

EVALUATION OF LIPID PROFILE IN PATIENTS WITH ISCHEMIC HEART DISEASE
ADMITTED TO CARDIAC CARE UNIT IN DIYALA PROVINCE¹*Ass. Prof. Ahmed Methab Athab, ²Dr. Anwar Ibrahim Mohammed and ³Dr. Eisa Raad Jasim¹(F.I.C.M.S) College of Medicine –Diyala University-Iraq.
^{2,3}(MBCbB-DM)-Baghdad Health Directorate-Iraq.*Corresponding Author: Ass. Prof. Ahmed Methab Athab
(F.I.C.M.S) College of Medicine –Diyala University-Iraq.

Article Received on 22/07/2019

Article Revised on 12/08/2019

Article Accepted on 02/09/2019

ABSTRACT

Back ground: Coronary Artery Disease (CAD) remains the first killer and common silent disease in the world. The lipid profile plays the essential role in CAD development via Atherogenesis process by depositing inside coronary arteries wall with lipid oxidation, which leads to artery narrowing then blockage. Disturbed lipid profile is one of the most important and potent risk factors in ischemic heart disease (IHD). **Patients & Method:** data taken from the 150 patients admitted to the C.C.U. of Baqubah teaching Hospital during a period between 1st September 2013 to the 15 of march 2014 were recorded lipid profile and analyzed then Comparison with data of others studies. **Objective:** This study was carried out to observe lipid profile in patients with ischemic heart disease. **Results:** Patients' age range was 42-90 years. HT was present in 52% of patients. DM was present in 44%. The commonest isolated lipid abnormality was a reduced HDL(<40 mg/dl) in (86%) of patients and increased plasma triglycerides (TG) (>150 mg/dl) in 50% of patient, there is total cholesterol \geq 200 mg/dL was present in (34%), LDL-cholesterol > 130 mg/dL was present in 23%. **Conclusions:** Lipid profile is very useful research tool to assess the effect of risk factors pertaining ischemic heart disease. Hyperlipidemia remains the strongest risk factor for CAD. Aggressive treatment of hyperlipidemia is of paramount importance to reduce the morbidity and mortality of cardiac events in patients with risk factors to reduce the morbidity and mortality of ischemic heart diseases.

KEYWORDS: CAD, TG, IHD.

INTRODUCTION

Coronary heart disease (CHD) is the most common form of heart disease and the single most important cause of premature death. By 2020 it is estimated that it will be the major cause of death in all regions of the world.

Disease of the coronary arteries is almost always due to atheroma and its complications, particularly thrombosis. Occasionally, the coronary arteries are involved in other disorders such as aortitis, polyarteritis and other connective tissue disorders.^[1]

The approach to the evaluation of acute chest pain, whether typical or atypical, should be to rapidly assess whether the pain is due to cardiac disease. Atypical chest pain does not rule out an acute myocardial infarction (AMI), especially in women, patients with diabetes, and the elderly, in whom an AMI may present in an atypical fashion.^[2]

Ischaemia of the heart results from an imbalance between myocardial oxygen supply and demand, producing pain called *angina*.^[3]

Angina pectoris is the symptom complex caused by transient myocardial ischaemia and constitutes a clinical syndrome rather than a disease; it may occur whenever there is an imbalance between myocardial oxygen supply and demand.^[1]

Myocardial ischemia can be asymptomatic (silent ischemia), particularly in diabetics.

Chronic (Stable) Angina: Usually follows a precipitating event (e.g. climbing stairs, sexual intercourse, a heavy meal, emotional stress, cold weather); relieved by rest or by the customary dose of nitroglycerin.

Unstable (Rest Or Crescendo) Angina: Recent onset, Increasing severity, duration, or frequency of chronic angina, Occurs at rest or with minimal exertion.

Prinzmetal's Variant Angina: Occurs at rest, Manifests electrocardiographically as episodic ST-segment elevations, Caused by coronary artery spasms with or without superimposed coronary artery disease, Patients also more likely to develop ventricular arrhythmias.

Microvascular Angina (Syndrome X): Refers to patients with normal coronary angiograms and no coronary spasm but chest pain resembling angina and positive exercise test.

Refractory Angina: Refers to patients who despite optimal medical therapy have both angina and objective evidence of ischemia and are not considered candidates for revascularization.^[4]

In recent years, a great deal of emphasis has been placed on the relationship between elevated serum cholesterol levels—especially low-density lipoprotein cholesterol complex (LDL-C)—and the incidence of coronary artery disease (CAD).

Hyperlipidemia represents a public health epidemic that continues to parallel the increased prevalence of obesity and is intimately implicated in the development of CAD. It is estimated that approximately 100 million American adults have total serum cholesterol levels in excess of 200 mg/dL and more than 12 million adults would qualify for lipid-lowering therapy by current national standards. Lowering LDL levels through diet and medication has been shown to reduce the progression of CAD and CAD mortality. According to the Framingham study, a 10% decrease in cholesterol level is associated with a 2% decrease in incidence of CAD morbidity and mortality.^[5]

The clinical spectrum of coronary heart disease ranges from silent (asymptomatic) ischemia to chronic stable angina, unstable angina, acute myocardial infarction (AMI), ischemic cardiomyopathy, and sudden cardiac death.^[6]

The most common underlying pathology is atherosclerosis of the coronary arteries.^[7]

Acute coronary syndromes are manifestations of ischemic heart disease and represent a broad clinical spectrum that includes non-ST segment elevation acute coronary syndrome (NSTEMI) (collectively unstable angina [UA]/non-ST elevation MI [NSTEMI]) and ST-elevation MI (STEMI).^[4]

The patient who use cocaine, the risk of MI increases 24-fold over baseline during the first hour.^[8]

The established major risk factors for CAD include smoking, hypertension, dyslipidemia specifically increased LDL cholesterol and low HDL cholesterol, diabetes mellitus, family history of CAD in a first-degree relative, male gender, and age. The first four factors are modifiable while the last three are not. There are other established risk factors that can be modified such as obesity, physical inactivity, an atherogenic diet, mental stress, and depression. The lifetime risk of developing

CAD after age 40 is 49% in men and 32% in women. CAD is the leading cause of death in both men and women, accounting for approximately 20% of all deaths in the United States.^[9]

Fifty percent of people who suffer a myocardial infarct die on the spot before medical aid can be summoned. Once the patient reaches the hospital, on the other hand, the risk is very small: the risk of dying of a first heart attack in a properly staffed coronary care unit with conservative medical management is only 7%.^[10]

Aim of study: To evaluate lipid profile in patients with ischemic heart disease in Baqubah teaching hospital.

MATERIAL AND METHOD

This prospective study done in Baqubah teaching hospital coronary care unit to evaluated lipid profile in patients with ischemic heart diseases(IHD) admitted to cardiac care unit during period between 1st of september 2013 to the 15th of march 2014.

We collecte 150 patient, 75 patients were male & 75 were female". The age ranging between 42 and 90 years. Those patients admitted to CCU were referred from emergency unit, private clinic & referred from other hospitals were recorded & analyzed the "age, sex, risk factor for ischemic heart disease, family history of ischemic heart disease, lipid profile ", the blood sample was obtained and send for lipid profile analysis.

RESULTS

Out of the (150) case of admitted to cardiac care unit (C.C.U.) a (75) of cases are female (50%) & (75) of cases are male (50%).

In our study show there is 99 patients(66%) have desirable level of total cholesterol(<200 mg/dl), 39 patients (26%) have borderline high(200_239mg/dl) and 12 patients (8%) have high level of cholesterol(≥240 mg/dl).

There is 75 patients (50%) have normal level of triglyceride (<150 mg/dl), 30 patients (20%) have borderline high (150_200 mg/dl) and 45 patients (30%) have high level of triglyceride(>200 mg/dl).

Serum HDLc levels has an inverse relationship with development of CAD there is 21 patients (14%) have very low HDL(<20 mg/dl), 108 patients (72%) have low HDL (20_39 mg/dl) and 21 patients (14%) have borderline high HDL(≥40 mg/dl).

There is 120 patients (77%) have normal level of LDL (<130mg/dl), 19 patients (16.4%) have borderline high LDL(130-160mg/dl) and 11 patients (6.6%) have high LDL(>160mg/dl).

Table 1: Show a totally 150 patients were included in this study including 75 patients male & 75 patients female and percentage of them.

	no of male	no of female	TOTAL
No of patients	75	75	150
percentage	50%	50%	100%

Table 2: Show number of patients have risk factor for ischemic heart disease & percentage of them.

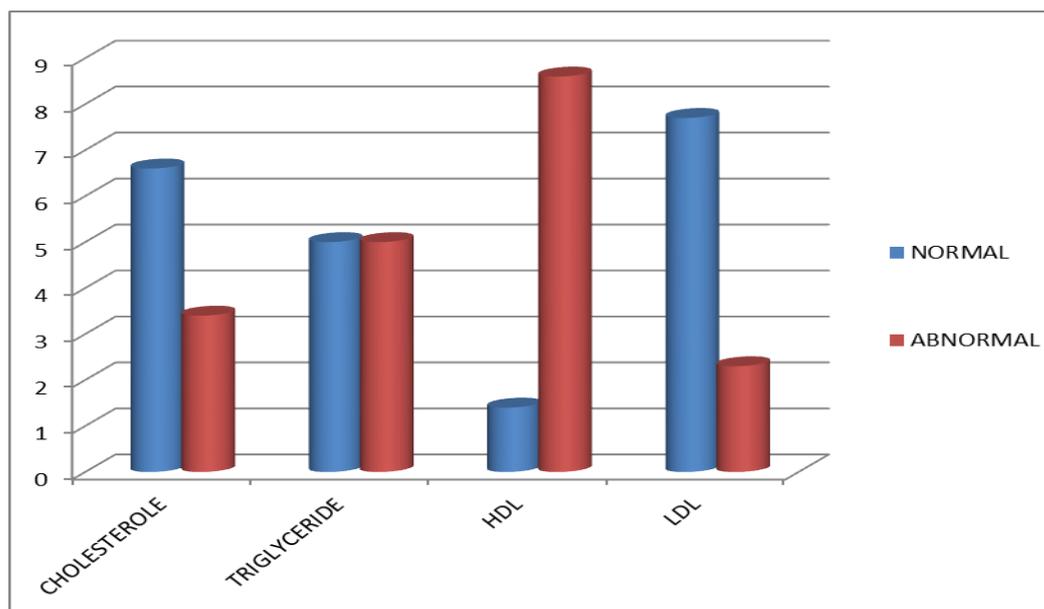
Risk factor	No of patient	Percentage%
HT	78	52%
DM	66	44%
Smoking	45	30%
Family History Of HT	60	40%
Family History Of DM	45	30%
Family History of Hyperlipidemia	21	14%
obesity	30	20%

Table 3: Distribution of coronary heart disease according to social status among 100 patients.

	No of patient	Percentage
Social state		
Married	138	92%
Non married	12	8%
TOTAL	150	100%
Smoking		
Yes	45	30%
No	105	70%
TOTAL	150	100%

Table 4: Show Frequency of the Biochemical Variables in the patient with IHD.

Parameter	IHD	PERCENTAGE
Total cholesterol (mg/dl)		
<200 mg/dl	99	66%
200_239	39	26%
≥240	12	8%
Triacylglyceride (mg/dl)		
<150 mg/dl	75	50%
150_200 mg/dl	30	20%
>200 mg/dl	45	30%
HDL_C(mg/dl)		
<20 mg/dl	21	14%
20_39 mg/dl	108	72%
≥40 mg/dl	21	14%
LDL_C(mg/dl)		
<130mg/dl	120	77%
130-160mg/dl	19.95	16.4%
>160mg/dl	9.9	6.6%



Graph 1: Show the distributions of cases according to level of normal and abnormal lipid profile.

DISCUSSION

Coronary artery disease (CAD) is the chief single cause of death both in developed and developing countries. It affects the people in the prime of life, when they are in the most productive stage.

Lipid profile plays the essential role of lipid deposition in artery wall and CAD development, by accumulating the LDL inside layers of artery wall, except HDL which has beneficial effects for a number of reasons by decreasing lipid oxidation after depositing in blood vessels, leading to retarding CAD development. Moreover, in other observational studies were shown that each 1- mg/dL decrease in plasma HDL concentration is associated with a 2% to 3% increased risk of CVD.^[11,12] So, HDL is called "good cholesterol" according to its beneficial role in blood vessels by many mechanisms to prevent LDL from depositing on blood arteries, while LDL is called "bad cholesterol" due to its accumulation inside arteries. The risk of CAD was approximately doubled with either TGs >200 mg/dl or HDL-cholesterol <40 mg/dl.^[13] Moreover, the presence of both was associated with a four-fold increase in risk.^[13]

CHOLESTEROL

In our study there is total cholesterol ≥ 200 mg/dL was present in (34%), this study agree with study done in Qazvin region by Fakhrzadeh H at etal (34.1%)^[14], also little high than study done in western region of Nepal by BR Maharjan at etal (28.6%)^[15] but this study disagree with sudy done in gaza by Samy H. Khwaiter (24.4%).^[16]

In our study show there is (66%) have desirable level of total cholesterol <200 mg/dl, (8%) have high level of cholesterol >240 mg/dl this study agree with study done in western region of Nepal by BR Maharjan at etal (71.4%, 3.57%) respectively^[15] but disagree with sudy in Gaza by Samy H. Khwaiter (75.5%,17%) respectively.^[16]

TRIGLYCERIDES

In our study increased serum level of triglycerides (>150 mg/dl) were present in 50% of patients, this study agree with study done in Qazvin study by Fakhrzadeh H at etal (53.5%)^[17] little high than of study Lipid profile in Egyptian patients by M. Mohsen Ibrahim a at etal(45%)^[17] and Jordan study by Hammoudeh J at etal(55%)^[18] but this reading disagree with study done in patients from western region of Nepal by BR Maharjan at etal (35.7%).^[15]

Normal level of serum triglycerides (<150 mg/dl) were present in 50% of patients in our study, this little less than study done in Gaza by Samy H. Khwaiter (58.5%)^[16] but disagree with study done in patients from western region of Nepal by BR Maharjan at etal (64.3%).^[15]

HDL

The distribution of serum HDL-C (<40 mg/dl) as risk factor was(86%) which is higher than study done in Gaza by Samy H. Khwaiter (73.2%)^[16] but disagree with study done in nepal by BR Maharjan at etal (53.6%)^[15] and in 45% in study of Jordanian CAD patients by Hammoudeh J at etal.^[18]

LDL

The LDL-C increases the risk of atherosclerosis by its longer resident time in blood whereas the low HDL-C increases the risk by slower removal of cholesterol from blood to liver for the synthesis of various sterol compounds and also for excretion.

In our study LDL-C > 130 mg/dL was present in 23% little less than study in Qazvin population by Fakhrzadeh H at etal (26.5%).^[14]

In our study show there is (77%) have normal level of LDL (<130mg/dl), (16.6%) have borderline high LDL (130-160mg/dl) this study agree with study done in patients from western region of Nepal by BR Maharjan at etal (78.5%, 17.8%) respectively.^[15]

In our study the distribution of serum LDL level (≥ 160 mg/dl) is 6.6% which is little less than study in Qazvin population by Fakhrzadeh H at etal (11.3%)^[14], little disagree with study done in Gaza by Samy H. Khwaiter (19.1%).^[16]

In our study show there are hypertension was present in 52% of patients, this study agree with study done in Egyptian patients M. Mohsen Ibrahim a at etal (56.7%).^[17] But this disagree (little higher) with study by Haddad et al (35.5%)^[16] and disagree with study done in Qazvin by Fakhrzadeh H at etal (12.1%).^[14]

In our study obesity in 20% of patients, this agree with study done in Qazvin by Fakhrzadeh H at etal (25.7%)^[14], and also agree with study done in Egyptian patients M. Mohsen Ibrahim a at etal (25.8%).^[17]

In our study, it was founded that the sex risk factor distribution of males and females was (50%:50%) Similar result was observed in Qazvin population by Fakhrzadeh H at etal (50.2%: 49.8%)^[14] but not similar in Jordanian study by Hammoudeh J at etal (78.3%: 21.7%).^[18]

CONCLUSIONS AND RECOMMENDATIONS

Lipid profile is very useful research tool to assess the effect of risk factors pertaining ischemic heart disease. Hyperlipidemia remains the strongest risk factor for CAD. Aggressive treatment of hyperlipidemia is of paramount importance to reduce the morbidity and mortality of cardiac events in patients with risk factors to reduce the morbidity and mortality of ischemic heart diseases.

So we recommend all people with high risk for atherosclerosis to do a lipid profile and treat those patients with high levels of lipids and TG to decrease incidence of ischemic heart diseases.

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