

Serum total Cholesterol and Triglycerides in Iraqi Individuals in Kirkuk City

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Abstract

To determine the normal serum levels of total cholesterol and triglyceride in the healthy local population of individual and to compare them with normal values in literature. Secondly, to study the effects of age, sex and occupation on these parameters.

Samples from (122) healthy Iraqi individuals in Kirkuk city, (76 men and 46 women) was used as subject of this investigation. The blood samples from these individuals were analyzed for total cholesterol and triglyceride levels.

The results were analyzed in relation to sex, age and occupation. The total serum cholesterol and triglyceride levels were higher but statistically not significant. Variation was observed in relation to sex. The study has also exhibit age depended statistically significant elevation the levels of serum lipid. Mean values of serum total cholesterol and triglyceride subjects were higher in males than females. The total serum cholesterol level decreases in individuals engaged in heavy works.

The normal values of serum cholesterol and triglyceride were found to be higher compared to those reported by other investigator. Because the variations in the total fat and carbohydrate composition of the diet rapidly induce changes in serum lipid fractions.

Introduction

Recently there has been much interest in the significance of the lipoproteins in atherosclerosis. Large numbers of studies have been carried out, different populations have been examined, and various diets have been tried [1,2,3]. Interest in serum lipid concentrations in health and disease have been greatly stimulated since a close correlation was found between the raised fasting serum lipid concentrations and the prevalence of ischemic heart disease (IHD) [4,5]. It is probably that the aging itself has a little effect on IHD and that the age factor in susceptible population is caused primarily by the cumulative effects of raised serum cholesterol, triglyceride, blood pressure, cigarette smoking and other factor over [6].

Hyperlipidemia may not only accelerate blood-clotting [7], but also increases blood viscosity, as well as, producing increased adhesiveness and aggregation of red blood cells [8].

It had also been shown that variations in both fat and carbohydrate composition of the diet rapidly induce changes in serum lipid fractions with immediate effects on serum cholesterol and phospholipids [9,10].

The diet of a common Iraqi individual includes apparently excess amounts of carbohydrates, fat and proteins, which may influence serum lipid concentrations. The role of hyperlipidemia in Iraq is not yet adequately investigated [11]. Increased serum total cholesterol and triglycerides levels are causally related to an increased risk for IHD [5,6].

The aim of this study is to determine the prevalence of total cholesterol and triglycerides in different age groups, sexes and occupations.

Material and Methods

The present study was conducted on (122) normal Iraqi subjects in Kirkuk City, which included (76) men and (46) women from Azadi general hospital. Blood samples were obtained from volunteers after an overnight fasting for (10 to 16) hours, then serum was separated and divided into two tubes. One of these tubes was used immediately and the other was stored at (-30°C) prior to analysis. Each sample was measured three times and mean result was calculated. The subject was questioned before taking blood samples about age, sex, occupation, dietary habit and previous illness. Enzymatic determination of total cholesterol was performed according to Allain et al. [12] methods by using (Biomerieux Vitex Inc, France) kit and serum triglyceride was performed also enzymatically according to method of Fossat and Principe [13] by using (Biomerieux Vitex Inc, France) kit. All values were presented as mean and standard deviation (SD). Student T-test was used for analysis.

Results and Discussion

Results of the present study are given in the tables (1-3). It is evident from (Table1) that the means of serum total cholesterol and triglyceride concentrations both in men and women are higher as compared to the reported normal values in literature [14,15,16].

However no statistically significant variations in the serum total cholesterol and triglyceride were observed in relation to sex, as the dietary habits are same in men and women subjects of the present study. The serum triglyceride showed a consecutive increase with age but statistically not

significant in the age groups (20-39 and 40-59). However the subjects age (60-79) years showed significant increase in serum triglyceride (Table 2). The higher values of serum triglyceride and a progressive rise in total lipids with age could be related to the high carbohydrate and fat intake by these individuals, causing a state of pre existing lipaemia which increases its expression with advancement of age [17,18].

The total serum cholesterol level showed no variation in relation to age as shown in the (Table 2), which suggests that the rise in total lipid concentration could be due to rise in other serum lipid fractions like triglyceride as the fat and carbohydrate contents of the diet produce pronounced changes in triglyceride concentration [19].

Serum triglyceride concentration showed no appreciable difference in subjects engaged in sedentary, moderate and heavy works. (Table 3).

Serum total cholesterol also showed no significant difference in sedentary and moderate works. But in subjects engaged in heavy work, the serum total cholesterol was significantly less as compared to other subjects, which could be attributed to their physical activity irrespective of fat consumption in the diet.

Conclusion

The normal values of serum lipids in this study were found to be higher compared to those reported in the other investigator. Those individuals, causing a state of pre existing lipaemia is produced which could be a risk factor for IHD and increasing its expression with advancement could relate the higher values of serum total cholesterol and triglyceride with age to the high carbohydrate and fat intake.

Table (1): Total serum cholesterol and triglyceride in relation to sex

Sex (No)	Serum total cholesterol* mg/dl (mean ±SD)	Serum triglyceride** mg/dl (mean ±SD)
Men (76)	235.20 ± 48.63 a	141.21 ± 52.31 a
Women (46)	226.74 ± 32.47 a	137.96 ± 49.74 a
T- test	1.15	0.34

In vertical columns, similar letters means not significant.

* To conversion of total cholesterol to mmol/l (mg/dl × 0.0259 = mmol/l).

** To conversion of triglyceride to mmol/l (mg/dl × 0.01133 = mmol/l).

Table (2): Total serum cholesterol and triglycerides in relation to age

Age groups (No)	(No) Male/Female	Serum total cholesterol* mg/dl (mean ±SD)	Serum triglyceride** mg/dl (mean ±SD)
20-39 (46)	29/17	236.91 ± 34.51 a	138.76 ± 51.71 a
40-59 (57)	37/20	232.52 ± 48.8 a	149.91 ± 44.3 ab
60-79 (19)	10/9	245.3 ± 39.5 a	156.12 ± 37.61 b

In vertical columns, similar letters means not significant.

* To conversion of total cholesterol to mmol/l (mg/dl × 0.0259 = mmol/l).

** To conversion of triglyceride to mmol/l (mg/dl × 0.01133 = mmol/l).

Table (3): Total serum cholesterol and triglycerides in relation to occupation

Type of occupation (No)	Serum total cholesterol* mg/dl (mean ±SD)	Serum triglyceride** mg/dl (mean ±SD)
Sedentary work (21)	239.61 ± 33.75 a	133.7 ± 41.5 a
Moderate work (44)	227.7 ± 42.96 a	148.6 ± 32.5 a
Heavy work (57)	211.2 ± 49.62 b	142.41 ± 54.2 a

In vertical columns, similar letters means not significant.

* To conversion of total cholesterol to mmol/l (mg/dl × 0.0259 = mmol/l).

** To conversion of triglyceride to mmol/l (mg/dl × 0.01133 = mmol/l).

References

- Durrington PN: Lipid and lipoprotein disorders. In: Ledingham JG, and Warrell DA: Concise oxford textbook of medicine, chapter 6, United States : Oxford university press Inc., 2000:728-730.
- Walker R: Hyperlipidemia. In: Walker R, and Edwards C: Clinical Pharmacy and therapeutics 2nded, Edinburgh: Churchill Livingstone 1999; 327-345.
- Raphael SS: Lynch's Medical laboratory technology 3rd ed. Philadelphia: W.B.Saunders company 1976:315-320.
- Jeppesen L, and Madsbad S: High triglyceride, low HDL-cholesterol and risk of coronary heart disease. *Ligskt-Læger* 1996; 158: 6896-6901
- Lamarche B., Despres JP., and et al.: Triglycerides and HDL-Cholesterol as risk factors for ischemic heart disease: Results from the Quebec cardiovascular study. *Atherosclerosis* 1996; 119: 235-245.
- Shaper AG., Pocock SJ. et al.: Risk factors for Ischemic heart disease. *J.Epidemiol. community Health* 1985; 39:197-209.
- Swank RL.: Effects of high fat feeding on viscosity of the blood. *Science*.954: 120.427
- Swank RL.: Effects of fat on blood viscosity in dogs. *Circulation Res*.1956; 4:579.
- The expert panel : second report of the expert panel on detection, evaluation and treatment of high blood cholesterol in adults circulation 1994; 89:1329-1445.
- National cholesterol education program : Expert panel on education, evaluation and treatment of high blood cholesterol in adults. *JAMA* 1993; 269: 3015-3023.
- Al-Javadi AA; Risk profile of myocardial infarction in Iraqi women of Mosul province. *Ann.Col. Med. Mosul* 1998, 24:45-49
- Allain CC., et al.: Enzymatic determination of total serum cholesterol. *Clin chem*.1974;20:170-175.
- Fossati P., and Francipe L: Quantitative determination of serum triglyceride by the use of enzymes *Clin chem*.1982; 28:2077
- Marshall WJ.: *Clinical chemistry*. 3rded.Great Britain: Mosby1997. 213.
- Gupta k.: High blood cholesterol causes, prevention and treatment. New Delhi: Orient paper backs 1996.25-24, 70: 92-93.
- Deace AJ., and Kaplan CA:Methods in clinical chemistry. Toronto: C.V Mosby company 1987:1221-1222.
- Sharma PK., and Khalsa N.: A study of serum lipids in relation to socioeconomic and nutritional status of women using oral contraceptives. *Ind. J. Nutr. Dietet*. 1978; 15:271.
- Khalsa N., and Sharma PK.: Effects of Gucc on serum lipids, uric acid and proteins. *Ind. J. Nutr. Dietet*. 1980; 17:297.
- Alfandi AA.:The role of hyperlipidemia in ischemic heart disease with a therapeutic trial with black seed oil.MSc thesis, Tikrit university 2001.

الخلاصة

الهدف من هذه الدراسة هو تحديد كمية الكوليسترول و كيميويات غذائية في الأخصاص الثلاثة و مقارنتها مع القيم الطبيعية الموجودة في الدراسات الأخرى وكذلك دراسة تأثير الصيام و التمرير و الشهية في هذه المادتين.

أما عن الدراسة على (100) عينة (76 من الذكور و 16 من الإناث) الذين يتناولون مستقراً الألبان في مدينة كركوك و هم تناول كمية الكوليسترول و كيميويات غذائية.

و من حيث هذه الدراسة بأنه لا يوجد فرق محسوس إحصائياً في نسبة الكوليسترول و كيميويات الثلاثة بين كلا الجنسين بينما أظهرت النتائج وجود فرق إحصائي ذووي في انخفاض مستوى الكوليسترول في معدل الأنخفاض الشديد يراون أعصاب، شذابة كمية إلى الأخصاص الذين يتناولون أمدان يومية عالية وتمد الأخصاص من هذه الدراسة بأن قيمة الدهون في معدل الأخصاص لأخصاص كانت أعلى من معدل الأخصاص مع قيم معدون بسيطة في دراسات أخرى و يرجع ذلك إلى ذلك إلى سبط التغذية اليومي تداني في مدينة كركوك حيث يحتسون على نسبة عالية من الدهون و الكربوهيدرات في غذائهم اليومي.

في هذه الدراسة أظهرت أيضاً بأن الجنس ذكوري هو الذي يزيد نسبة الكوليسترول و كيميويات الثلاثة كما تدون أيضاً أن معدل الزيادة في التكرار أعلى من الإناث وأن نسبة الزيادة تحتوي إحصائياً في نسبة الكيميويات الغذائية في الفئات الذموية الثلاثة.