



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

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MONA MAGHRABY



Evaluation of Cardioprotective Effect of a Single Oral Dose of Nicorandil before Primary PCI in Patients presenting with Anterior STEMI

Thesis

**Submitted for partial Fulfillment of Master Degree
*In Cardiology***

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List of Abbreviations

5-HD	5-hydroxydecanoate
ACEIs	Angiotensin Converting Enzyme Inhibitors
ARBs	Angiotensin receptor blockers
ATP	Adenosine Triphosphate
BBs	Beta adrenoreceptors blockers
Ca	Calcium
CABG	Coronary Artery Bypass Grafting
CAD	Coronary Artery Disease
CK MB	Creatine Kinase Myocardial Band
CKT	Creatine Kinase Total
C_{max}	Peak plasma level of a drug
ECG	Electrocardiogram
IC	Intracoronary
IONA	Investigation of nicorandil in angina
IRA	Infarct-related artery
IV	Intavenous
JACC	Journal of American College of Cardiology
K	Potassium
K-ATP	Adenosine triphosphate sensitive potassium Channel
LAD	Left Anterior Descending artery
LV EF%	Left Ventricle Ejection Fraction%

LV	Left Ventricle
MACE	Major Adverse Cardiac Events
MAPKs	Mitogen-activated protein kinases
MI	Myocardial infarction
mPTP	Mitochondrial Permeability Transition Pore
MVO	Microvascular obstruction
Na	Sodium
PCI	Percutaneous Coronary Intervention
PPCI	Primary Percutaneous Coronary Intervention
PTCA	Percutaneous Coronary Transluminal Angioplasty
PVCs	Premature Ventricular Contractions
PVF	Peak volume flow
RI	Reperfusion injury
RIC	Remote Ischemic Conditioning
RISK	Reperfusion injury salvage kinases
ROS	Reactive oxygen species
STEMI	ST-segment elevation myocardial infarction
STR	ST segment elevation resolution
TFG	TIMI Flow Grade
TIMI	Thrombolysis in Myocardial Infarction
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia

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Abstract:

Background: Nicorandil in conjunction with primary percutaneous coronary intervention (PPCI) has been reported to exert cardioprotective effect in patients with ST segment elevation myocardial infarction (STEMI). Intravenous and intracoronary Nicorandil administration with PPCI have been reported to reduce reperfusion injury consequences and improve cardiac function in patients with STEMI even on the long term .However, there is limited information on the use of oral Nicorandil in STEMI patients .

Objective: The Aim of this study was to evaluate Cardioprotective effect of a single oral dose of Nicorandil 20 mg given before primary PCI in patients presenting with a first anterior STEMI within 6 hours from symptoms onset .

Material and Methods: This study is a Prospective multicenter Study that included 80 Patients who were presenting with first anterior STEMI and undergone primary PCI as a myocardial reperfusion method in the period between June 2016 and May 2018. Patients were divided into two groups: Group A (40 patients) was the Study group which received Nicorandil 20mg single oral dose immediately on admission with the loading doses of aspirin and clopidogril prior to the PPCI procedure and Group B (40 patients) was the Control group that did not receive Nicorandil .

Results: There were no differences between two groups as regards demographic data or risk factors for coronary artery disease. There was statistically significant lower peak levels of cardiac enzymes in group A compared to group B. Peak level of CKT in group A was 1899.1 ± 601.000 compared to 2386.300 ± 844.318 in group B , ($P=0.004$) .The peak level of CK MB in group (A) was 264.100 ± 86.982 compared to 329.325 ± 147.404 in group B ($P=0.018$) .The left ventricle ejection fraction in the study group (43.550 ± 5.114) was found to be higher than control group (40.325 ± 5.753) , ($P=0.010$).

Conclusion: Single dose of Nicorandil 20 mg administered orally and given to patients who were presenting with a first anterior STEMI within 6 hours from symptoms onset prior to reperfusion with primary PCI had a significant cardioprotective effect in the form of higher left ventricular ejection fraction and lesser release of cardiac enzymes (CKT and CK MB) compared to control group which reflects more myocardial salvage of the area at risk and lesser reperfusion induced myocardial damage.

Key words: Nicorandil, STEMI, Reperfusion Injury, Primary PCI.

INTRODUCTION

Despite the major advances against ischemic heart disease over the past 50 years, myocardial infarction remains a leading cause of death and disability worldwide even into the 21st century. In patients presenting with an acute ST-segment elevation myocardial infarction (STEMI), the most effective therapeutic intervention for reducing ischemic injury, limiting the size of myocardial infarction (MI), preserving the left ventricular (LV) systolic function and preventing the onset of heart failure is timely and effective myocardial reperfusion using either thrombolytic therapy or Primary Percutaneous Coronary Intervention (PPCI). ⁽¹⁾

Effective reperfusion of the occluded coronary artery led to a reduction of myocardial necrosis and significantly improved the prognosis in acute STEMI ⁽²⁾. For the past two decades mortality and morbidity in STEMI patients were reduced significantly and is mainly due to improvements in the availability and efficacy of reperfusion Therapy, in particular PPCI. Currently, in addition to primary angioplasty with stent implantation and manual aspiration thrombectomy, modern fast acting antiplatelet agents and anticoagulants have been widely introduced into clinical practice, which further improved the patency of the infarct-related artery (IRA) and the efficiency of reperfusion. ⁽³⁾