Impact of Oral Nicorandil Intake on Incidence of Acute Kidney Injury in Diabetic Patients with Renal dysfunction Undergoing Elective Percutaneous Coronary Intervention

A Thesis

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List of Contents

List of abbreviations

PCI : Percutaneous coronary angiography
CI-AKI : Contrast-induced acute kidney injury
CHF : Congestive heart failure
CKD : Chronic Kidney Disease
MDRD : Modification of diet in renal disease
ROS : Reactive oxygen species
CIN : Contrast-induced nephropathy
ATP : Adenosine triphosphate
NO : Nitric oxide
DM : Diabetes mellitus
IABP : Intra-aortic balloon pumb
eGFR : estimated glomerular filtration rate
HOCM : High-osmolar contrast media
LOCM : Low-osmolar contrast media
IOCM : Iso-osmolar contrast media
AKI : acute kidney injury
ESC : European society of cardiology
AHA : American heart association
RCT : randomized controlled trial
EBP : extracorporeal blood purification
IDF : International diabetes federation
ADA : American diabetes association
WHO : world health organization
GDM : gestational diabetes mellitus
HIV : Human immunodeficiency virus
AIDS :Acquired immune deficiency syndrome
FPG : fasting plasma glucose
ESRD : End-stage renal disease
DKD : Diabetic kidney disease
Cr : Creatinine

s. Cr : Serum creatinine
ACE : Angiotensin converting enzyme
IHD : ischemic heart disease
GBD : global burden of disease
VOC : voltage sensitive calcium channel
ROC **:** Receptor operated calcium channel
MLCP **:**Myosin light chain phosphatase
BK Channel : Big potassium channel
PKG **:** cGMP dependent protein kinase
IP3 **:** inositol triphosphate
mPTP **:** mitochondrial permeability transition pore
ATP **:** adenosine triphosphate
PKC **:** protein kinase C
ROC **:** Receptor operated calcium channel

List of Tables

Tab. No.	Title	Page No.

List of Figures

Fig. No.	Title	Page No.

Introduction

INTRODUCTION

Contrast-induced acute kidney injury (CI-AKI) is a serious and prevalent side effect of the administration of iodine contrast medium after Coronary angiography or Percutaneous Coronary Intervention procedures.

The European Society of Urogenital Radiology defines contrast-induced acute kidney injury as any of the following **(Kellum J. et al., 2012)**:

- Increase in Serum creatinine by more than or equal 0.3 mg/dl within 48 hours.
- Increase in serum creatinine to more than or equal to 1.5 times baseline, which is known or presumed to have occurred within the prior 7 days
- Urine volume less than 0.5 ml/kg/h for 6 hours

CI-AKI incidence ranges from 2-5% in the general population to 50% in high-risk patients **(Cheungpasitporn et al., 2014).**

The risk factors for CI-AKI include diabetes mellitus (which is associated with increased risk even in patients with preserved renal function), congestive heart failure (CHF), age > 75, hypertension, hypotension, decreased renal perfusion, female gender, high-osmolar contrast, contrast volume, urgent versus planned PCI and most importantly, chronic kidney disease (CKD) **(Mehran R et al., 2004).**