

The Value of Left Atrial Deformation Analysis as a Predictor of Severity of Coronary Artery Disease

Thesis

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By Mustafa Fayed Fadle Abd AllahM.B.B.Ch

Under Supervision of Dr/ Ahmed Ibrahim Nassar

Professor of Cardiology Faculty of Medicine - Ain Shams University

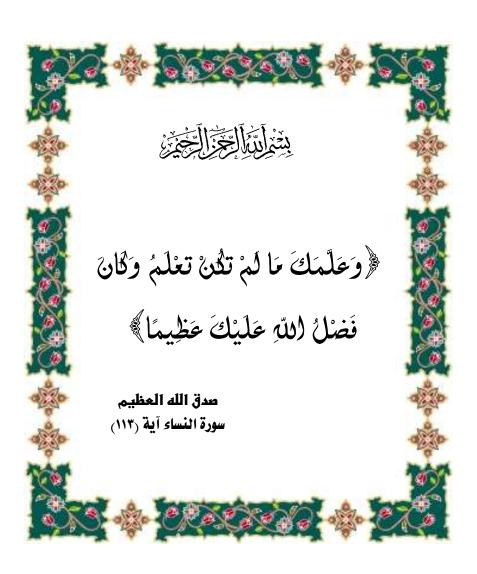
Dr/ Khaled Mohamed Said

Assistant Professor of Cardiology Faculty of Medicine - Ain Shams University

Dr/ Ahmed Ahmed Fouad

Lecturer of Cardiology Faculty of Medicine - Ain Shams University

> Faculty of Medicine Ain Shams University 2018





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List of Abbreviations

Full term Abb. 2D..... Two-dimensionalACC...... American College of Cardiology ACEF The Value of Age, Creatinine, and Ejection **Fraction** ACS...... Acute coronary syndrome AF Atrial fibrillation AHA American Heart Association AP Anteroposterior view *BCIS-1.....The* balloonpump-assisted coronary intervention study CABG...... Coronary artery bypass grafting CAD Coronary artery disease CHF Chronic heart failure CIN Contrast induced nephropathy CRP...... C-reactive protein DES...... Drug-eluting stent. EDS..... Early diastolic strain EDS..... Early diastolic strain EF Ejection fraction ESC..... European Society of Cardiology EuroSCORE...... European system for cardiac operative risk evaluation FPG...... Fasting blood glucose GFR......Glomerular filtration rate GRC The Global Risk Classification HF..... Heart failure hs-TnT High sensitivity troponins HTN...... Hypertension

List of Abbreviations Cont...

Abb.	Full term
<i>IHD</i>	Ischaemic heart disease
<i>LA</i>	Left atrium
LAa SR	Peak atrial longitudinal strain rate during ventricular late diastole
<i>LAD</i>	Left anterior descending
LAe SR	Peak atrial longitudinal strain rate during ventricular early diastole
<i>LAO</i>	Left anterior oblique
LAs SR	$Peak \ atrial \ longitudinal \ strain \ rate \ during \\ ventricular \ systole$
LAVmax	LA maximum volume
LAVmin	LA minimum volume
LAVpreA	$Pre\ A\ volume$
<i>LCX</i>	Left circumflex
<i>LDS</i>	Late diastolic strain
<i>LM</i>	Left main coronary artery
LV	Left ventricle
LVDd	$Left\ ventricular\ end\ diastolic\ dimension$
LVDs	Left ventricular end-systolic dimension
LVEF	Left ventricular ejection fraction
LVH	Left ventricular hypertrophy
<i>MACE</i>	Major adverse cardiac events
<i>MI</i>	Myocardial infarction
MR	Magnetic resonance
NCDR	National Cardiovascular Data Registry
NSTE-ACS	Non ST elevation acute coronary syndrome
<i>NYHA</i>	New York Heart Association;
<i>OM</i>	Obtuse marginal branch
PACS	Peak Atrial Contraction strain

List of Abbreviations Cont...

Abb.	Full term	
PALS	Peak atrial longitudinal strain	
PCI	Percutaneous coronary intervention	
<i>PDA</i>	Posterior descending artery	
<i>RAO</i>	Right anterior oblique	
RCA		
ROI	Region of interest	
<i>RV</i>	Right ventricle	
SR	Strain rate	
SS	Systolic strain	
SS	Systolic strain	
STE	Speckle Tracking Echocardiography	
	ST-elevation myocardial infarction.	
	ue Doppler imaging	

Introduction

Coronary artery disease (CAD) is the leading cause of death all over the world. The World Health Organization estimates that approximately 17 million people die from CAD every year. (1)

LV diastolic function is abnormal in a high percentage of patients with CAD at rest independent of LV systolic function and may occur even in the absence of regional or global left ventricular systolic dysfunction. (2-3) It has been suggested that left ventricular diastolic dysfunction may occur before left ventricular systolic dysfunction and therefore serve as an early and sensitive marker of ischemia. (4)

The principal role of the left atrium is to modulate left ventricular (LV) filling and cardiovascular performance by functioning as a **reservoir** for pulmonary venous return during ventricular systole, **a conduit** for pulmonary venous return during early ventricular diastole, and **a booster pump** that augments ventricular filling during late ventricular diastole. (5)

Two-dimensional (2D) speckle-tracking strain imaging is a novel method for quantitative real-time assessment of regional myocardial deformation that uses tracking of acoustic speckles or kernels rather than Doppler myocardial velocities (6). It has been suggested that Left atrium strain as measured by 2D speckle tracking can be used to evaluate dynamic LA function.⁽⁷⁾



Coronary angiography is the gold standard for diagnosis of coronary artery disease. (8) The Synergy between PCI with TAXUS and Cardiac Surgery score (SYNTAX score) is anatomically based risk calculation that characterize the severity of CAD. (9-11)

AIM OF THE WORK

The aim of this study is to evaluate the relation between LA strain and the severity of coronary artery stenosis in patients with CAD.