HCV infection. The exact pathogenic mechanisms responsible for this association are still unknown; however, they may be related to both HCV itself and to liver injury. IR is a major independent determinat of fibrosis in chronic HCV infection, regardless of the genotype and the severity of liver damage (*Camma, et al., 2009*).

Both IR and beta-cell dysfunction contribute to glucose intolerance in patients with chronic HCV. In addition, IR may be the earliest abnormality in this process, which in the following years may progress to glucose intolerance and also diabetes mellitus (DM). Thus, impaired glucose tolerance (IGT) has been reported in HCV-infected patients before the onset of cirrhosis. HCV infection also is associated with an increased prevalence of diabetes mellitus. These data indicate the specific

role of HCV in the evolution of impaired insulin action and IGT, independent from the development of cirrhosis (*Qamar, et al., 2007*).

Insulin resistance, regardless of the presence of diabetes, significantly predicts the presence of esophageal varices (EV), in subjects with HCV-related cirrhosis. In order to reduce the need for endoscopic procedures, the development of a noninvasive tool for the-prediction of presence of EV is an important issue in subjects with cirrhosis (*Camma, et al., 2009*).

# **Aim of Work**

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The aim of work was to evaluate insulin resistance (IR) as a non invasive predictor of esophageal varices in patients with chronic liver diseases.

# **Review**