

EVALUATION OF SERUM LEVELS OF HIGH SENSITIVITY CRP IN CORONARY ARTERY ECTASIA VS. OBSTRUCTIVE CORONARY ARTERY DISEASE

Thesis

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SUMMARY

Coronary artery disease is the most common form of heart disease and the most important single cause of death world wide.¹

Coronary artery ectasia (CAE) is an uncommon angiographic finding in coronary artery disease and is defined as an arterial segment with a diameter of at least 1.5 times the diameter of the adjacent normal coronary artery. ^{2,3}

The prevalence of CAE in the literatures varies between 1.2–6%^{4,5,6} and 9% among Egyptians.²⁵⁸

Angina pectoris is a frequent presentation of the disease.⁷

CAE was suggested to be an accompaniment or a variant of coronary atherosclerosis.^{4,8}

It is sometimes associated with more extensive coronary stenosis, suggesting that ectasia and stenosis may have pathophysiological mechanisms in common.⁹

¹⁰In fact thinning of vascular media has been reported to be associated with advanced atherosclerosis.¹¹

Moreover, recent advances in basic science have established a fundamental role for inflammation in mediating all stages of atherosclerosis starting from

List of Contents

Title	Page No.
Introduction	1
Aim of the work	3
<u>Review of Literature</u>	
• Anatomy and Histology of Coronary Arteries	4
• Atherosclerosis as an Inflammatory Process.....	12
• Atherosclerosis and Inflammatory Markers.....	27
• Coronary Artery Ectasia	42
Patients and Methods	69
Results	74
Discussion.....	95
Summary	103
Conclusion and Recommendations	107
References	109
Arabic Summary	---

List of Tables

Table No.	Title	Page No.
Table (1):	Reported incidence of coronary ectasia in some studies	44
Table (2):	Comparison between the mean ages in the studied groups.....	75
Table (3):	Other demographic data and risk factors analysis.....	76
Table (4):	Laboratory Results	84
Table (5):	Comparison between hs-CRP levels among normal and other studied groups	86
Table (6):	Comparison between hsCRP levels among the studied groups with ectasia or ectasia with stenosis vs the studied groups with atherosclerotic lesions.....	86
Table (7):	hs-CRP according to number of ectatic vessles.....	88

List of Figures

Figure No.	Title	Page No.
Figure (1) :	Anatomy of left coronary artery	7
Figure (2) :	Anatomy of right coronary artery	8
Figure(3) :	Endothelial dysfunction in atherosclerosis.....	17
Figure(4) :	Inflammatory markers in vascular and extravascular inflammation	30
Figure(S1):	The mean ages in the studied groups	75
Figure (S2):	Gender distribution in the studied groups	77
Figure (S3):	Prvelance of obesity among studied groups	78
Figure (S4):	Prvelance of smoking among studied groups	79
Figure (S5):	Prvelance of hypertension among studied groups	80
Figure (S6):	Prvelance of diabetes mellites among studied groups	81
Figure (S7):	Prvelance of FH of CAD among studied groups	82
Figure (S8):	Prvelance of dyslipidemia among studied groups	83
Figure (S9):	hs-CRP levels in the studied groups	87
Figure (S10):	hs-CRP levels according to number of ecstatic vessles	88
Figure (5):	Case (29).....	89
Figure(6):	Case (3)	89
Figure (7):	Case (5)	90
Figure (8):	Case (4)	90
Figure (9):	Case (11)	91
Figure (10):	Case (12).....	91
Figure (11):	Case (18)	92
Figure (12):	Case (14)	92
Figure (13):	Case (15).....	93
Figure (14):	Case (19)	93
Figure (15):	Case (17)	94

List of Abbreviations

CAE	coronary artery ectasia
HsCRP.....	High sensitive C-reactive protein
IL6.....	Interleukin-6
LAD	Left anterior descending coronary artery
LCX	Left circumflex coronary artery
RCA	Right coronary artery
LAO	Left anterior oblique
RAO.....	Right anterior oblique
MMPs.....	Matrix metalloproteinases
TIMPs	Tissue inhibitors of MMPs
LDL	Low density lipoprotein
HDL.....	High density lipoprotein
FH	Familial hyperlipidemia
AAA	Ascending aortic aneurysm
IMT.....	Intimae medial thickness
VEGF	Vascular endothelial growth factor
ICAM.....	Intra cellular adhesive molecules
VCAM.....	Vascular cellular adhesive molecules
CAD.....	Coronary artery disease
OCAD	Obstructive Coronary artery disease
NO	Nitric oxide
HLA.....	Human leucocytes antigen
TIMI	Thrombolysis in myocardial infarction
CFR	Coronary flow reserve
MPV	Mean platelet volume

List of Abbreviations (Cont...)

IVGG	Intra venous gamma globulins
SPECT.....	Spital position emission computerized tomography
KD	Kawasaki disease
ET-1.....	Endothiline-1
ROS	Reactive oxygen species
MCP	Monocytes chemo attractant protein
SMC.....	Smooth muscle cells
M-CSF.....	Macrophage colony stimulating factor
TNF	Tumor necrotize factor
VLDL.....	Very low density lipoprotein
Ang II	Angiotensin II
AGE.....	Advanced glycated end products
SAA	Serum amyloid A
INF.....	Interferon
Th1	T.helper cell 1
MI.....	Myocardial infarction
TG.....	Triglycerides
IHD.....	Ischaemic heart disease
ACC	American college of cardiology
AHA.....	American heart association
DM.....	Diabetes mellitus

INTRODUCTION

Coronary artery disease is the most common form of heart disease and the most important single cause of death world wide.¹

Coronary artery ectasia (CAE) is an uncommon angiographic finding in coronary artery disease and is defined as an arterial segment with a diameter of at least 1.5 times the diameter of the adjacent normal coronary artery.^{2,3} The prevalence of CAE in the literatures varies between 1.2–6%^{4,5,6}. Angina pectoris is a frequent presentation of the disease.⁷ CAE was suggested to be an accompaniment or a variant of coronary atherosclerosis.^{4,8} It is sometimes associated with more extensive coronary stenosis, suggesting that ectasia and stenosis may have pathophysiological mechanisms in common.^{9,10} In fact thinning of vascular media has been reported to be associated with advanced atherosclerosis.¹¹ Moreover, recent advances in basic science have established a fundamental role for inflammation in mediating all stages of atherosclerosis starting from initiation through progression and ultimately the thrombotic complications.¹²

C-reactive protein (CRP) is a protein produced by hepatocytes and released into blood stream any time

there is active inflammation in the body. It is among the most sensitive markers of systemic inflammation.¹³

Proinflammatory cytokines have been shown to play a role in atherogenesis and the development of acute coronary syndrome among which is interleukin-6(IL-6) which originates from T-helper cells and macrophages and promotes B-cell growth and antibody production.¹⁴

AIM OF THE WORK

In an attempt to find an inflammatory etiology in coronary artery ectasia, the serum levels of hs CRP in patients with stable coronary artery disease were measured and correlated to the presence or absence of coronary artery ectasia.

ANATOMY AND HISTOLOGY OF CORONARY ARTERIES

1) Anatomy of coronary arteries

There are three main coronary arteries that supply the heart:

- The left anterior descending coronary artery (LAD) which supplies the anterior two thirds (2/3) of the ventricular septum and part of left ventricular wall
- The left circumflex coronary artery (LCX) which supplies the lateral wall of the left ventricle, in some cases the circumflex artery also supplies the inferior portion of the left ventricle.
- The right coronary artery (RCA) which supplies the inferior portion of the heart and posterior one third (1/3) of the ventricular septum.¹⁵

Both the LAD and LCX are branches from left main coronary artery. The term "dominance" often is used to describe coronary artery anatomy; the dominant vessel is the one that supplies the posterior diaphragmatic Portion of the interventricular septum and the diaphragmatic surface of the left ventricle. The RCA is dominant in about 85% of humans.¹⁶

Left coronary artery:

The left main coronary artery arises from the upper portion of the left aortic sinus. Then emerges from behind the pulmonary trunk within a short distance (2 to 10 mm) then usually bifurcates into LAD and LCX.¹⁶

In 37 percent of patients, the left main coronary artery trifurcates into LAD, LCX and ramus intermedius. In these cases the ramus arises between the LAD and LCX arteries and usually supplies the free wall along the lateral aspect of the left ventricle.¹⁶

Left anterior descending coronary (LAD):

The LAD passes down the anterior interventricular groove toward the cardiac apex. Its major branches are septal and diagonal branches.

The septal branches pass into the interventricular septum and interconnect with similar septal branches passing upward from the posterior descending branch of RCA to produce a network of potential collateral channels. The diagonal branches of LAD pass over the anterolateral aspect of the heart; more than 90% have one to three branches.¹⁷

The LAD courses beyond the left ventricular apex and terminates along the diaphragmatic aspect of the

left ventricle in 78 percent of patients. It fails to reach the diaphragmatic surface and terminates at or before the apex in 22 percent of patients.¹⁸

Left Circumflex artery (LCX):

The circumflex artery originates at bifurcation of left main coronary artery and passes along the left atrioventricular groove. The left circumflex artery usually gives off one to three large obtuse marginal branches, as it passes down the atrioventricular groove. The branches of the left circumflex coronary artery are variable; but may include the sinus node artery, the left atrial circumflex branch, the anterolateral marginal branch, the distal circumflex branch, one or more posterolateral marginals and the posterior descending artery. The anterolateral marginal is directed along the anterolateral wall toward the apex.¹⁷

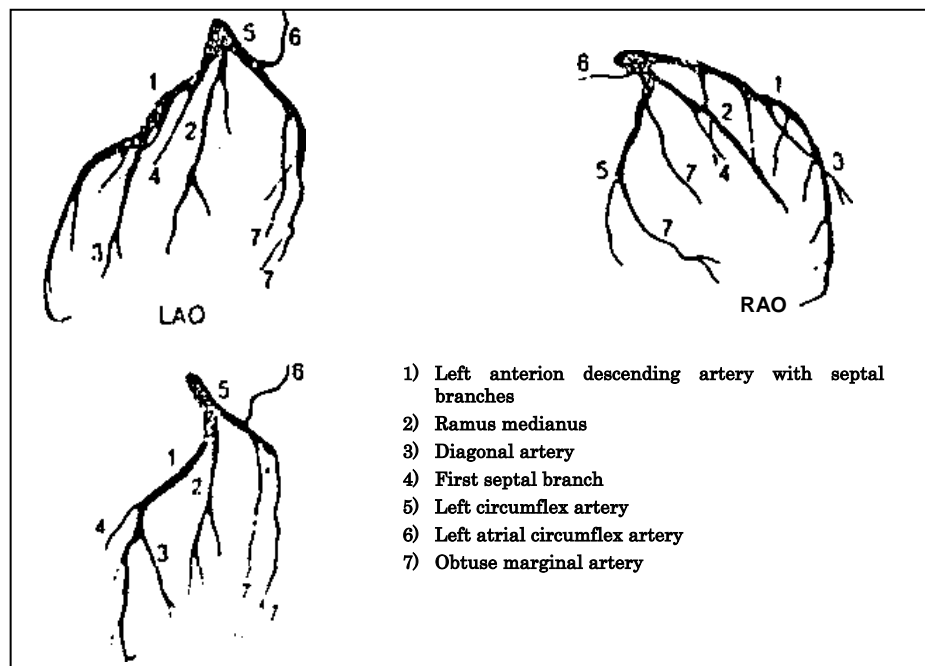


Fig.(1): Anatomy of left coronary artery.¹⁹

Right coronary artery (RCA):-

The right coronary artery originates from the right aortic sinus at a point somewhat lower than the origin of the left coronary which originate from the left aortic sinus. It descends in the right artioventricular groove running posteriorly at the acute margin of the right ventricle toward the crux (a point on the diaphragmatic surface of the heart where the right atrioventricular groove, the left atrioventricular groove and the posterior interventricular groove come together). The first branch of the right coronary artery is considered to be the conal artery. Its primary importance is to serve as a source of collateral circulation in patients with left anterior