Innovative Non- invasive diagnostic tool for HCV infection in Egyptian patients.

A thesis submitted for partial fulfillment of Master Degree in Internal Medicine

By

Olla Abdalla Elshahat Mohammed

M.B., B.CH.

Ain Shams University

Supervised by

Prof. Dr. Ahmed Shawky Elsawaby

Professor of Internal Medicine, Gastroenterology & Hepatology

Faculty of Medicine, Ain Shams University

Prof. Dr. Ahmed Ali Monis

Professor of Internal Medicine, Gastroenterology & Hepatology

Faculty of Medicine, Ain Shams University

Prof. Dr. Ahmed Mohamed Elsawy

Consultant of Gastroenterology & Hepatology of the Egyptian Armed Forces

Faculty of Medicine

Ain Shams University

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✍ *Olla Abdalla Elshahat Mohammed*

بِسْمِ اللّهِ الرّحمَنِ الرّحيمِ

(...رَبِّ أَوزعنِي أَن أَشكُرَ نِعمَتَكَ الّتِي أَنْعَمْتَ عَلَيَّ وعَلى والِدَيَّ وأَنْ أَعْمَلَ صَالِحًا تَرْضَاهُ وأَدْخِلْنِي بِرَحْمَتِكَ فِي عِبَادِكَ الصَّالِحِينَ)

صدق اللّه العظيم

النمل.. اية رقم ١٩

List of content

Page No. *Subject.*

List of Figures

List of Tables

.

List of Tables (cont.)

Table No.	Title	Page No.

List of Abbreviations

Abb.	Full term
AFP	Alpha fetoprotein
Alb	Albumin
ALT	Alanine Aminotransferase
AST	Aspartate Aminotransferase
AUC	Area under the curve
CBC	Complete Blood Count
Cm	Centimeter
Creat.	Creatinine
DAA	Directly acting antiviral
Dl	Deciliter
G	Gram
Eff	Efficiacy
EIA	Enzyme – linked immunoassays
FN	False negative
FP	False positive
HCC	Hepatocellular carcinoma
HCV	Hepatitis C Virus
HS	Highly significant
IBD	Irritable bowel disease
Kd	Kilodalton
MELD	Model for End-stage Liver Disease
Mg	Milligram
Ml	Milliliter
Mm	Millimeter
mm Hg	Millimeter mercury
N*	Negative
Na	Sodium
No	Number

NPV	Negative Predictive value
NS	Non significant
P*	Positive
PCR	Polymerase chain reaction
PEM	Protein energy malnutrition
PPV	Positive Predictive value
PT	Prothrombine time
Sn	Sensitivity
Sp	Specificity
TN	True negative
TP	True positive

Introduction

Introduction

Hepatitis C virus (HCV) infection is one of the main causes of chronic liver disease worldwide . The long-term impact of HCV infection is highly variable, ranging from minimal histological changes to extensive fibrosis and cirrhosis with or without hepatocellular carcinoma (HCC). The number of chronically infected persons worldwide is estimated to be about 160 million, but most are unaware of their infection. The implementation of extended criteria for screening for HCV is a subject of major debate among different stakeholders. Clinical care for patients with HCV-related liver disease has advanced considerably during the last two decades, thanks to an enhanced understanding of the pathophysiology of the disease, and because of developments in diagnostic procedures and improvements in therapy and prevention **(*Lavanchy D* et al., 2011).**

HCV genotype 4 (HCV-4) infection is common in the Middle East and in Africa, where it is responsible for more than 80% of HCV infections. HCV-4 is considered a major cause of chronic liver disease and cirrhosis, which leads to liver failure and is the root cause of hepatocellular carcinoma **(Nguyen M. et al., 2005).**

Diagnosis of Chronic HCV infection is based on the presence of both anti-HCV antibodies, detected by enzyme immunoassays, and HCV RNA, detected by molecular assays. HCV RNA testing is essential for the management of HCV. The most recent assays are based on the use of real-time polymerase chain reaction (PCR). They can detect minute amount of HCV RNA (down to 10 international units IU / ml) and accurately quantify HCV RNA levels up to approximately 10^7 IU / ml.

Their dynamic range of quantification adequately covers the clinical needs for diagnosis and monitoring **(Chevalize S et al.,2008).**

C- Fast is a new invented device for the detection of HCV RNA which depends on that every molecule in nature has its own molecular signature electromagnetic signal which the device can detect it after programming the device (**Gamal S. et al**., **2013).**

Aim of the Study

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The aim of the present study is to assess if we can use C-Fast instead of PCR in detection of HCV infection in Egyptian patients.

Review of Literature