Parameters derived from systolic anterior motion of anterior aortic wall and their correlation with left ventricular systolic function

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(قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
العَلِيمُ الحَكِيمُ)

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List of Abbreviations

ACS .....Aortic cusp separation

AO .....Aortic root

ASE .....American Society Of Echocardiography

CAD.....Coronary artery disease

CK .....Creatine kinase

CT.....Computed tomography

CTR.....Cardiothoracic ratio

DBP .....Diastolic blood pressure

DM.....Diabetes mellitus

EDD.....End-diastolic dimension

EDV.....End- diastolic volume

EF .....Ejection fraction

EBCT .....Electronbeam computed tomography

ESD .....End-systolic dimension

ESV .....End -systolic volume

FS.....Fractional shortening

HF.....Heart failure

HTN.....Hypertension

HR .....Heart rate

IVS.....Interventricular septum

LAD.....Left atrial diameter

LBBB.....Left bundle branch block

LV.....Left ventricle

LVEF.....Left ventricular ejection fraction

LVH.....Left ventricular hypertrophy

MRI .....Magnetic resonance imaging

MDCT .....Multidetector computed tomography

MI .....Myocardial infarction

MR.....Mitral regurgitation

NYHA.....New York Heart Association

OMI.....Old myocardial infarction

PET .....Positron emission tomography

PND .....Paroxysmal nocturnal dyspnea

PWT .....Posterior wall thickness

RBBB .....Right bundle branch block

SAM .....Systolic anterior motion

SBP.....Systolic blood pressure

SPECT ....Single-photon emission computed tomography

SD …….. Standard deviation

SWMA ....Segmental wall motion abnormality

Tc.....Technicum

TDI .....Tissue doppler imaging

TR.....Tricuspid regurgitation

VCF .....Velocity of circumferential fiber

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INTRODUCTION

Left ventricular dysfunction is a condition in which the left ventricle of the heart was functionally impaired. This condition usually leads to heart failure, myocardial infarction and other cardiovascular complications. Diagnosis is made by measuring the diminished ejection fraction ***(Carabello, 2002)***.

The most well-accepted expression of global LV function is the ejection fraction which defined as the ratio of stroke volume to end-diastolic volume. Normal values of the left ventricular ejection fraction are 55% to 75% when determined by angiography and echocardiography ***(Carabello, 2002).***

There are several methods to detect the LV systolic function such as nuclear imaging, computed tomography, magnetic resonance imaging and echocardiography.

A major clinical application of echocardiography is the assessment of ventricular systolic function. This is a fundamental part of the standard echocardiographic examination, but is especially important in patients with heart failure and post-myocardial infarction ***(Bernard et al., 2007).***

The ejection fraction is most commonly used to assess the poor ventricular contractility by echocardiography using eyeballing, M-mode and Simpson's method ***(Jae et al., 2007).***

The most common method for determining ventricular volumes is the Simpson rule or the "rule of disks'. This technique requires recording an apical, four- or two-chamber view from which the endocardial border is outlined in end-diastole and end-systole ***(Figenbaum et al., 2005).***

There are several limitations in using Simpson rule measurements of left ventricular volumes. First, apical views must be used, and myocardial dropout is

always a potential problem. For accurate volume determination, the transducer must be at the true apex and the ultrasonic cross-sectional beam must be through the center of the left ventricle ***(Figenbaum et al., 2005).***

There is another measurement which may be of value in the assessment of left ventricular systolic function which is the systolic anterior motion of anterior aortic root. The movement of the aortic root in an anterior direction on M-mode reflects the filling and emptying of left atrium which is confined between the aortic root and spine. A decrease in atrial filling and emptying, for example with low forward stroke volume, result in decreased motion of the aortic root. ***(Catherine et al., 2008).***

AIM OF THE WORK

The aim of this study is to evaluate the systolic function of the left ventricle by the anterior systolic aortic motion of anterior aortic wall obtained from M-mode parasternal long axis view "Aorta – left atrium".