



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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Left Ventricular Function in Recovered COVID 19 Patients using 4 Dimension Echocardiography and Conventional Echocardiography

Thesis

*Submitted for Partial Fulfillment
of Master Degree in Cardiology*

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2021

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

لَسْبَدَانِكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgments

*First and foremost, I feel always indebted to **Allah** the Most Beneficent and Merciful.*

*I wish to express my deepest thanks, gratitude and appreciation to **Prof. Dr. Walaa Adel**, Professor of Cardiology, Faculty of Medicine, Ain Shams University, for her meticulous supervision, kind guidance, valuable instructions and generous help.*

*Special thanks are due to **Dr. Viola William**, Assistant Consultant of Cardiology, Faculty of Medicine, Ain Shams University, for her sincere efforts, fruitful encouragement.*

*I am deeply thankful to **Dr. Hazem Mansour**, Lecturer of Cardiology, Faculty of Medicine, Ain Shams University, for his 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.

Aly Osama Abdelhady Elsayed

List of Contents

Title	Page No.
List of Tables.....	i
List of Figures	ii
Introduction	1
Aim of the Work	4
Review of Literature	
Coronavirus Disease 2019 (COVID-19)	5
Real-Time Three-Dimensional Echocardiography	17
Patients and Methods.....	34
Results.....	50
Discussion	65
Limitations.....	71
Conclusion	72
Summary	73
References	75
Arabic Summary	

List of Tables

Table No.	Title	Page No.
Table 1:	Showing grading of LV diastolic function.....	41
Table 2:	Demographic data:.....	51
Table 3:	Risk Factors:	52
Table 4:	Laboratory finding:.....	54
Table 5:	2D Echocardiography findings:.....	55
Table 6:	2D Echocardiography findings (cont...).	56
Table 7:	2D Echocardiography findings (cont...).	57
Table 8:	2D Echocardiography findings (cont...).	58
Table 9:	Global longitudinal strain of LV:	59
Table 10:	4D echocardiography of Left ventricle:.....	60
Table 11:	Shows the relation between those who had Normal GLS versus who had Abnormal GLS regarding demographic data	61
Table 12:	Shows the relation between those who had Normal GLS versus who had Abnormal GLS regarding Risk factors:	63
Table 13:	Shows the relation between those who had Normal GLS versus who had Abnormal GLS regarding laboratory findings:	64

List of Figures

Fig. No.	Title	Page No.
Figure 1:	Risk factors in patients infected with COVID-19.....	10
Figure 2:	COVID-19 and heart failure	14
Figure 3:	Modes of 3D echocardiography	20
Figure 4:	Proper alignment of the two long axis 2D planes of the left ventricle as indicated by the red and green lines	24
Figure 5:	The top two quadrants show the marking of 5 points-medial mitral annuli, lateral mitral annulus, apex (in the first quadrant), anterior and inferior mitral annulus (in the second quadrant)	25
Figure 6:	End systolic frame with end-systolic volume, stroke volume, and ejection fraction calculated by 3D.	26
Figure 7:	Endocardial and epicardial borders are traced in the end-diastolic frame in the 4 and 2 chamber views (upper left and right boxes)	27
Figure 8:	Parametric image display of segmental timing (above) and excursion (below) in a patient with dilated cardiomyopathy	31
Figure 9:	LA volume measurement in apical four-chamber view.(From our work Patient Number 22).....	38
Figure 10:	Assessment of diastolic function using PWD across the mitral valve .(From our work Patient Number 9).....	40
Figure 11:	Measurement of tricuspid annular plane systolic excursion (TAPSE).(From our work patient Number 2)	42

List of Figures cont...

Fig. No.	Title	Page No.
Figure 12:	Tissue Doppler imaging at the tricuspid annulus, showing peak longitudinal excursion velocity of the basal RV free wall (S').(from our work patient number 14).....	43
Figure 13:	Illustrations of the Steps involved in speckle tracking echocardiography.....	46
Figure 14:	Stepwise guide for LV analysis.....	48
Figure 15:	Assessment of LV volumes By 4D echocardiography (from our work patient Number 22).....	49
Figure 16:	Demographic data	51
Figure 17:	Risk factors analysis as regard smoking.....	53
Figure 18:	Risk factors analysis as regard hypertension and diabetes.....	53
Figure 19:	Shows the relation between those who had Normal GLS versus who had Abnormal GLS regarding demographic data.....	62
Figure 20:	Relation between those who had Normal GLS versus who had Abnormal GLS regarding demographic data.	62
Figure 21:	Shows the relation between those who had Normal GLS versus who had Abnormal GLS regarding Risk factors:	63

List of Abbreviations

Abb.	Full term
<i>2d</i>	<i>Two dimension</i>
<i>4d</i>	<i>Four dimension</i>
<i>ACE</i>	<i>Angiotensin converting enzyme</i>
<i>BSA</i>	<i>Body surface area</i>
<i>CBC</i>	<i>Complete blood picture</i>
<i>CVD</i>	<i>Cardio vascular disease</i>
<i>EDD</i>	<i>End diastolic dimensions</i>
<i>EDV</i>	<i>End diastolic volume</i>
<i>ESD</i>	<i>End systolic dimensions</i>
<i>ESV</i>	<i>End systolic volume</i>
<i>FAC</i>	<i>Fractional area change</i>
<i>GLS</i>	<i>Global longitudinal strain</i>
<i>HF</i>	<i>Heart failure</i>
<i>HGB</i>	<i>Hemoglobin</i>
<i>IL6</i>	<i>Interleukin 6</i>
<i>LAV</i>	<i>Left atrium volume</i>
<i>LV</i>	<i>Left ventricle</i>
<i>LVEF</i>	<i>Left ventricle ejection fraction</i>
<i>MCP</i>	<i>Monocyte chemoattractant protein</i>
<i>PLT</i>	<i>Platelets</i>
<i>PWD</i>	<i>Pulse wave Doppler</i>
<i>RAAS</i>	<i>Renin angiotensin aldosterone system</i>
<i>RT3D</i>	<i>Real time three dimensional</i>
<i>TAPSE</i>	<i>Tricuspid annular plane systolic excursion</i>
<i>TDI</i>	<i>Tissue Doppler imaging</i>
<i>TLC</i>	<i>Total leucocytic count</i>
<i>TNF</i>	<i>Tumor necrosing factor</i>
<i>TR</i>	<i>Tricuspid regurgitation</i>

INTRODUCTION

A Corona virus diseases (COVID 19) is defined an illness caused by a novel corona virus called severe acute respiratory distress syndrome corona virus 2 (SARS COV 2) it was first identified as outbreak as respiratory illness in Wuhan City and later on March 11,2020 and later it was declared as global pandemic.

Presentations of COVID -19 ranged from asymptomatic mild cases up to sever cases which leads finally to death.

Symptoms may develop from 2 days up to 2weeks after exposure. Fever is the most common symptom of COVID-19, other common symptoms include cough, loss of appetite, fatigue, shortness of breath, sputum production, fatigue, diarrhea. Less common symptoms include runny nose, sore throat, skin lesions.

There are several testing protocols for the disease, The standard method is real time reverse transcription polymerase chain reaction (rRT-PCR) . Also Chest CT scans may be done.

The impact of COVID 19 on the Heart is largely unknown but it is at higher risk of failure. Increased afterload from pulmonary embolism, negative inotropic effects of cytokines, and direct angiotensin converting enzyme 2-mediated cardiac injury from COVID 19 are potential mechanisms that can affect the heart ⁽¹⁾.

But Right now Little is known about the cardiac manifestations of COVID-19 because all the data gathered until now were based on laboratory and clinical evaluation or case reports in deteriorating patients We need more follow-up research on the patients that recovered from their illness, to assess the short- and long-term clinical implications of cardiac disease in COVID-19 and to assess for the pathogenesis of RV dysfunction in this disease.

Evaluation of left ventricular size and function are the most common reasons for performing echocardiography in the adult patient. Important diagnostic, prognostic, and treatment decisions depends on LV morphology analysis; the widespread bedside availability, cost, and non-invasive nature of echocardiography means that this technique has become the method of choice in most situations for performing this analysis. However, both M mode and two dimensional (2D) echocardiography make important geometric assumptions about the LV which leads to inaccuracies in measurements. Many echocardiographic departments perform “eyeball” analysis of global and regional LV function and provide visual estimates of ejection fraction because existing quantification methods (from M mode and 2D Echo) are both time consuming and difficult to perform. In an era when so many important and often costly decisions are made upon these data it is incumbent upon departments that accurate and reproducible echo quantification methods are utilised—especially since the “gold standard”

technique of cardiac magnetic resonance (CMR) is not so widely available, is more costly, cannot be used on those with implanted pacemakers or defibrillators, and is disliked by many patients.

Real Time Three dimensional (RT3D) echocardiography has been available for several years using time consuming and difficult reconstruction techniques (often utilizing transoesophageal studies). However, recent advances in computer processing and transducer construction techniques have meant that real time transthoracic 3D echocardiography is now available from major ultrasound system manufacturers. Software programs to analyse 3D datasets of the LV are also now readily available; this combination of new instrumentation and software has been shown to provide highly accurate (compared to CMR) analysis of LV morphology and function, such that this methodology is likely to ensure that echocardiography remains the first choice technique for non-invasive evaluation of the LV.

AIM OF THE WORK

Aim of the Work is to study the effect of COVID 19 on Left Ventricular Function and dimensions using 4D Echocardiography in recovered patients.