بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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MONA MAGHRABY

Comparison between the Computed Tomography (CT) Coronary Angiography by Using "Coronary Artery Disease - Reporting and Data System (CAD-RADS)" and the Conventional Coronary Angiography in Assessment of the Coronary Artery Stenosis Severity

Thesis

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Radiodiagnosis

By

Ahmad Mohammad Abdelmonem Ibrahim Haggag
M. B. B. Ch., Ain Shams University

Under supervision of

Prof. Dr. Mounir Sobhy Guirguis
Professor of Radiodiagnosis
Faculty of Medicine, Ain Shams University

Dr. Ahmed Samy Abdelrahman
Assistant Professor of Radiodiagnosis
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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Ahmad Haggag

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List of Abbreviations

Abb.	Full term
2D	*Two-dimensional*
3D	*Three-dimensional*
ACC	*American College of Cardiology*
ACR	*American College of Radiology*
AO	*Aortic root*
ASU	*Ain Shams university*
AV	*Atrioventricular*
BPM	*Beat per minute*
CABG	*Coronary artery bypass graft*
CAD	*Coronary artery disease*
CAD-RADS	*Coronary Artery Disease Reporting And Data System*
CCTA	*Coronary computed tomography angiography*
CECT	*Contrast-enhanced computed tomography*
CHF	*Congestive heart failure*
CS	*Coronary sinus*
CT	*Computed tomography*
CTA	*Computed tomography angiography*
D1	*First diagonal branch*
D2	*Second diagonal branch*
DM	*Diabetes Mellitus*
EBCT	*Electron beam computed tomography*
ECG	*Electrocardiography*
G	*Graft*
HTN	*Hypertension*
HU	*Hounsfield units*

List of Abbreviations (Cont...)

Abb.	Full term
ICA	*Invasive coronary angiography*
IHD	*Ischemic heart disease*
IV	*Intravenous*
LA	*Left atrium*
LAD	*Left anterior descending artery*
LCA	*Left coronary artery*
LCx	*Left circumflex artery*
LMT	*Left main trunk*
LV	*Left ventricle*
MDCT	*Multi-detector computed tomography*
mg	*Milligram*
MI	*Myocardial infarction*
MIP	*Maximum intensity projection*
mL	*Millilitre*
mm	*Millimetre*
MRP	*Multi-planar reformations*
MSCT	*Multi-slice computed tomography*
N	*Non-diagnostic*
NASCI	*North American Society for Cardiovascular Imaging*
NPV	*Negative Predictive Value*
OM	*Obtuse marginal artery*
PDA	*Posterior descending artery*
PPV	*Positive Predictive Value*
RA	*Right atrium*
RCA	*Right coronary artery*

List of Abbreviations (Cont...)

Abb.	Full term
RI	*Ramus intermedius artery*
RV	*Right ventricle*
S	*Stent*
sec	*Second*
SSCT	*Society for Cardiovascular Computed Tomography*
SVG	*Saphenous vein graft*
TIMI	*Thrombolysis In Myocardial Infarction*
V	*Vulnerable*
VRT	*Volume rendering technique*

INTRODUCTION

Coronary artery disease (CAD), also known as ischemic heart disease (IHD), refers to a group of diseases which includes stable angina, unstable angina, myocardial infarction, and sudden cardiac death ***(Wong, 2014).***

Limitation of blood flow to the heart causes ischemia (cell starvation secondary to a lack of oxygen) of the heart's muscle cells. The heart's muscle cells may die from lack of oxygen and this is called a myocardial infarction (commonly referred to as a heart attack). It leads to damage, death, and eventual scarring of the heart muscle without regrowth of heart muscle cells. Chronic high-grade narrowing of the coronary arteries can induce transient ischemia which leads to the induction of a ventricular arrhythmia, which may terminate into a dangerous heart rhythm known as ventricular fibrillation, which often leads to death ***(Ambrose and Singh, 2015).***

Coronary artery disease (CAD), represents a leading cause of death. Establishing its anatomic diagnosis requires coronary angiography, recent technical advances in multi-detector computed tomography (MDCT) have led to fast electrocardiogram-gated acquisition with sub-millimetre spatial resolution, thus allowing excellent visualization of the coronary arteries ***(Garcia et al., 2006).***

The Coronary Artery Disease - Reporting and Data System (CAD-RADS) is a standardized findings communication method and clinical decision aid relevant to coronary CT angiography. The system was created by a collaboration of the Society for Cardiovascular Computed Tomography (SCCT), American College of Radiology (ACR), and North American Society for Cardiovascular Imaging (NASCI) and was also endorsed by the American College of Cardiology (ACC). The system was published in 2016 ***(Cury et al., 2016).***

The intent of CAD-RADS is to create a standardized method to communicate findings of coronary CT angiography (coronary CTA) to facilitate decision-making regarding further patient management. The suggested CAD-RADS classification is applied on a per-patient basis and represents the highest-grade coronary artery lesion documented by coronary CTA. It ranges from CAD-RADS 0 (Zero) for the complete absence of stenosis and plaque to CAD-RADS 5 for the presence of at least one occluded coronary artery and should always be interpreted in conjunction with the impression found in the report. Specific recommendations are provided for further management of patients with stable or acute chest pain based on the CAD-RADS classification ***(Cury et al., 2016).***

The main goal of CAD-RADS is to standardize reporting of coronary CTA results and to facilitate communication of test results to referring physicians along with suggestions for subsequent patient management. Also, CAD-RADS will