

**Study of vitamin D level in Cirrhotic
HCV Patients before and after
transplantation**

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Internal Medicine*

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List Of Abbreviations

AASLD: The American association of liver diseases.
ADH: Antidiuretic hormone.
AFP: Alpha-feto protein.
AIH: Auto immune hepatitis.
AP: Alkaline phosphatase.
ATCR: Acute T- cell mediated rejection.
BMD: Bone mineral density.
BMI: Body mass index.
BP: blood pressure.
CDU: Colour Doppler ultrasonography.
CKD: Chronic kidney disease.
CNI: Calcineurin inhibitor.
CT: Computed tomography.
CVD: Cardiovascular disease.
DBP: Vitamin D binding protein.
ESRD: End stage renal disease.
ERCP: Endoscopic retrograde cholangio pancreatography.
HB core Ab: Hepatitis B core antibody.
HBsAg: Hepatitis B surface antigen.
HCV: Hepatitis C virus.
HCV Ab: Hepatitis C virus antibody.
HPS: Hepato pulmonary syndrome.
HRS: Hepatorenal syndrome.
HVPG: Hepatic venous pressure gradient.
IL: Interleukin.
INF: interferone.
INR: International normalized ratio.
IOM: Institute of medicine.
IPVD: Intra Pulmonary vascular dilatation.
LKM: Liver kidney microsomal.
LT: Liver transplant.
MELD: Model of end stage liver disease.

List Of Abbreviations

MRCP: Magnetic resonance cholangio pancreatography.
NAFLD: Non alcoholic fatty liver disease.
PTC: Percutaneous transhepatic cholangiography.
PTH: Parathyroid hormone.
SBP: Subacute bacterial peritonitis.
T1DM: Type 1 diabetes mellitus.
Th-1: T- helper1.
Th-2: T- helper2.
TIPS: Transjugular intrahepatic portosystemic shunt.
VDR: Vitamin D receptors.

Introduction

Egypt has the highest prevalence rate of hepatitis C virus (HCV) in the world, making it the most challenging public health problem facing the country **(Esmat, 2013)** Studies showed that 7% of the Egyptian population carry hepatitis C virus (HCV) RNA **(Amr *et al.*, 2015).**

Liver cirrhosis occurs with untreated chronic hepatitis C virus infection, patients with cirrhosis are susceptible to a variety of complications, and their life expectancy can be markedly reduced, especially in those with acute on chronic liver failures **(Gustot *et al.*, 2015).**

Vitamin D has been associated with chronic liver diseases and it has been reported that low vitamin D status is a common feature in different types of liver diseases **(Christos *et al.*, 2016).**

According to recent studies , the prevalence of vitamin D insufficiency is higher in patients with chronic liver disease than in general population ranging between 64 and 92 % and it has been also reported that incidence of vitamin D deficiency increases as the liver disease progresses **(Christos *et al.*, 2016).**

Introduction And Aim of The Work

Vitamin D has immunomodulatory effects with direct actions at dendritic cells, monocytes, macrophages, B-cell and T-cell functions considering that vitamin D and vitamin D receptors (VDR) are expressed by several cellular populations of the immune system such as T- helper 1(Th1) and T- helper 2 (Th2) (Christos *et al.*, 2016).

Aim of the Work

The aim of this work is to study vitamin D level in post HCV liver cirrhosis patients before and six months after liver transplantation in addition to chronic HCV patients without cirrhosis.

Liver Cirrhosis

Cirrhosis is defined as histological development of regenerative nodules that are surrounded by fibrous bands in response to chronic liver injury which leads to portal hypertension and end stage liver disease (**Savino *et al.*, 2015**).

Hepatitis C Virus (HCV) infection is a major global health challenge, it is estimated that more than 170 million persons are chronically infected worldwide. Approximately 3.7 million persons in Egypt have chronic HCV infection in the age group 15-59 in 2015, with 7% of the Egyptian population carry hepatitis C virus (HCV) RNA (**Amr *et al.*, 2015**) and (**Aaron *et al.*, 2016**).

Pathophysiology

Persistent intrahepatic T helper 1 cell immune response and the role of numerous TH1-associated cytokines in chronic HCV infection have been documented and selective increase in chemokines and chemokine receptors that promote the accumulation of TH1 cells, has also been observed in chronic HCV infection. Despite the prominent activation of TH1 cells, their response is inadequate to eradicate the virus and produces a nonspecific chronic inflammatory response which finally leads to chronic liver injury. Significantly increased proportions of memory T cells and natural killer T

cells in portal venous blood were found in adult cirrhotic patients (**Nikolaos *et al.*, 2015**) and (**Marwa *et al.* 2017**).

Pathology

Macroscopically, the liver is initially enlarged, but with progression of the disease, it becomes smaller. Its surface is irregular with firm consistency. Depending on the size of the nodules there are three macroscopic types: micronodular, macronodular and mixed cirrhosis. Microscopic picture show the presence of regenerative nodules of hepatocytes surrounded by fibrous connective tissue that bridges between portal tracts (**Mark, 2015**).

Etiology

Most common causes of cirrhosis in the United States

- Hepatitis C (26%)
- Alcoholic liver disease (21%)
- Hepatitis C plus alcoholic liver disease (15%)
- Cryptogenic causes (18%)
- Hepatitis B (15%)
- Miscellaneous (5%)

Miscellaneous causes of chronic liver disease and cirrhosis

- Autoimmune hepatitis
- Primary biliary cirrhosis
- Primary sclerosing cholangitis
- Hemochromatosis

- Wilson disease
- Alpha-1 antitrypsin deficiency
- Type IV glycogen storage disease
- Drug-induced liver disease (e.g. methotrexate, alpha methyl dopa, amiodarone)
- Venous outflow obstruction (e.g. Budd-Chiari syndrome, veno-occlusive disease)
- Cardiac cirrhosis

Chronic Hepatitis C (HCV) is one of the major causes of liver cirrhosis in Western Countries and approximately 10–20% of infected patients have cirrhosis at the time of clinical presentation (**Savino *et al.*, 2015**).

Genotypes

HCV is a spherical, enveloped, single-stranded RNA virus belonging to the Flaviviridae family and Flavivirus genus. There are six major genotypes and several subtypes of the virus.

HCV genotypes differ 30-35% at the nucleotide level, and differences between subtypes within a single genotype are approximately 15% (**Anupriya, 2015**).

Distribution of the HCV genotypes varies worldwide. Genotypes 1, 2, and 3 show relatively broad geographical distribution, whereas genotypes 4, 5, 6 are more confined to specific geographic regions.