Comparative Study between Diabetic and non- Diabetic Patients Regarding Prevalence of Coronary Artery Disease and Plaque Composition by Multi-detector CT Coronary Angiography

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قَالُوا

سبحانك لا علم لنا

إلا ما علمتنا إنك أنت

العليم الحكيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

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List of Abbreviations

Abb.	Full term
2D	Two dimensions
3D	Three dimensions
ACCF	American college of cardiology foundation
AHA	American heart association
AOR	An Odds Ratio
CABG	Coronary artery bypass and grafting
CAD	Coronary artery disease
CAP	Coronary artery plaque
CCT	Coronary Computed tomography
CCTA	Coronary computed tomography angiography
CHD	Coronary heart disease
CI	Confidence interval
CKs	Cytokines
CT	Computed tomography
HR	Heart rate
HS	Highly significant
HTN	Hypertension
HU	Hounsfield units
IL	Interleukin
LA	Left atrium
LAA	Left atrial appendages
LAD	Left anterior descending
LCx	Left circumflex
LDL	Low density lipid
LM	Left main
LSPV	Left superior pulmonary vein
MDCT	Multidetector computed tomography

List of Abbreviations Cont...

Abb.	Full term
MI	Myocardial infarction
MIP	Maximum projection intensity
MPR	Multiplanar reconstruction
NAD	Nicotinamide adenosine dinucleotide
NC	Necrotic core
NS	Non significant
OM	Obtuse marginal
P	Prevalence
PDA	Posterior descending artery
RCA	Right coronary artery
ROI	Area of interest
RR	Inter beat interval
RSPV	Right superior pulmonary vein
S	Significant
SA	Superior atrial
SD	Standard deviation
Sig	Significance
TNF	Tumor necrosis factor
VA	Ventriculo-atrial

INTRODUCTION

Coronary artery disease (CAD) is the leading cause of morbidity and mortality worldwide. The treatment of CAD has changed significantly in the last two decades *(Rochette et al., 2013).*

Diabetes is known to be a major cardiovascular risk factor associated with significantly increased morbidity and mortality and particularly increased risk of major cardiac events especially myocardial infarction as a manifestation of highly incident coronary artery disease. This can lead to decreased life expectation and life quality. Major cause for myocardial infarction is plaque rupture. Prevalence of obstructive and non-obstructive plaques is increased in diabetic patients *(Nadjiri et al., 2016).*

Recent trials have demonstrated that both anatomical and functional significance are crucial to clinical outcomes for symptomatic CAD patients considered for revascularization *(Rochette et al., 2013).*

The primary advantage of MDCT is the ability to obtain thin cross-sectional axial images, with improved spatial resolution over ultrasound, nuclear medicine and magnetic resonance imaging. CT images, which are inherently digital and thus quite robust, are amenable to 3-D computer reconstruction, allowing for nearly an infinite number of projections *(Budoff, 2016).*

Coronary CT Angiography not only substitutes invasive coronary angiography under certain conditions but it furthermore emerges as a useful prognostic tool for prediction of subsequent cardiac events *(Nadjiri et al., 2016).*

The exceptional contrast resolution of CT (ability to differentiate fat, air, tissue and water), allows visualization of more than the lumen or stent but rather the plaque, artery wall and other cardiac and non-cardiac structures simultaneously *(Budoff, 2016).*

AIM OF THE WORK

The aim of this study is to assess the prevalence of coronary heart disease in diabetic patients in comparison to non-diabetics and evaluating the composition of the plaque in diseased individuals.