LVEDP as a Predictor of Successful Revascularization in Patients with Acute Coronary Syndromes Undergoing Early Invasive Strategy

Thesis

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Summary

Coronary artery disease (CAD) is the leading cause of death all over the world. Acute coronary syndromes describe a spectrum of clinical syndromes ranging from unstable angina to NSTEMI and STEMI. Patients presenting with ACS are divided into those with ST elevation or new left bundle branch block, and those with NSTEACS which includes transient ST elevation (lasting <20 minutes), unstable angina, and NSTEMI ***(Aroney et al., 2001).***

More than half of all myocardial infarction in unitated states of America each year are classified as non Qwave myocardial infarction are rising. Nevertheless, the clinical course and prognosis of this type myocardial infraction and best approach to management remain controversial. Since patients with Q wave infarction reportedly have higher rates of early and late ischemic complications, presumably because of presence of viable but jeopardized myocardium within the perfusion zone of infracted related artery, their treatment has become more aggressive ***(William et al.,1998).***

Management of high risk acute coronary syndromes by early invasive strategy improve long term survival and reduces late myocardial infarction and rehosptializatio for unstable angina ***(Anthony et al.,2006).***

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List of Abbreviations

ACC ..... American college of cardiology

ACE ..... Angiotensin converting enzyme

ACS ..... acute coronary syndrome

ADA ..... American diabetes association

ADP ..... Adenosine diphosphate

AHA ..... American heart association

APS ..... Angiographic perfusion score

CABG ..... Coronary arteries bypass grafting

CAPTURE ..... Randomized placebo – controlled trial of Abciximab before and during coronary intervention in refractory unstable angina.

CK ..... Creatine kinase

CMRI ..... Cardiac magnetic resonance imaging

CTFC ..... Corrected TIMI frame count

CTnI ..... Cardiac specific troponin I

CTnT ..... Cardiac specific troponin T

EDPVR ..... End–diastolic pressure–volume relationship

ESC ..... European society of cardiology

EUROPA ..... European trial on reduction of cardiac events with perindoprol in stable coronary artery disease

FRISC ..... FRagmin and Fast Revascularisation during Instability in Coronary artery disease

GP ..... Glycoprotein

GRACE ..... Global registry of acute coronary events

List of Abbreviations (Cont.)

HOPE ..... Heart outcome prevention evaluation.

ISIS ..... International study of infarct survival.

LDL ..... Low-density lipoprotein.

LMW ..... Low molecular weight.

LMWH ..... Low molecular weight heparin.

LVEDP ..... Left ventricular end–diastolic pressure

MBG ..... Myocardial blush grade

MI ..... Myocardial infarction.

NCEP-ATP ..... National cholesterol education program, adult treatment panel

NSTE-ACS ..... Non S-T segment elevation acute coronary syndrome

NSTEMI ..... Non ST elevation myocardial infarction.

NYHA ..... New York Heart association

Oasis ..... Organization to Assess Strategies for Ischemic Syndromes.

OPUS ..... Oral glycoprotein IIb/IIIa inhibition with orbofiban in patients with unstable coronary syndromes

PCI ..... Percutaneous coronary intervention

PET ..... Positron emission tomography

PTCA ..... percutaneous transluminal coronary angioplasty

PURSUIT ..... Platelet IIb/IIIa underpinning the receptor for suppression of unstable angina trial

List of Abbreviations (Cont.)

RITA..... Randomized intervention treatment of angina

STEMI ..... ST elevation myocardial infarction

SYMPHONY ..... Sibrafiban versus aspirin to Yield Maximum Protection from ischemic Heart events post-acute coronary syndrome

TACTICS-TIMI 18 . Treat angina with aggrastat and determine cost of therapy with an invasive or conservative strategy TIMI 18

TDI ..... Tissue Doppler imaging

TGF ..... TIMI flow grade

TIMI ..... Thrombolysis in myocardial infarction.

UA ..... Unstable angina

UFH..... Unfractionated heparin

VANQUISH ..... Veterans affairs non-Q wave infarction strategies in hospital.

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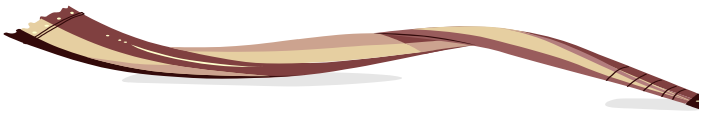

Ahmed Said

Introduction

Coronary artery disease (CAD) is a major cause of mortality and morbidity in developed countries and Egypt ***(Brorsson et al., 2001).*** Before developing the technique of PCI, coronary artery bypass graft (CABG) had been the standard and the only revascularization procedure ***(Woods et al., 2005).*** Besides, CABG is proved to be effective in improving angina symptoms for at least 1 year after the operation ***(Edéll-Gustaffsson, 2002).*** Fortunately, there is an alternative treatment for CAD, the PCI, which is an effective, safe, less disabling and less expensive revascularization procedure compared with CABG ***(Woods et al., 2005).***

The PCI had become a more frequently used treatment than CABG for CAD in most western countries as well as in Egypt. Although the survival rate and functional status are commonly used as the outcome measures for evaluating treatments of CAD. According to ***Hlatky (2000),*** therefore, in considering the effectiveness of a treatment, it is not enough to assess the mortality rate alone; the effect of a therapy on patients' quality of life should also be taken into account. In recent years, other than biochemical endpoints, health-related quality of life (HRQoL) is considered as an important indicator of health outcome in chronic diseases such as CAD ***(Benzer et al., 2003).***

So earlier trials have shown that a routine invasive strategy improves outcomes in patients with acute coronary syndromes without ST-segment elevation. However, the optimal timing of such intervention remains uncertain ***(Cannon et al., 2001).***

A routine invasive strategy is beneficial in high-risk patients with acute coronary syndromes ***(Anderson et al., 2008).*** In high risk patients with third heart sound, pulmonary edema and severely ongoing ischemia, he has elevated left ventricular end diastolic pressure (LVEDP) ***(Gregorg et al., 2005).***

The strongest predictors of mortality in ischemic heart diseases were advanced age, left ventricular end diastolic pressure (LVEDP), L.V ejection friction, systemic blood pressure and renal insufficiency ***(Yun You Li et al., 2009).***

Early intervention may be preventing ischemic events that could occur while the patient is awaiting a delayed procedure ***(Neumann et al., 2003).*** Alternatively, by treating a patient with intensive antithrombotic therapy and delayed intervention for several days, procedure related complications may be avoided with intervention on a more stable plaque ***(De Winter et al., 2005).***

The question is left ventricular end diastolic pressure (LVEDP) will be decrease after PCI in patients with acute coronary syndrome and will be a predictor of outcome?

Aim of the Work

To study using left ventricular end diastolic pressure (LVEDP) after revascularization in high risk patients with acute coronary syndrome without ST segment elevation myocardial infarction undergoing early invasive strategy as predictor of successful reperfusion.

Hemodynamics and Diastolic Function

A. Introduction:

Hemodynamics is concerned with the mechanical and physiologic properties controlling blood pressure and flow through the body.

The hemodynamic component of the cardiac catheterization procedure focuses on pressure measurements, the measurement of flow (e.g., cardiac output, shunt flows, flow across a stenotic orifice, regurgitant flows, and coronary blood flow), and the determination of vascular resistances.

Yet, nowadays with the current improvement of non-invasive modalities of diagnostic procedures (e.g., echocardiography, CT and CMRI), less concern is directed towards intra-cardiac pressure tracing. Recently, FFR has established its role in assessment of functional significance in coronary lesions.

To demonstrate the importance of assessment of left ventricular end-diastolic pressure (LVEDP) in patients presenting with acute coronary syndrome, we will try to focus on the diastolic side of the hemodynamics of the heart.