Validation of P2/MS and other non-invasive indices for detecting esophageal varices in patients with liver cirrhosis

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MB.B-ch

Submitted for partial fulfillment of master degree of

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2012


بسم الله الرحمن الرحيم

ACKNOWLEDGEMENT

First of all, thanks to "Allah" who granted me the ability to accomplish this work.

I would like to express my deepest gratitude and highest appreciation to Prof. Dr. Mona Ahmed Amin, professor of internal medicine for her continuous encouragement, generous support and unlimited help.

I am extremely grateful to Dr. Ahmed Ibrahim Abdel Ghani Elbadry, assistant professor of internal medicine, for his continuous guidance and suggestions, saving no effort or time to make this work better.

I am greatly honored to express my deepest appreciation to Prof. Dr. May Mohsen Fawzi, assistant Professor of Internal Medicine for her outstanding guidance and kind support throughout the work.

Ahmed Youssef Hassan

DEDICATIONS

I dedicate this work to my beloved family especially my parents who always show so much care, aid, support and patience.

I dedicate this work also to all dear professors from whom I learned as well as my sincere friends who support me.

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LIST OF ABBREVIATIONS:

HREV	**High risk esophageal varices.**
TGF-β_1	**Transforming growth factor-beta.**
PDGF	**Platelet-derived growth factor.**
MMP	**Matrix metalloproteinase.**
TIMP	**Tissue inhibitors for metalloproteinase.**
ALT	**Alanine aminotransferase**
IL	**Interleukin.**
AST	**Aspartate aminotransferase**
ET	**Endothelin.**
ROS	**Reactive oxygen species.**
IGF	**insulin growth factor**
EGF	**epidermal growth factor**
SBP	**Spontaneous bacterial peritonitis.**
HOA	**Hypertrophic osteoarthropathy.**
FSH	**Follicle stimulating hormone.**
LH	**Luteinizing hormone.**
HCC	**Hepatocellular carcinoma.**
LFTs	**Liver function tests.**
GGT	**Gamma-glutamyl transpeptidase.**
IgG	**Immunoglobulin G.**
DIC	**Disseminated intravascular coagulopathy.**
HVPG	**Portal-hepatic venous pressure gradient.**
GOV	**Gastroesophageal varices.**
NIEC	**North Italian endoscopic consortium.**
NSAID	**Non-steroidal anti-inflammatory drugs.**

IGV	**Isolated gastric varices.**
BaEs	**Barium esophagography.**
CT	**Computerized tomography.**
ECE	**Esophageal capsule endoscopy.**
EGD	**Esophagogastroduodenoscopy.**
PVD	**Portal vein diameter.**
ALP	**Alkaline phosphatase.**
PI	**Prothrombin index.**
SAAG	**Serum-ascites albumin gradient.**
BUN	**Blood urea nitrogen.**
AAR	**AST/ALT ratio.**
API	**Age-platelet index.**
APRI	**AST-to-platelet ratio index.**
SPRI	**Spleen-to-platelet ratio index.**
ASPRI	**Age–spleen-to-platelet ratio index.**
ROC	**Receiver operating characteristic.**
AUROC	**Areas under the ROC curve.**
HCV	**Hepatitis C virus**
HBV	**Hepatitis B virus**

INTRODUCTION

AND

AIM OF THE WORK

INTRODUCTION:

The development of esophageal varices in patient with liver cirrhosis is a common complication. The prevalence of esophageal varices among these patients may range from 60 – 80 %. Variceal bleeding occurs in 20 – 40 % of patients and the reported mortality associated with episodes of variceal bleeding is 20 -35 %. (Jensen, 2002). (Graham D, smith Jl., 1981)

In 2005, the Baveno IV consensus stated that cirrhotic patients with portal hypertension should have endoscopic screening for esophageal varices at diagnosis. (De Franchi., 2005)

Patients with large esophageal varices or varices with red wale sign are considered high risk esophageal varices (HREV) and they should start primary prophylaxis for variceal bleeding. The use of beta blockers or band ligation in patient with HREV can reduce incidence of variceal bleeding in approximately 50%. (Cales et al., 1990)

Other authors have suggested that patient with small esophageal varices without risk factors (red wale sign, child C) should repeat the endoscopy at 1-2 year interval, at 2-3 years interval in patient without varices and compensated cirrhosis and at 1 year in patients without varices and decompensated cirrhosis to evaluate variceal progression. (Damico et al., 1995). (Garcia et al., 2007)

So if a simple and noninvasive test is available, many low-risk patients may reliably avoid endoscopy.

Many studies have shown that clinical, biochemical and ultrasonographic parameter are associated with presence and grading of esophageal varices.

AIM OF THE WORK:

large-scale validation study of a simple, noninvasive test called P2/MS based on complete blood counts, (platelet count)$^{(2)}$/[monocyte fraction (%) x segmented neutrophil fraction (%)].

Then compare it with other predictive tests for high risk esophageal varices in cirrhotic patients such as the age-spleen platelet ratio index, spleen-platelet ratio index, age-platelet index, aspartate aminotransferase (AST)-platelet ratio index, AST-alanine aminotransferase ratio and the formula by Berzigotti et al. (Lee et al., 2009). (Kim et al., 2010)

REVIEW OF LITERATURE

CHAPTER ONE

LIVER CIRRHOSIS

DEFINITION:

Necrosis of liver cells followed by fibrosis and nodule formation. The liver architecture is diffusely abnormal and this interferes with liver blood flow and function. This derangement produces the clinical features of portal hypertension and impaired liver cell function. (*Parveen K.,Michael C*, 2005)

AETIOLOGY:

a) **Chronic viral hepatitis (B or C)**
b) **Alcohol**
c) **Non-alcoholic fatty liver disease**
d) **Immune:**
    - **Primary sclerosing cholangitis**
    - **Autoimmune liver disease.**
e) **Biliary:**
    - **Primary biliary cirrhosis**
    - **Cystic fibrosis**
f) **Genetic:**
    - **Haemochromatosis**
    - **α_1-antitrypsin deficiency**
    - **Wilson's disease**
    - **Galactosaemia**
    - **Glycogen storage disease**
g) **Vascular:**
    - **Cardiac cirrhosis following right sided failure**
    - **Budd-Chiari syndrome**
    - **Veno-occlusive disease**
h) **Cryptogenic (unknown).**

World-wide, the most common causes of cirrhosis are viral hepatitis and prolonged excessive alcohol consumption. Prolonged biliary damage or obstruction, as in primary biliary cirrhosis, sclerosing cholangitis and post-surgical biliary strictures will also result in cirrhosis. Persistent blockage of the venous return from the liver e.g. veno-occlusive disease and Budd-Chiari syndrome will eventually result in liver cirrhosis. (Nicki et al., 2010). (Fauci et al., 2008)