Effect Of Vitamin D Status and Serum Ferritin Concentration On Early Virological Response Of Chronic Hepatitis C Virus To Standard Care Therapy

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قَالُوا سُبْحَانَكَ لا عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ
الْعَلِيمُ الْحَكِيمُ

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Thanks **ALLAH**for giving me strength and patience to fulfill this job

May You (**ALLAH**) accept it from me and consider itgood and useful

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To all who will read this one day and find it useful,

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INTRODUCTION

Hepatitis C is caused by RNA flavivirus. Acute symptomatic infection with hepatitis C is rare, most individuals will be unaware of when they became infected and are only identified when they develop chronic liver disease. **(Shiffman et al., 2003)**

Hepatitis C virus (HCV) is a major public health problem and a leading cause of chronic liver disease. **(Williams 2006)**

An estimated 180 million people are infected worldwide,the prevalence of HCV infection between the years 1999 and 2002 was 1.6%, equating to about 4.1 million persons positive for antibody to hepatitis C (anti-HCV), 80% of who are estimated to be viremic. **(Armstrong et al., 2006)**

Hepatitis C is the principal cause of death from liver disease and the leading indication for liver transplantation. **(Kim, 2002)**

Some calculations suggest that mortality related to HCV infection (death from liver failure or hepatocellular carcinoma) will continue to increase over the next two decades. **(Deuffic et al., 2007)**

The optimal approach to detecting HCV infection is to screen persons for a history of risk of exposure to the

virus, and to test selected individuals who have an identifiable risk factor. **(Alter et al., 2004)**

Currently, injection drug use is the primary mode of HCV transmission. Thus, all persons who use or have used illicit injection drugs in the present or in the past, even if only once, as well as intranasal drug users who share paraphernalia, should be tested for HCV infection. **(Armstrong et al., 2006)**

Individuals who have received a blood or blood component transfusion or an organ transplant before 1992 should also be tested. **(Petta et al., 2010)**

With the introduction of sensitive tests to screen blood donors for HCV antibodies in 1992, transfusion-transmission of HCV has become rare. **(Wasley et al., 2005).**

Persons with hemophilia should be tested for HCV infection if blood products were received before 1987, after which time, viral inactivation procedures were implemented. **(Goedert et al., 2007)**

Similarly, individuals with unexplained elevations of the aminotransferase levels (alanine and/or aspartate aminotransferase; ALT/AST), those ever on hemodialysis, children born to HCV-infected mothers, or those with human immunodeficiency virus (HIV)

infection should be tested for the presence of HCV infection. **(Mast et al., 2005)**

Other potential sources of HCV transmission include exposure to an infected sexual partner or multiple sexual partners; exposure among health care workers to HCV contaminated blood and blood products, and tattooing. **(Workowski and Berman 2006)**

This is a list of persons who should be routinely screened for HCV infection. For some groups, such as those with a history of injection drug use or persons with hemophilia, the prevalence of HCV is high (90%). For other groups (recipients of blood transfusions prior to 1992), the prevalence is moderate (10%). For still others, (persons with needle stick exposure, sexual partners of HCV-infected persons), the prevalence is low (1% to 5%).

Persons for Whom HCV Screening is Recommended:

- Persons who have injected illicit drugs in the recent and remote past, including those who injected only once and don't consider themselves to be drug users.
- Persons with hemophilia who received clotting factor concentrate prior to 1987.
- Persons with HIV.

- Persons who ever been on hemodialysis .
- Persons with unexplained abnormal aminotransferase levels.
- Persons who received a transfusion of blood or blood products.
- Children born to HCV -infected mothers.
- Health care, emergency medical and public safety workers after a needle stick injury or mucosal exposure to HCV- positive blood.
- Persons who received organ transplantation. **(conte et al.,2009)**

Chronic hepatitis C affects 170 million people worldwide and is a major cause of chronic liver disease. Combination therapy with pegylated interferon (PEG-IFN) alpha and ribavirin is the current standard of care, but it has limited efficacy and a high cost. During the last decade, several modifiable and non-modifiable parameters have been identified to help clinicians predict the probability of achieving a sustained viral response (SVR) prior to treatment in individual patients. **(lambrecht et al., 2011)**

Two new predictors of response to antiviral treatment have emerged:

1- Serum ferritin concentration:

HCV interferes with the host's iron metabolism, and hepatic iron measures were correlated with the grade and stage, as well as with the treatment outcome, of CHC. **(Bonkovsky et al., 2006)**

Infection with HCV leads to iron accumulation in the liver and increased serum ferritin levels, which can be, at least partially, explained by down-regulation of hepcidin, a key regulator of iron homeostasis. **(Nishina et al., 2008)**

However, serum ferritin is also frequently elevated in inflammatory conditions. Excess iron in the liver promotes liver inflammation, oxidative stress, and mitochondrial dysfunction. **(Drakesmith and Prentice 2008)**

2- Serum vitamin D concentration:

Is also of great interest because it is easily modifiable by dietary supplementation. Based on several recent reports demonstrating that vitamin D appears to possess important immunomediated and antiproliferative effects. **(Petta et al., 2010)**