Transient elastography in diagnostic imaging of liver fibrosis in chronic viral hepatitis

Essay submitted for partial fulfillment of Master Degree in Radiodiagnosis

BY

Sara Nabil Abo El Anin Negm

M.B., B.Ch

Cairo University

Supervised By

Prof Dr. Zenat Ahmed El Sabbagh

Assistant Professor of Radiodiagnosis

Faculty of medicine

Ain Shams University

Dr. Rania Mohab El Marzouky

Lecturer of Radiodiagnosis

Faculty of medicine

Ain Shams University

Dr.Zeinab Mostafa Metwalli

Fellow of Radiodiagnosis

National Hepatology & Tropical Medicine Research Institute

Faculty of Medicine

Ain Shams University

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Sara Nabil Aboel Anin Negm

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LIST OF ABBREVATIONS

A mode	Amplitude mode
AFP	Alfa feto protein
ALT	Alanine aminotransferase
Ao	Abdominal aorta
APA	Arterio portal anastomosis
APRI	AST platelet ratio index
AST	Aspartate aminotransferase
AUROC	Area under the receiver operator characteristic curve
BMI	Body mass index
c	Caudate lobe
CBD	Common bile duct
CD	Cluster of differentiation
CHD	Common hepatic duct
cmm	Cubic centimeter
CV	Central venules
ECM	Extracellular matrix
EDHS	Egyptian Demographic Health Survey
ELF	Enhanced liver fibrosis
FI	Fibrosis index
FT	Fibro test

g/dl	Gram per dici litter
GB	Gall bladder
GGT	Gamma glutamyl transferase
HA	Hepatic artery
HAI	Histological activity index
HARI	Hepatic artery resistive index
HBsAG	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCC	Hepatocellular carcinoma
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
HMS	Hepatic microcirculatory subunits
HSCs	Hepatic stellate cells
HV	Hepatic vein
IFN	Interferon
IQR	Inter quartile range
IVC	Inferior vena cava
KPs	Kilo pascals
LSE	Liver stiffness evaluation
LSM	Liver stiffness measurement
m/s	Meter per second
MCL	Mid clavicular line

MHz	Mega hertz
mlU/L	Mili litter unit per litter
MMPs	Matrix metalloproteinase
MRE	Magnetic resonance elastography
NAFLD	Non alcoholic fatty liver disease
NASH	Nan alcoholic staeato hepatitis
ng/dl	Nano gram per dici litter
NPV	Negative predictive value
PBC	Primary biliary cirrhosis
PDGF	Platelet derived growth factor
PPV	Positive predictive value
PSC	Primary sclerosing cholangitis
PV	Portal vein
PVPV	Portal vein peak velocity
RAM	Random accessory memory
RBP	Retinol binding protin
RF	Radiofrequency
RNA	Ribonucleic acid
SEC	Sinusoidal endothelial cells
SMA	Superior mesenteric artery
SMV	Superior mesenteric vein
T-cell	Thymus derived cell

TE	Transient elastography
TIMPs	Tissue inhibitors of metalloproteinase
TM mode	Time motion mode
TSH	Thyroid stimulating hormone
U/L	Unit per litter
US	Ultrasonography

List OF Figures

List OF Tables

Introduction & Aim of the work

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Chronic hepatitis is the most common cause of cirrhosis and hepatocellular carcinoma (HCC) and the leading indication for liver transplantation worldwide. Approximately 20% of chronically infected patients develop liver fibrosis and cirrhosis with subsequent progression to end stage liver disease or HCC ***(Fontaine et al., 2007)***.

Chronic hepatitis B and C **(**HBV&HCV**)** infections are characterized by high rates of chronicity as 70-85% of acute HCV cases evolve into chronic hepatitis ***(Persico et al., 2000)***.

Analysis of the surveillance data showed increasing trend of HBV and HCV infections ***(Ninashvili et al.,2012)***.

In 2002 prevalence rate of chronic HBV infection was 4.5 million , it began increasing in 2005 up to 10.2 million and reached 34.9 million in 2012 (7.5 times increase of the level of 2002). The same applies to chronic HCV infection, In 2002-2004 incidence rate of the infection ranged between 6.6-8.4 per 100 000 population. It began increasing in 2005 and reached 45.5 in 2012 (5 fold increase**)** ***(Ninashvili et al.,2012)***.

The published Egyptian Demographic Health Survey (EDHS) in 2009 was a national probability sample of the resident Egyptian population. This report estimated an overall anti-HCV antibody prevalence of 14.7%. The number of Egyptians estimated to be chronically infected was 9.8% (***Ismail et al., 2011).***

HBV can spread through sex (it is 100 times easier to spread through sex than HIV), blood transfusions (mostly before 1975), and needle sharing by intravenous drug users. The virus can pass from mother to child at birth or soon afterward; the virus can also pass between adults and children to infect whole families. Other people at risk include those with kidney failure who are undergoing hemodialysis a procedure that helps filtering the blood or those receiving a transplanted organ infected with HBV virus. Most adults