Extent of Coronary Arteries Disease Between Angiographic FIndings and Some Atherogenic Lipid inDices

Basil N. Saeed

ABSTRACT:

BACKGROUND:

Modification of lipid subtypes improves the prognosis of ischemic heart disease.

OBJECTIVE:

Correlating the coronary angiographic finding with the measurement of different plasma lipid parameters.

PATIENT AND METHODS:

(180) hundred eighty patients admitted in the study, (120) patients were male, (60) patient were female, their age range (29-72 years) were randomly assigned into four groups.

Group (1): Patient with myocardial infarction (STEMI).

Group (2): Patient with non-STEMI myocardial infarction.

Group (3): Patient with unstable angina.

Group (4): Patient with ischemic cardiomyopathy.

The angiographic findings, were classified according to the guidelines of (ACC/AHA) all patients had lipid parameters correlated to their angiographic finding (A, B, C, respectively).

RESULTS:

This study showed that there was significantly correlated between the levels of HDL, LDL, triglyceride and the coronary angiographic findings in groups (A, B, C) (0.05, 0.001, 0.001) respective. However the use of Atherogesic index (TG/HDL-c) was highly significant and nave clinical evaluation the severity of extent of coronary artery disease (i.e. the Raton (5.9) in group A, (5.2) in group B, (4.8) croup C).

CONCLUSION:

Using more than one lipid parameter can assess the severity of coronary artery disease.

***KEYWORD*:** angiographic finding, coronary disease, lipid parameters

INTRODUCTION:

Among the numerous risk factors known to be of etiopathogenic significance for ischemic heart disease, a prominent place is occupied by the disorders of lipid metabolism [1, 2]. The purpose of this study was to trace the mutual relations between some disorders of lipid metabolism and its correlation to the severity of coronary artery disease according to the angiographic findings classified according to the (ACC/AHA) guidelines [3].

1-Type (A) lesion: Discrete (<10 mm), concentric, readily accessible, non-angulated segment <45˚, smooth contour, little or no calcium, less than totally occluded, not ostial, no major side brach involvement, absence of thrombus.

2-Type (B) lesion*:* Tubular (10-20 mm) length, eccentric moderate tortousity of proximal segment, moderately angulated segment (>45˚ <90˚), irregular contour, moderate to heavy calcification, total occlusion, (<3months old), Bifurcation, some thrombin present.

3-Type (C) lesion*:* Diffuse (>20mm) length, excessive tortousity of proximal segment, extremely angulated segment ≥ 90˚, total occlusion, (>3 month old), inability to protect major side bronch, degenerated vein graft with friable lesion.

PATIENT AND METHODS:

Hundred eighty (180) patients admitted to three cardiac (Al-Numey, Al-Aurthy, (Al-thwara) centers (Yemen-Sana'a) over the proid of October 2007- Jun 2009.There were (120) male patients (67%) and (60)

Department of Medicine, College of Medicine, Baghdad University

female (33%), age range (20-72 years) they were grouped into four groups.

Group (1): (80) Patients (44%) with post (STEMI) myocardial infarction.

Group (2): (20) Patients (11%) of post non-STEMI myocardial infarction.

Group (3): (60) Patients (33%) of unstable angina.

Group (4): (20) Patients (11%) of ischemic cardiomyopathy.

All patients went through the same protocol of history, clinical examination and blood test including lipid profile. Any patients having any of the following disorder have been excluded:

1-Chronic liver disease including the cirrhosis.

2-Nephrotic Syndrome.

3-Chronic kidney disease.

4-Hyporthyroidism.

5-No one of these patients were on thiazide, estrogen, progestogen and anticonvulsant drugs.

RESULTS:

128 patients (71%) were having factors of 52 patients (29%) of patient have one risk factors. The Ejection Fraction means (48 ± 8%). (60) Patients from the 80 patients will post STEMI (67%) having ≥ risk factors while the remaining 20 patients from the same group (33%) have one risk factor only. In the 20 patients of group (2) of post. Non STEMI, 10 of them have ≥ risk factor and other 10 patients have only risk factor. Regarding group (3) of patients which unstable angina only 40 patients (67%) of this group have ≥ risk factors. (90%) of patients with ischemic cardiomyopathy (Group 4) have Group 4 ≥ risk factors.

Also in this study there uses No significant correlation between lipid parameters level and the extent of coronary artery disease. But the aterogenic index of using (TG/HDL-c) showed correlation with advancement of severity coronary artery disease.

Table I: Characters of study patients

The character	Number and mean	Percentage %
Total Number	180	
Male	120	67%
Female	60	33%
Age range (29-72 years)		
EF%	48 ± 8	
Patient with one risk factor	52	29%
Patient with two or more risk factors	128	71%
Total cholesterol	229.17 ± 6.4 mg/DL	
LDL	157.19 ± 6.45 mg/DL	
HDL	35.24 ± 1.06 mg/DL	
Triglyceride	172 ± 6.62mg/DL	

Table II: Distribution of risk factors in correlation to the types of Coronary heart disease.

Type of ischemic heart disease	Number of patients with one risk factor	Number of patients with ≥ two risk factor
post STEMI myocardial infarction	20 (33%)	60 (67%)
post non STEMI myocardial infarction	10 (50%)	10 (50%)
unstable angina	20 (33%)	40 (67%)
ischemic cardiomyopathy	21 (10%)	8 (90%)

Table III: Distribution of the types of coronary lesions angiographic coronary finding in correlation with the type of ischemic heart disease.

Type of lesion	post STEMI myocardial infarction	post non STEMI myocardial infarction	unstable angina	ischemic cardiomyopathy	Total and %
Type A	30	12	15	8	65(36%)
Type B	20	5	10	5	40 (22%)
Type C	35	10	10	20	75(42%)

Table IV: Correlation of the lipid parameter to the types of coronary artery lesion

Lipid parameter	A	B	C	P value		
				A&B	A/C	B/C
HDL	36.84 ± 1.08	35.25 ± 1.45	35.62 ± 1.06	0.419	0.00	0.00
LDL	150.7 ± 6.36	149 ± 7.77	151.16 ± 6.55	0.882	0.00	0.00
cholesterol	223.9 ± 6.04	223 ± 6.83	225 ± 4.45	0.954	0.00	0.00
Triglyceride	129.7 ± 5.65	194 ± 7.08	198 ± 4.47	0.48	0.00	0.00
Atherogenic Index	4.57 ± 038	4.42 ± 0.31	4.36 ± 0.25	0.001	0.001	0.001
TG/HDL-c	4.8	5.2	5.9	Strongly between all three groups		

(P < 6.05 significant)
(P < 6.001high significant)

DISCUSSION:

Despite the fact that different varieties of classical risk factors affect the development of coronary artery lesion as independent factor, the abnormal lipid metabolism could affect the seventy of the lesion [4, 5]. This is predominantly seen in the presence of elevated small dense particles of LDL with low HDL, which is considered now as established risk factor [6, 7, 8, 9, 10]. In many previous studies all over the world. However over the past few years many studies and including this study, there was no significant correlation between these parameters and the severity coronary artery disease [11, 12, 13, 14]. β The work went into the direction of using other parameters to assess the severity of coronary artery disease [15].

Triglyceride in the past not used as parameter but Gaziano, JM et al [16, 17] used the TG/HDL ratio as predictor for the prevalence of myocardial infarction followed by many other studies in which it was found as stronger predictor than HDL, LDL, total cholesterol for the development of ischemic heart disease [18].

This study fit with Helsinki heart study as triglyceride used as strong predictor in ischemic heart disease. This study showed that the level of (TG/HDL-c) was higher in all three groups (Normally less than 4) lastly it must not be forgotten that triglyceride could affect the formation of an atherogenic phenotyping due to the presence of small dense HDL/LDL particles in predicting the development of ischemic heart disease [19, 20, 21, 22].

CONCLUSION:

Nearly all routine parameters of lipid variables were associated of with extent of coronary artery lesion.

However the ratio of TG/HDL-c was a strong powerful predictor of assessing the severity of coronary artery disease.

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