

الآية

قال تعالى:

﴿وَالَّذِينَ جَاءُوا مِنْ بَعْدِهِمْ يَقُولُونَ رَبَّنَا اغْفِرْ لَنَا
وَلِإِخْوَانِنَا الَّذِينَ سَبَقُونَا بِالْإِيمَانِ وَلَا تَجْعَلْ فِي
قُلُوبِنَا غِلًّا لِلَّذِينَ آمَنُوا رَبَّنَا إِنَّكَ رَءُوفٌ رَحِيمٌ﴾

صدق الله العظيم

(سورة الحشر الآية : 10)

Dedication

To;

My parents...

And my daughters...

My brothers and all friends...

Acknowledgment

First of all, I thank Allah the Almighty for helping me complete this project. I thank Dr. Caroline Edward Ayad, my supervisor, for her help and guidance.

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Abstract

This study was designed to define the role of computed tomography coronary angiography (CTA) in the diagnosis of patients with chest pain and suspected to have coronary artery disease (CAD) by measuring the calcium scoring in the coronary arteries (CAC) and correlate the results with the (CTA) findings and coronary arteries plaque types. A 101 patients (59 male, 42 female; mean age, 58.98 years) underwent (CTA). Quantitative coronary angiography calcium scoring (Agatston) was measured in right coronary artery (RCA), left anterior descending artery (LAD), left circumflex coronary artery (LCFX). The main finding of this study was; Plaque types were calcified in 29.7%, non-calcified in 10.9%, mixed in 8.9% and soft plaque in 1.0%. (CTA) findings were mild, moderate and severe atherosclerosis, coronary arteries stenosis, total occlusion and pericarditis. A significant relationship was noticed between the calcium scoring values and the (CTA) findings in both (LAD) and (RCA) at p value < 0.05 , with no significant relation between the plaque type and calcium scoring Agatston values in (RCA) and (LCFX) was identified.

Finally (CAC) offers identifying the patients intended to have cardiac events, diagnosis of coronary arteries lesions and characterizing the plaque pattern .It is believable that measurements of calcium score will provide an acknowledged analytical radiological tool for the diagnoses of (CAD).

ملخص الدراسة

اجريت هذه الدراسة بغرض توصيف امراض الشرايين التاجية الرئيسية بواسطة الاشعة المقطعية متعددة الكواشف للمرضي الذين يعانون من الالام الصدر وقصور التنفس والذين لديهم احتمالية كبيرة للاصابة بامراض تصلب الشرايين التاجية بقياس درجة التكلس (كمية الكالسيوم) في الشرايين التاجية الرئيسية وربط هذه القيم مع نتائج الفحص النهائية ونوع الصفائح المتكونة. اجريت هذه الدراسة في 101 مريض تم تجميعها عشوائيا من مركز رويال سكان و مستشفى الامل ومستشفى الاطباء احتوت علي 59 مريض ذكر و 42 انثي متوسط اعمارهم 58.98 سنة, تم قياس قيم التكلس للمرضي في كل من الشرايين التاجية الاتية, الشريان التاجي الايمن والايسر وفروعه. وكانت النتائج الرئيسية كالآتي: صنفت النتائج الي متكلسة في 29.7% وغير متكلسة في 10.9% والمختلطة الي 8.9% و صفائح رخوه في 1.0%. وكانت اهم نتائج الفحص بالاشعة المقطعية متعددة الكواشف النهائية كالآتي: تكلس بسيط ومتوسط وحاد وانسداد جزئي وكامل والتهاب عضلة القلب. لوحظ وجود علاقات مهمة بين قيم التكلس وهذه النتائج في الشرايين التاجية الرئيسية (الايمن والايسر) وكانت احتمالية الخطاء اقل من 0.05 مع ملاحظة عدم وجود هذا الارتباط بين قيم التكلس وانواع الصفائح في الشريان التاجي الايمن والشريان التاجي الفرعي الايسر. وبنهاية هذه الدراسة وجد ان قياس قسم التكلس وتوصيف امراض الشرايين التاجية بواسطة الاشعة المقطعية متعددة الكواشف من الطرق المهمة في تشخيص امراض شرايين القلب وتحديد طريقة العلاج.

List of abbreviations

3D	Three dimensional
AHA	American heart association
Ao	Aorta
ASD	Atrial septal defect
ATP	Adenosine tri-phosphate
AV	Atrioventricular
CA	Coronary angiography
CABG	Coronary artery bypass grafting
CAD	Coronary artery disease
CCF	Congestive cardiac failure
CHF	Congestive cardiac failure
CL	Confidence level
CMR	Cardiac magnetic resonate
CT	Computed tomography
ECG	Electrocardiogram
EMB	Endomyocardial biopsy
ESRD	End-stage renal disease
FOV	Field of view
HDL-C	High density lipoprotein cholesterol
HMG-CoA	Treatment with 3-hydroxy-3-methylglutarylcoenzyme A
HU	Hounsfield unit
IHD	Ischemic heart disease
IVC	Inferior vein cava

LA	Left atrium
LAD	Left anterior descending artery
LCx	Left circumference
LCXR	Left circumference
LDL-C	Low density lipoprotein cholesterol
LV	Left ventricle
LVEF	Left ventricular ejection fraction
MDCT	Multidetector computed tomography
MDCTA	Multidetector computed tomography angiography
MESA	Multi-Ethnic Study of Atherosclerosis
MIP	Maximum intensity projection
MPR	Multiplaner reconstruction
MR	Magnetic resonance
MRI	Magnetic resonance imaging
MSCT	Multislice computed tomography
NPV	Negative predictive value
PCI	Percutaneous coronary intervention
PDA	Patent ductus arteriosus
PPV	Positive predictive value
PT	Pulmonary trunk
PV	Pulmonary vein
RA	Right atrium
RCA	Right coronary artery
RGH	Retrospective gated helical computed tomography
RV	Right ventricle
SA	Sinoatrial node

SD	Stander deviation
SHAPE	Screening for Heart Attack Prevention and Education
SVC	Superior veni cava
US-ECCD	Ultrasound echo-color Doppler
VR	Volume render
VSD	Ventricular septal defect

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