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 exhibited age dependent statistically significant elevation in levels of serum triglyceride. 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 work.

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 body 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 on 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 ischaemic heart disease (IHD) [4-5]. It is probably that the aging itself has a role in 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 factors over [6].

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

It has also been shown that variations in both fat and carbohydrate compositions 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 adult subjects in Kirkuk City, which included (76) men and (46) women from Azadi general hospital. Blood samples were obtained from volunteers after overnight fasting for (12 to 15) hours, then serum was separated and divided into two tubes. One of these tubes was used immediately and the other was stored at (−80)°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. [2] methods by using (Biuretac Visk In France) kit and serum triglyceride was performed also enzymatically according to method of Freidin and Prencipe [13] by using (Biuretac Visk In 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 (1-5). 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.
Serum total cholesterol also showed no significant difference in sedentary and moderate work. 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 literature. These individuals, causing a state of pre-existing lipemia as fat and carbohydrate contents of the diet produce pronounced changes in triglyceride concentration.

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

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

<table>
<thead>
<tr>
<th>Sex</th>
<th>Serum total cholesterol* mg/dl (mean±SD)</th>
<th>Serum triglyceride** mg/dl (mean±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>235.20±8.63 a</td>
<td>147.90±9.31 a</td>
</tr>
<tr>
<td>Women</td>
<td>226.74±32.47 a</td>
<td>132.96±49.94 a</td>
</tr>
<tr>
<td>T-test</td>
<td>1.15</td>
<td>0.14</td>
</tr>
</tbody>
</table>

In vertical columns, similar letters means are significant.
* To conversion of total cholesterol to mmol/l (mg/dl * 0.0259 = mmol/l).
** To conversion of triglyceride to mmol/l (mg/dl * 0.0113 = mmol/l).

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

<table>
<thead>
<tr>
<th>Age groups (%)</th>
<th>(66)</th>
<th>Serum total cholesterol* mg/dl (mean±SD)</th>
<th>Serum triglyceride** mg/dl (mean±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-39 (46)</td>
<td>29/17</td>
<td>236.91±34.51 a</td>
<td>138.76±51.71 a</td>
</tr>
<tr>
<td>40-59 (57)</td>
<td>37/26</td>
<td>232.55±48.8 a</td>
<td>149.91±43.3 ab</td>
</tr>
<tr>
<td>60-79 (19)</td>
<td>10/9</td>
<td>245.3±39.5 a</td>
<td>156.12±37.61 b</td>
</tr>
</tbody>
</table>

In vertical columns, similar letters means are 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 * 0.0113 = mmol/l).

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

<table>
<thead>
<tr>
<th>Type of occupation</th>
<th>Serum total cholesterol* mg/dl (mean±SD)</th>
<th>Serum triglyceride** mg/dl (mean±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary work</td>
<td>229.61±33.75 a</td>
<td>133.7±41.3 a</td>
</tr>
<tr>
<td>Moderate work</td>
<td>217.7±42.96 a</td>
<td>138.6±32.3 a</td>
</tr>
<tr>
<td>Heavy work</td>
<td>211.3±49.62 b</td>
<td>137.1±34.2 a</td>
</tr>
</tbody>
</table>

In vertical columns, similar letters means are 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 * 0.0113 = mmol/l).
References