Prevalence of Hepatitis C Virus Antibodies in Hemodialysis Patients in Kafr El- Sheikh Governorate (Sector B)

Thesis
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By

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List of Abbreviations

ADH	*Antidiuretic hormone*
ALT	*Alanine Aminotransferases*
ANA	*Antinucler antibody*
ANP	*Atrial natriuretic peptide*
ASK	*Atrophic single kidney*
AST	*Aspartate Aminotransferases*
AVF	*ArterioVenous Fistula*
AVG	*ArterioVenous Graft*
BCM	*Bio compatible membrane*
BICM	*Bio incompatible membrane*
BRA	*Bilateral renal atrophy*
C	*Complement*
C.ANCA	*Cytoplasmic pattern antinutrophil cytoplasmic Abs*
CAPD	*Continous Ambulatory Peritoneal Dialysis*
CD	*Cluster of Differentiation*
CDC	*Center for Diseases Control and Prevention*
CHC	*Chronic hepatitis C*
CKD	*Chronic kidney disease*
CRRT	*continuous renal replacement therapy*
CRYO	*cryoglobulinemia*
DM	*Diabetes mellitus*
DMSA	*Di mercapto succinic acid*
DNA	*Deoxyribo neucleic acid*
E	*Envelop glycoproteins*
EHMs	*Extrahepatic manifestations*
EIA	*Enzyme immunoassay*
ELISA	*Enzyme Linked Immunosorbent Assay*
EPA	*Enviromental Protection Agency*

ESRD	*End stage renal disease*
Et	*Endothelin*
ETR	*End-of treatment response*
EVR	*Early viral response*
FDA	*Food and Drug Administration*
GFR	*glomerular filtration rate*
GN	*Glomerulonephritis*
GSH	*Glutathione*
HBV	*Hepatitis B Virus*
HCC	*Hepatocellular carcinoma*
HCV	*Hepatitis C Virus*
HCWs	*Health care workers*
HD	*Hemodialysis*
HGF	*Hepatocyte growth factor*
HIV	*Human Immunodeficiency Virus*
HRS	*Hepato renal syndrome*
HTN	*Hypertension*
IB	*Immuno blot*
ICU	*intensive care unit*
IFNs	*Interferons*
Ig	*Immunoglobulin*
KDIGO	*Kidney Disease Improving Global Outcome*
LDL	*Low Density Lipoprotien*
MALT	*Mucosa associated lymphoma tumor*
MG	*Myasthenia gravies*
mm	*Multible myloma*
MOF	*Multiorgan faliur*
MPGN	*Membranoproliferative glomerulonephritis*
MRI	*Magnetic resonant image*

NIH	*National Institute of Health*
NIPD	*Nocturnal intermittent peritoneal dialysis*
NO	*Nitric oxid*
OBS	*Obstructive uropathy*
PCR	*Polymerase Chain Reaction*
PCT	*Porphyria cutenea tarda*
PEG-IFN	*Pegylated-Interferon*
r.HUEPO	*Recombinant human erythropoietin*
RAS	*Renal artery stenosis*
RBV	*Ribavirin*
Rt-PCR	*Reverse transcriptase Poly chain reaction*
RNA	*Ribo neucleic acid*
RT	*Reverse Transcriptase*
RVR	*Rapid Virological Response*
SLE	*Systemic Lupus Erythematosis*
SLED	*Sustained law efficiency dialysis*
SR	*Scavenger Receptor*
SS	*Sjogren Syndrome*
STD	*Sexually Transmitted Diseases*
SVR	*Sustained viral response*
TMA	*Transcription mediated amplification*
TPN	*Total parentral nutrition*
UOP	*Urin out put*
UTI	*Urinary tract infection*
WHO	*World Health Organization*

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Introduction

Hepatitis C virus (HCV) is a small (40 to 60 nanometers in diameter), enveloped, single-stranded RNA virus of the family Flaviviridae and genus hepacivirus. Because the virus mutates rapidly, changes in the envelope proteins may help it to evade the immune system. There are at least six major genotypes and more than 50 subtypes of HCV. The different genotypes have different geographic distributions ***(Meyers et al., 2003)***.

HCV infection is the most common chronic bloodborne infection in the United States; approximately 3.2 million persons are chronically infected. Although HCV is not efficiently transmitted sexually, persons at risk for infection through injection drug use might seek care in sexual transmitted diseases (STD) treatment facilities, human immune-deficiency virus (HIV) counseling and testing facilities, correctional facilities, drug treatment facilities, and other public health settings where STD and HIV prevention and control services are available ***(Fissell et al., 2004).***

Patients on hemodialysis (HD) have a high risk of acquiring HCV infection. Transfusion of unscreened blood, duration of dialysis and nosocomial transmission within HD

units is implicated as the main transmission routes of HCV infection in HD patients ***(Meyers et al., 2003)***.

HCV infection in patients on HD has been associated with greater morbidity and mortality ***(Froio et al., 2003)***.

Virological diagnosis and monitoring of HCV infection are based on two categories of laboratory tests, namely serologic assay detecting specific antibody to HCV (indirect test) and assay that can detect, quantify or characterize the component of HCV viral particles (direct tests), such as HCV RNA ***(Lok et al., 1998)***.

Antibody detection tests are considered important tools to assess the magnitude of HCV infection in patients on HD. The window phase in HD patients can be longer as these patients are immunocompromised and the anti HCV Enzyme Linked ImmunoSorbent Assay (ELISA) test alone may fail to detect the infected patients in the acute phase of the disease ***(Lok et al., 1998)***.

Chronic hepatitis C varies greatly in its course and outcome. At one end of the spectrum are patients who have no signs or symptoms of liver disease and completely normal levels of serum liver enzymes. Liver biopsy usually shows some degree of chronic hepatitis, but the degree of injury is usually mild, and the overall prognosis may be good ***(Fabrizi et al., 2002)***.

At the other end of the spectrum are patients with severe hepatitis C who have symptoms, HCV RNA in serum, and elevated serum liver enzymes, and who ultimately develop cirrhosis and end stage liver disease. In the middle of the spectrum are many patients who have few or no symptoms, mild to moderate elevations in liver enzymes, and an uncertain prognosis. So, the treatment may be in the form of symptomatic liver support, interferon, ribavirin and even liver transplantation ***(Fabrizi et al., 2002)***.

At present, the main tools of preventing new cases of hepatitis C are to screen the blood supply, encourage health professionals to take precautions when handling blood and body fluids, and inform people about high-risk behaviours. Programs to promote needle exchange offer some hope of decreasing the spread of hepatitis C among injection drug users ***(Moreira et al., 2003)***.

Effective screening of blood and blood products virtually eliminated HCV transmission by blood transfusions a decade ago, and a subsequent decline in HCV incidence and prevalence within HD units in developed countries occurred ***(Fabrizi et al., 2010).***

Vaccines and immunoglobulin (Ig) products do not exist for hepatitis C, and development seems unlikely in the near future because these products would require antibodies to all

the genotypes and variants of hepatitis C. Nevertheless, advances in immunology and innovative approaches to immunization make it likely that some form of vaccine for hepatitis C will eventually be developed ***(Moreira et al., 2003)***.

Aim of the Work

To study the prevalence of hepatitis C antibodies among the patients undergoing regular HD in Kafr El- Sheikh Governorate Sector (B) by a questionnaire form.

They include patients in the following hospitals.

Kafr El- Sheikh city, Biala city, El Hamol city, El Riad city and Baltem city in the period of 1/1/2012 to 30/7/2012.

Chapter (1)

Hepatitis C Virus Overview

Hepatitis C virus (HCV) is the leading cause of chronic liver disease worldwide. It is estimated that about 170 million people are chronically infected with HCV, which is a major cause of cirrhosis and hepatocellular carcinoma ***(Boyer & Marcellin, 2000).***

Hepatitis C virus is the single most important cause of liver disease in Egypt ***(El-Zayadi، 1997; Habib et al., 2001),*** where high HCV rates were reported among several population groups reaching up to 20% ***(Mohamed et al., 2006).***

HCV is a small, enveloped virus with a single stranded RNA genome of positive polarity. Based on its features, it has been classified as the sole member of the genus hepacivirus in the Flaviviridae family, which include 2 other genera with important human and animal pathogens: Flaviviruses (e.g. West Nile virus, dengue virus and yellow fever virus) and pestiviruses (e.g. bovine viraldiarrhea virus and classical swine fever virus) ***(Ivanyi-Nagy et al., 2006).***

HEPATITIS C VIRUS (HCV):

Hepatitis C virus (HCV) is a single stranded ribonucleic acid (RNA) virus that replicates at a rapid rate. As a