

Correlation Of Lipid Profile And Diet With Premature Coronary Heart Disease In Kirkuk City-Iraq

Lipid Profili ve Diyetin Irak-Kerkük'te Prematür Koroner Kalp Hastalıkları İle İlişkisi

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Summary:

This study was carried out on 160 patients with documented coronary heart disease (CHD) who attended the private medical clinics in Kirkuk city during the period from beginning of August 2009 to the end of July 2011. Their ages were below 40 years old. Full history was taken from each patient, in addition to laboratory investigations regarding risk factors.

From 160 patients, 112 were males and 48 were females. The ratio of males to females was 2.5: 1. It was found that the highest rate of CHD was among earners, followed by housewives and officials. The middle economic status and patients on mixed diet had highest rate of CHD.

Patients fed on extra-meal had higher CHD than those who had no extra-meal.

From 160 patients only 10 patients were practicing regular exercise. The highest rate of CHD was among hypertensive patients while the lowest rate was among diabetic patients.

All patients in this study had high level of cholesterol and triglyceride while the level of HDL, LDL and VLDL were within high risk level, meanwhile the value of serum uric acid and blood sugar were within normal range.

Key Words: Coronary heart disease, cholesterol, triglyceride

Abstract:

Bu çalışma, Ağustos 2009'un başından Haziran 2011 sonuna kadar, Kerkük'teki özel muayenehanelere başvuran, koroner kalp hastalığı (KKH) bulunan, yaşları 40'ın altında olan, 160 hasta üzerinde yapılmıştır. Hastalardan tam tıbbi hikayeleri alınmış ve risk faktörlerini dikkate alarak, laboratuvar tetkikleri istenmiştir.

160 hastadan, 112 'si erkek, 48'i kadın olup, erkeklerin kadınlara oranı 2.5:1 idi. En yüksek KKH oranı sırasıyla ücretli çalışanlarda, ev kadınlarında ve resmi kurum çalışanlarında bulunmuştur. Orta ekonomik düzeydeki, karışık diyetle beslenen hastalarda saptanmıştır. Ekstra öğün alanlarda almanlara göre KKH daha yüksek bulunmuştur. 160 hastadan sadece 10 tanesi düzenli egzersiz yapmakta idi. En yüksek KKH oranları hipertansif hastalarda bulunurken, en düşük oran diabetik hastalar arasında saptanmıştır. Bu çalışmaya katılan tüm hastaların kolesterol ve trigliserid düzeyleri yüksek iken, HDL, LDL, VLDL düzeyleri, yüksek risk düzeyinde, serum ürik asit ve kan şekeri düzeyleri ise normal sınırlarda bulunmuştur.

Anahtar Kelimeler: Koroner kalp hastalığı, kolesterol, trigliserid

Introduction:

Coronary heart disease (CHD) is the most common form of heart disease and the single most important cause of premature death in the developed world. Unfortunately, the incidence of the condition is increasing rapidly in Eastern Europe and many developing countries¹.

It has been shown that, many factors contribute to the development and progression of atherosclerosis. Advancing age, sex, genetic predisposition, systemic arterial hypertension, hyperlipidemia and diabetes are the major risk factors of coronary heart disease². Cigarette smoking is known to be an important cause of CHD³.

In U.K. it is reported that; 1 in 4 men and 1 in 5 women die from CHD, an estimated 300,000 people have a myocardial infarction each year and 1.7 million people have angina. The death rate from CHD is among the highest ones in the world⁴.

The prevalence of CHD in the younger population (less than 40 years old) is difficult to establish accurately. Approximately 4% of patients with myocardial infarction are less than 40 years old⁵.

This study was aimed to show the factors associated with increased risk of coronary heart disease among people below 40 years.

Patients And Methods:

A study was carried out on 160 patients with documented CHD who have attended the private medical clinics in Kirkuk city. Their age were ranging from 20-39 years old. The period of study was, from the beginning of August 2009 to the end of July 2011.

A special questionnaire sheet was arranged to get full medical history from each patient, including sex, age, occupation, social and economic status, type of main meal, additional meal, exercise, smoking and associated diseases. The economic status of the families was recorded by asking the people their income.

Full clinical examination was performed for each patient and some biochemical investigations were done after two weeks of the acute attack.

The biochemical tests including serum cholesterol; triglyceride, uric acid, random blood sugar and lipid profile were done for those who could pay the costs.

The serum cholesterol is estimated using enzymatic PAP Kit of bioMe'rieux, SA, France.

The serum triglyceride was estimated using enzymatic colorimetric test (GPO-PAP) of Bicon, Diagnostic Germany.

Lipid profile (HDL cholesterol / phospholipids) in serum was estimated using bioMe'rieux, Sa Kit, bioMe'rieux Vitek, Inc., France.

The serum uric acid was determined enzymatically using acid urique PAP 150 kit of bioMe'rieux, Sa, France.

Random blood sugar was determined after enzymatic oxidation in the presence of glucose oxidase, using glucose GOD / PAP Kit of Randox company, U.K..

Results:

Among 160 patients with documented coronary heart disease (CHD), 112 (70%) were males and 48 (30%) were females.

The distribution of coronary heart disease according to sociodemographic status of the patients is indicated in table 1. It is shown that the highest rate of CHD was among earners (58.75%) followed by housewives (26.25%) and officials (15%), respectively. The highest rate of CHD was among middle economic status (57.5%), followed by high (33.75%) and low (8.75%) economic status, respectively. The rate was higher among married patients (95%) than unmarried ones (5%). Regarding the smoking, the rate was higher among non-smokers, being 76.25% in comparison with smokers 23.75%.

Table 1. Distribution of coronary heart disease according to sociodemographic status among 160 patients.

	Number	Percentage %
<u>Occupation</u>		
Earners	94	58.75
Officials	24	15
Housewives	42	26.25
<u>Economic status</u>		
Low	14	8.75
Middle	92	57.50
High	54	33.75
<u>Social status</u>		
Married	152	95
Single	08	5
<u>Smoking</u>		
Yes	38	23.75
No	122	76.25

The distribution of CHD according to daily life style is illustrated in table 2. It is shown that, the highest rate of the disease was among those mainly fed on mixed diet (65%) followed by plant (20%) and animal diets (15%). Patients having extra-meal (76.25%), had higher rate of CHD than those who had no extra-meal (23.76%). Concerning the relationship between CHD and exercise, it is shown that only 10 patients were walking regularly and 10 patients had daily light exercises.

Table 2. Distribution of coronary heart disease according to daily life style

	Number	Percentage %
<u>Diets</u>		
Plant	32	20
Animal	24	15
Mixed	104	65
<u>Extra meal</u>		
Yes	122	76.25
No	38	23.76
<u>Exercise</u>		
Walking	10	6.25
Light	10	6.25

Table 3, shows the distribution of coronary heart disease according to family history and associated diseases. It is shown that, (47.5%) of patients had positive family history for CHD and 52.5% had no family history.

To show the association between CHD and other chronic illnesses, it is indicated that (62.5%) of patients were hypertensive, (2.5%) had diabetes only, (12.5%) had both diabetes and hypertension while (22.5%) had no associated illness.

Table 3. Distribution of coronary heart disease according to family history and associated diseases

	Number	Percentage %
<u>Family history</u>		
Yes	76	47.5
No.	84	52.5
<u>Associated diseases</u>		
Hypertension	100	62.5
Diabetes	4	2.5
Hypertension +Diabetes	20	12.5
None	36	22.5

Table (4) shows that the level of cholesterol was within moderate risk group (210.12 mg/dl), while the triglyceride level was higher (216.39 mg/dl) than normal. The level of HDL (40.92 mg/dl), LDL (143.31 mg/dl) and VLDL (47.30 mg/dl) were within high risk values.

Table 4. Lipid profile values in CHD patients.

Biochemical tests	Mean values \pm S.D. (mg/dl)*		
	CHD patient	Low risk	High risk
Cholesterol	210.12 \pm 48.90	150	240
Triglyceride	216.39 \pm 95.76	50	200
High density lipoprotien (HDL)	40.92 \pm 6.53	65	33
Low density lipoprotien (LDL)	143.31 \pm 40.15	50	135
Very low density lipoprotien (VLDL)	47.30 \pm 28.85	0	40

* Marshal, (6).

The value of serum uric acid was (6.36 mg/dl) and random blood sugar (118.5 mg/dl) was within normal levels (table 5).

Table 5. Uric acid and random blood sugar values in CHD patients.

Test	Mean \pm S.D.	
	CHD patients	Normal range (*)
Uric acid	6.36 \pm 1.15	1.5 --- 8.0 mg/dl
Random blood sugar	118.5 \pm 35.16	100 --- 140 mg/dl

(*) Fauci, et al (7).

Discussion:

It is necessary to know the risk factors, such as; sex, diet, stress and environment to search for causes of coronary heart disease (CHD)⁸.

In the studied group, the higher rate of CHD in males rather than in females reflects that males are at higher risk to develop CHD than females^{1,9}. Similar finding is

also reported by Al-Hity (10) in Ramadi, Iraq in different age groups between 35-60 years. Saleh (11) in Jordan, found that the rate of CHD in males was higher than in females among patients below 40 years old.

The highest rate of CHD, among earners rather than housewives and officials, might be related to stress factors, over-working and irregular meal taking and the effect of unstable economic state. This fact is also indicated in highest rate of CHD among middle economic status, which is due to over-working to earn the daily requirements and imbalanced diet.

Although the rate of CHD among high economic families is lower than middle ones, it is still high (33.75%), and this might be due to high meat, saturated fat and high calorie food intake (1 & 11).

The lowest rate among low economic status families could be due to low meat consumption, fatty and high calorie food consumption by those families.

The higher rate of CHD in married patients than unmarried ones may be related to stress of life and higher responsibility for the family.

The role of smoking in development of CHD should not be neglected, as (23.75%) of our patients were smokers. It is well-known that smoking is dangerous for people in whom other risk factors are present¹². It is a well-known fact that smoking has a complex effect on the people and on the environment. It is not necessary for a person to be a primary smoker to be regarded at risk. The involuntary smokers (secondary) are more important, regarding risk factors, because they are obliged to smoke the cigarette of others and are prone to the risk of smoking like the smoker itself. Smoking is one of the strongest environmental pollution factors and its effect on the general health of the population should be studied¹³. Although smoking has a multiplicative effect on CHD as hypotension, Diabetes mellitus, lipoprotein-a is a strong genetically linked risk factor in thrombosis and CHD in young patients¹⁴.

The highest rate of CHD among patients on mixed diet could be due to excessive intake of food rich in carbohydrate and sugar, leading to obesity which is one of the risk factors of CHD.

The lowest rate of CHD among those fed on animal diet could be related to the sample size and only a small group of population is mainly on animal diets, due to its high cost.

The results of the present study clearly indicate that extra meal has a negative effect on predisposing patients to CHD.

It is also shown that; exercise is an important factor for prevention of CHD, as only 10 of the studied group were walking regularly and 10 were practicing a regular light exercise. It has been demonstrated that, there is a relationship between physical activity and increased concentration of HDL-C in both young and middle aged men, as well as cardiovascular fitness¹⁵.

It seems that, family history has an important role in CHD, as it is shown that 47.5% of the studied group had family history. This fact is known; the monogenic disorder of abnormal receptor function is characterized by premature CHD¹⁶. The percentage of CHD patients with family history in our study (47.5%) is lower than that reported by Al-Hity¹⁰. He has found the rate of CHD as 59.79% in Ramadi city, but he has studied the patients whose ages ranged between 35-60 years old. This reflects that CHD increases with age.

In agreement with other researches, CHD is common among patients with hypertension (62.5%), as the incidence of CHD increase with rise in blood pressure and the risk is related to both systolic and diastolic blood pressure. The CHD among patients without hypertension and diabetes might be due to other factors such as mental stress, obesity and family history in addition to shared environment¹. In the present study, patients with hypertension and diabetes was the third level, regarding risk factors but the lowest risk factors were among those with diabetes only (2.5%).

The high level of cholesterol, triglyceride, LDL, VLDL and low level of HDL in the patients of this study reflects that these parameters had association with CHD, while HDL has a protective role in "reverse" cholesterol transport removing it from the tissues¹⁶.

It is recommended to carry on further studies in Kirkuk city and other parts of the country on bigger samples.

It is also needed to include cholesterol-lowering therapy in secondary prevention, which has been endorsed as a new practice measure in the health plan employer data information set¹⁷.

It is advised to correct the preventive factors such as diet, exercise, weight loss and smoking cessation, in order to reduce the toll from hearts disease¹⁸.

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