شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

A study of the cardiovascular effects of the direct acting anti-hepatitis C virus drugs by Cardiac Magnetic Resonance Imaging

Thesis

Submitted for Partial Fulfillment
of M.D Degree in ***Cardiology***

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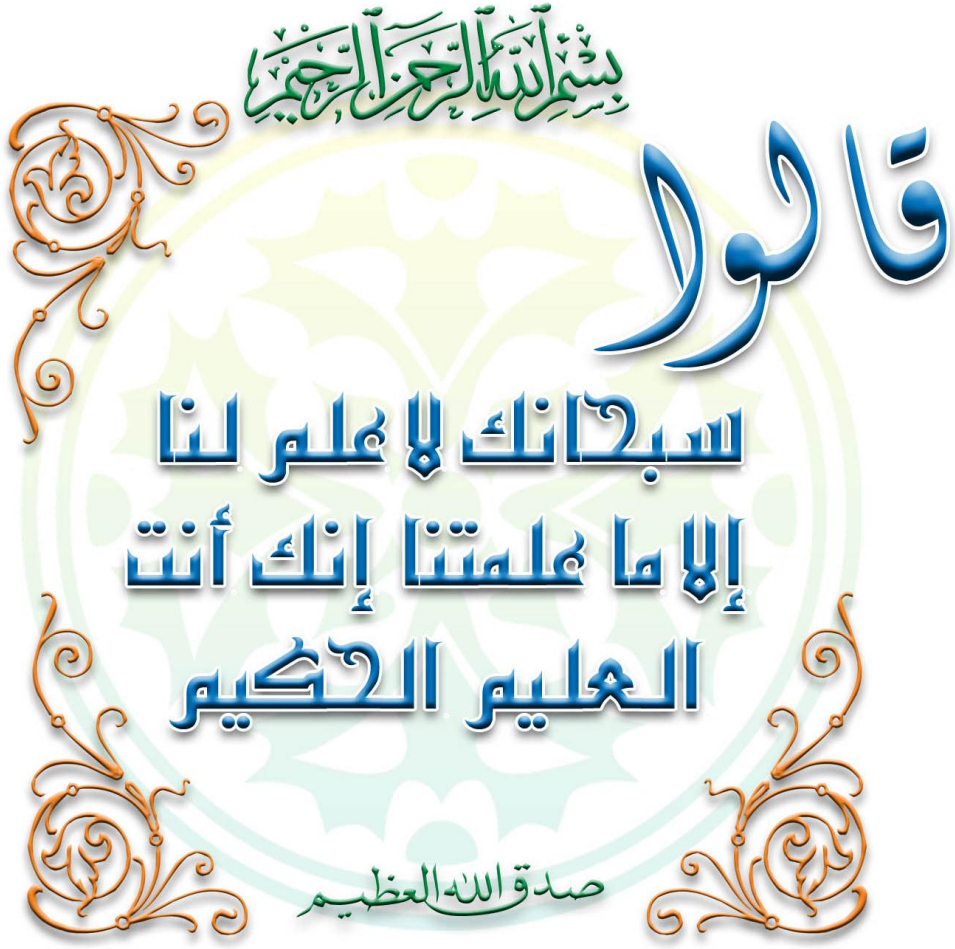
2021



سورة البقرة الآية: ٣٢

Acknowledgment

First and foremost, I feel always indebted to ALLAH,
the Most Kind and Most Merciful.

I wish to express my deepest thanks, gratitude and appreciation to ***Prof. Dr. Tarek Mohammed Khairy Abdel-Dayem****, for his meticulous supervision, kind guidance, valuable instructions and generous help.*

Special thanks are due to ***Prof. Dr. Ahmed Samir Ibrahim*** *Professor of Radio-diagnosis, Faculty of Medicine, Ain Shams University* ***& Professor Dr. Ossama Ashraf Ahmed****, Professor of Gastroenterology & Hepatology, Faculty of Medicine, Ain Shams University, for their sincere efforts and fruitful encouragement.*

I am deeply thankful to ***Prof. Dr. Yaser Goma ElKashaln and Dr.Diaa Eldin Ahmed Kamal*** *for their great help, outstanding support, active participation and guidance.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Last but not least my sincere thanks and appreciation to all patients participated in this study.

Amr Gamal Shawky

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List of Abbreviation

BSA	**:**	body surface area.
CAD	**:**	coronary artery disease.
CK	**:**	creatine kinase.
CMR	**:**	cardiac magnetic resonance imaging.
CV	**:**	cardiovascular.
CVD	**:**	cardiovascular disease.
DAAs	**:**	direct-acting antivirals.
DT	**:**	deceleration time.
ECG	**:**	electrocardiogram.
EDV	**:**	end-diastolic volume.
EDVI	**:**	end-diastolic volume-indexed.
ESV	**:**	end-systolic volume.
ESVI	**:**	end-systolic volume-indexed.
FS	**:**	fractional shortening.
GLS	**:**	global longitudinal strain.
HCG	**:**	human chorionic gonadotropin.
HCV	**:**	Hepatitis C virus.
IVSTD	**:**	inter-ventricular septum thickness in diastole.
LAD	**:**	left atrial diameter.
LAVI	**:**	left atrial volume indexed.
LGE	**:**	late gadolinium enhancement.
LV	**:**	left ventricular.
LVDD	**:**	left ventricular diastolic dysfunction.
LVEDD	**:**	left ventricular end-diastolic diameter.
LVEF	**:**	left ventricular ejection fraction.

LVESD	**:**	left ventricular end-systolic diameter.
PCR	**:**	polymerase chain reaction.
PSIR	**:**	phase sensitive inversion recovery.
PWTD	**:**	posterior wall thickness in diastole.
RSWMA	**:**	resting segmental wall motion abnormalities.
RV	**:**	right ventricular.
RVEF	**:**	right ventricular ejection fraction.
RVSP	**:**	right ventricular systolic pressure.
SSFP	**:**	steady state free precession.
SV	**:**	stroke volume.
SVI	**:**	stroke volume- indexed.
TAPSE	**:**	tricuspid annular plane systolic excursion.
TTE	**:**	trans-thoracic echocardiography.

INTRODUCTION

Chronic infection by hepatitis C virus (HCV) is prevalent worldwide [1,2], with global estimates as high as 1% of world population [3]. Historically, Egypt possessed the highest HCV prevalence, mainly because of using unsafe parenteral injections in the mass treatment of schistosomiasis in the 20th century [4,5].

In the recent years, Egypt has implemented a successful HCV screening and treatment program, which led to nationwide screening of 49.6 million people between October 2018 and April 2019. 2.2 million HCV cases were identified from this mass screening, and they were referred for further evaluation [6].

Between 2001 and 2011, the standardized treatment for chronic HCV infection was a combination of pegylated interferon (PEG-IFN) and ribavirin (RBV) [7]. These therapies were not tolerated by many subjects, had numerous side effects, and was not fully effective [8,9,10].

HCV treatment has witnessed major improvement owing to the introduction of the direct-acting antiviral (DAA) agents [11-20]. However, there were some questions raised about their cardiac safety profile. Some case reports and studies reported

possible cardiac side effects from DAAs, such as cardiomyopathies and conduction disturbance [21-28].

Cardiac Magnetic Resonance Imaging (CMR) is considered the gold standard modality for objective calculation of ventricular volumes and systolic functions, without worrying about the echocardiographic windows or the inter-observer variability [29,30]. The addition of gadolinium enhancement to CMR studies enables the detection of myocardial fibrosis and scarring which can be used to diagnose any cardiac affection before its detection clinically and even before causing evident impairment of ventricular functions [31,32]. Additionally, the pattern of late gadolinium enhancement (LGE) helps in differentiating between ischemic and non-ischemic cardiomyopathies [29,33].

Aim of the Work

Evaluation of the cardiovascular effects and safety of the new direct acting antiviral drugs in Egyptian patients with HCV infection using cardiac magnetic resonance imaging.

REVIEW OF LITERATURE

HCV treatment: the new era of DAAs

Hepatitis C virus (HCV) infection is one of the major global health problems with prevalence as high as 1% of the world population [(1)]. Chronic HCV infection is a leading cause of cirrhosis and liver cancer, with huge social and economic implications [(2)]. Egypt is considered one of the countries with the highest rates of chronic HCV infection, with estimates as high as 14.7% reported in some studies [(3)]. The most prevalent in Egypt is HCV genotype 4 which is the most common genotype in the Middle East and Africa [(4)]. The high prevalence of HCV infection in Egypt is unfortunately due to using unsafe parenteral injections in the mass treatment of schistosomiasis in the 20th century [(5)].

In the recent years, the Egyptian government has successfully implemented a nationwide HCV screening program. In the period between October 2018 and April 2019, 49.6 million Egyptians were screened for HCV, identifying about 2.2 million with HCV infection, and they were referred for further evaluation and treatment [(6)].

This screening program showed that HCV was still highly prevalent among Egyptian adults, even though more than 2