

Effect of Cardiac Rehabilitation on Atrial Function in Patients with Acute Anterior Wall Myocardial Infarction Following Successful Coronary Revascularization

Thesis

Submitted in Partial Fulfillment of MD Degree in Cardiology

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2017

Acknowledgment

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

I'd like to express my respectful thanks and profound gratitude to **Prof. Osama Mohamed Hassan**, Professor of Cardiology - Faculty of Medicine- Ain Shams University for his keen guidance, kind supervision, valuable advice and continuous encouragement, which made possible the completion of this work.

I am also delighted to express my deepest gratitude and thanks to **Prof. Bassem wade Habeeb**, Professor of Cardiology, Faculty of Medicine, Ain Shams University, for his kind care, continuous supervision, valuable instructions, constant help and great assistance throughout this work.

I am deeply thankful to **Prof. Zeinab Abdelsalam Fahmy**, Professor of Cardiology, Faculty of Medicine, Ain Shams University, for her great help, active participation and guidance.

I wish to introduce my deep respect and thanks to **Dr. Ahmed Mohamed Onsy**, Assistant Professor of Cardiology, Faculty of Medicine, Ain Shams University, for his kindness, supervision and cooperation in this work.

I would like to express my hearty thanks to **Dr. Adel Mohamed Shabana**, Lecturer of Cardiology - Ain Shams University for his support till this work was completed.

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

Omnia Yussef Kamel Mohammed

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List of Abbreviations

<i>Abb.</i>	<i>Full term</i>
<i>ABP</i>	<i>Arterial blood pressure</i>
<i>AF</i>	<i>Atrial fibrillation</i>
<i>AHA</i>	<i>American heart association</i>
<i>AMI</i>	<i>Acute myocardial infarction</i>
<i>Apical 2C view</i>	<i>Apical two chamber view</i>
<i>Apical 4C view</i>	<i>Apical four chamber view</i>
<i>Apical LA view</i> ...	<i>Apical long axis view</i>
<i>BMI</i>	<i>Body mass index</i>
<i>CABG</i>	<i>Coronary artery bypass graft</i>
<i>CAD</i>	<i>Coronary artery disease</i>
<i>CCT</i>	<i>Cardiac computed tomography</i>
<i>CK</i>	<i>Creatine kinase</i>
<i>CK-MB</i>	<i>Creatine Kinase-myocardial band</i>
<i>CMR</i>	<i>Cardiac magnetic resonance</i>
<i>CR</i>	<i>Cardiac rehabilitation</i>
<i>CRT</i>	<i>Cardiac re-synchronization therapy</i>
<i>CVD</i>	<i>Cardiovascular disease</i>
<i>DBP</i>	<i>Diastolic blood pressure</i>
<i>DD</i>	<i>Diastolic dysfunction</i>
<i>DM</i>	<i>Diabetes mellitus</i>
<i>Echo</i>	<i>Echocardiography</i>
<i>ESV</i>	<i>End systolic volume</i>
<i>EF</i>	<i>Ejection fraction</i>
<i>FH</i>	<i>Family history</i>
<i>FUP</i>	<i>Follow up</i>
<i>HR</i>	<i>Heart rate</i>
<i>HRR</i>	<i>Heart rate reserve</i>
<i>HTN</i>	<i>Hypertension</i>
<i>JVP</i>	<i>Jugular venous pressure</i>

List of Abbreviations (Cont...)

<i>Abb.</i>	<i>Full term</i>
<i>LA</i>	<i>Left atrium</i>
<i>LAD</i>	<i>Left anterior descending artery</i>
<i>Lat</i>	<i>Lateral</i>
<i>LV</i>	<i>Left ventricle</i>
<i>MET</i>	<i>Metabolic equivalent</i>
<i>MI</i>	<i>Myocardial infarction</i>
<i>MR</i>	<i>Mitral regurgitation</i>
<i>NYHA</i>	<i>New York heart association</i>
<i>PAD</i>	<i>Peripheral artery disease</i>
<i>PCI</i>	<i>Percutaneous coronary intervention</i>
<i>PV</i>	<i>Pulmonary vein</i>
<i>PVC</i>	<i>Premature ventricular contraction</i>
<i>RA</i>	<i>Right atrium</i>
<i>SBP</i>	<i>Systolic blood pressure</i>
<i>Sep</i>	<i>Septal</i>
<i>STEMI</i>	<i>ST segments elevation myocardial infarction</i>

INTRODUCTION

Atherosclerotic cardiovascular disease (CVD) is now the leading cause of death worldwide, it is on the rise and has become a true pandemic that respects no borders (*Schunemann et al., 2008*).

CVD was responsible for 42% of all deaths below 75 years of age in European women and for 38% of all deaths at 75 years in men (*Allender et al., 2008*). However, results from more recent reports do suggest that mortality and morbidity from CVD is levelling, especially in younger adults (*Ford & Capewell, 2007 and Vander et al., 2008*).

There is overwhelming evidence that comprehensive Cardiac rehabilitation (CR) is associated with a reduction in both cardiac mortality (26–36%) and total mortality (13–26%) (*Lawler et al., 2011*).

Cardiac rehabilitation is also associated with a reduction in morbidity, namely recurrent myocardial infarction and a 28–56% reduction in costly unplanned readmissions (*Clark et al., 2005; Davies et al., 2010; Lam et al., 2011*).

Cardiac rehabilitation improves functional capacity and perceived quality of life whilst also supporting early return to work and the development of self-management skills (*Yohannes et al., 2010*).

These benefits make Cardiac rehabilitation one of the most clinically and cost-effective therapeutic interventions in cardiovascular disease management (*Casaclang-Verzosa et al., 2008 and Balady et al., 2011*).

The left atrium (LA) plays a major role in left ventricle (LV) performance, LA function is a surrogate marker of LV diastolic function and the left atrial mechanical dysfunction occurs in LV systolic and diastolic dysfunction, coronary artery disease, myocardial infarction, hypertension, aortic stenosis and cardiomyopathy (*Palecek et al., 2011*).

Assessment of LA size and function provides prognostic data for the outcome of patients with MI or ischemia (*Ariyarajah et al., 2008*).

In ischemic heart disease, the contribution of the LA to LV function may increase if the cardiac myocytes are not affected by direct ischemia (*Cao et al., 2016*).

Atrial infarction can be seen in up to 10% of patients with acute myocardial infarction and it is frequently accompanied by atrial arrhythmias. Electrical remodelling of the atria appears to be a key determinant for maintenance of atrial tachyarrhythmias so normal atrial function is important in maintaining adequate cardiac performance (*Tjandrawidjaja et al., 2005*).

AIM OF THE WORK

To evaluate the effect of cardiac rehabilitation on atrial function using speckle tracking method following successful coronary revascularization for patients with their first presentation of acute anterior ST elevation myocardial infarction (STEMI).

*Chapter 1***CARDIAC REHABILITATION**

Cardiac rehabilitation programs have become an integral part of the standard of care in modern cardiology. Their scope has shifted from the emphasis on exercise therapy to comprehensive secondary prevention strategies managing risk factors, nutritional, psychological, behavioral and social factors that can affect patient outcomes (*Mampuya, 2012*).

While the importance of primary prevention measures aimed at delaying or preventing the onset of cardiovascular disease is obvious and cannot be emphasized enough, cardiac rehabilitation is mainly involved with secondary prevention which relies on early detection of the disease process and application of interventions to prevent the progression of disease. These interventions include education, counseling and behavioral strategies to promote lifestyle change and modify risk factors (*Piepoli et al., 2014*).

In most current guidelines of cardiovascular societies worldwide, cardiac rehabilitation is a class I recommendation (*Piepoli et al., 2014*).