

Blood Cholesterol and its Effect on the heart, a comparative study between males and females in different age groups

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ABSTRACT

This study was evaluated the blood cholesterol and its effect on the heart, through a comparison conducted between males and females in different age groups. The study aimed to shed light on the most serious cause of heart attacks, which is high blood pressure due to high blood cholesterol, and to identify the most age groups most vulnerable to high cholesterol in both gender, the results were taken through medical analyzes and the total number of cases was recorded: 685, where the highest percentage was 56.93 % recorded in males and their number were 390, and 43.07% for females, that was the lowest percentage, and recorded 295 people, while it is reported that the average level of cholesterol is higher in females than in males during all age groups except for the age group 60-69, which was higher in males, and it follows that the average rate of cholesterol accumulation is higher in females.

Key words: blood cholesterol, age group, Tripoli medical center.

INTRODUCTION

Blood clots, which are known medically as acute myocardial infarction, occur when one or more of the coronary arteries are blocked and supply the heart with oxygen and nutrients. It should be noted that coronary artery blockage often occurs as accumulation of some substances known as plaques inside the walls Coronary, which causes a contraction, and in the event that part of these plaques are torn apart, a group of other blood cells were accumulate in this part, were causes a blood clot and coronary artery blockage, thus impeding the blood flow through it and damage a part of the heart muscle, the damage of the heart muscle were depend on time block of the artery without treatment. Whenever increased the artery blockage, increase the expected damage which can be permanent, there were many causes of heart attack, which interest in the field of this study as high cholesterol level, the fat found in the blood that increase and excessive sedimentation on the arterial surfaces impedes the flow of blood, which may lead to blockage of the artery leading to a heart attack or chest angina (Fallet al,1992). Cholesterol has many symptoms, including coronary artery disease and high blood pressure (Despres and Cardiol,2001) and (WHO, 2016).Age, sex, and blood pressure could modify the associations of total cholesterol (and its main two fractions, HDL and LDL cholesterol) with vascular mortality. This meta-analysis combined prospective studies of vascular mortality that recorded both blood pressure and total cholesterol at baseline, to determine the joint relevance of these two risk factors (McMahon, 2007), moreover cholesterol and blood pressure were approximately additive. Of various simple indices

involving HDL cholesterol, the ratio total/HDL cholesterol was the strongest predictor of IHD mortality (40% more informative than non-HDL cholesterol and more than twice as informative as total cholesterol). Total cholesterol was weakly positively related to ischaemic and total stroke mortality in early middle age (40-59 years) (Lewington et al,2007).

Objectives of the study:-

- This study aims to shed light on the most dangerous cause of heart attacks, which is high blood pressure resulting of high blood cholesterol.
- To identify the most age-groups most vulnerable to high cholesterol in both gender.

MATERIAL AND METHODS

Lipid Profile:

1. HDL.
2. LDH.
3. LDL.
4. Triglycerides.
5. Cholesterol.
6. Reagent.

The device that was used for the cholesterol sample:

Integra 400 plus is from German company Roche Cobas, as shown in Appendix E1 and E2.

The method:

We use an (Automatic), Serum cholesterol actuation method.

Action steps:

We put the cholesterol sample in Rac and Position No. 2, then we choose the required sample or analysis, which is cholesterol, and then we choose Safe. It appears to us (5-) 2, which means (Rac-Position) and then starts to work.

It takes from the beginning new and then starts reading (Reading) It takes about 12 minutes to turn on the cholesterol on the Spectrophotometer, as the reading is based on Light, and this type of device has no wavelength.

Results

Cases that contain a high level of triglycerides was registered from some hospitals in the city of Tripoli, and the total number of these cases were 685, which were classified into males and females in different age groups as follows: -

Through the results that were recorded the total number of cases were 685, where the highest percentage was 56.93 % recorded in males and their number were 390, and 43.07% for females, which were the lowest percentage, that were numbered 295 people as shown in the table 1.

Table 1 shows the number of samples and the percentage of both males and females

gender	Number	Ratio(%)
Male	390	56.93%
Female	295	43.07%
Total	685	100%

685 morbidities were divided according to the ages of the cases, starting from 20 to 89 years, and each age group contained on 10 years as shown in Table 1. through the percentages in table 2 that shows the percentage of patients according to age groups in both gender. the highest percentage were recorded 24.38% for the age group between 50-59 years while the lowest percentage 2.62 %, was in the 20-29 age group as shown in table 2.

Table 2 shows the percentage of patients according to age groups

Age groups	Number of cases according to age groups	Ratio (%)
20-29	18	2.62 %
30-39	38	5.54%
40-49	135	19.71%
50-59	167	24.38%
60-69	148	21.60%
70-79	112	16.35%
80-89	67	9.78%
//	685	100%

In present study, the number of cases was 685, which were classified into males and females in different age groups, where the highest percentage was 56.93% for males their number was 390, while females were 43.07% the lowest percentage that was numbered 295 people. But when we study the percentages for males and females separately, we find that the percentages for females are higher than for males. The percentage was 2.71 % for females, whereas of males was 2.56% for the age group (20-29 years), while the percentage was 6.10 % for females in the age group (30-39 years), while the percentage of males was 5.13% for this age group. In the percentage of males was

17.95% for the age group (between 40-49 years) and 22.04% for females. The percentage of males and females was 23.58% and 25.42% respectively that were reported for the age group (50-59 years) and the highest percentage that were recorded in the age group (60-69 years), where it was in males about 25.13%. and 16.95% for females, while the percentage of males was 16.15% for the age group (70-79 years) and of females was 16.61% and in the age group (80-89 years) the percentage of males was recorded 9.50% and for females was 10.17% , We conclude that the highest sick cases is at the age groups of 50-59 and 60-69 years, and the lowest rate of sick cases is from the age of 20-29 years and this is for both sexes as shown in the table 3.

table 3 shows the percentage of patients according to age groups in males and females

Age groups	Male	Ratio (%)	Female	Ratio (%)
20-29	10	2.56%	8	2.71%
30-39	20	5.13%	18	6.10%
40-49	70	17.95%	65	22.04%
50-59	92	23.58%	75	25.42%
60-69	98	25.13%	50	16.95%
70-79	63	16.15%	49	16.61%
80-89	37	9.50%	30	10.17%
Total	390		295	

When conducting the statistical study using ANOVA (SPSS analysis) version 20, It is clear from the statistical study

conducted that there is a significant difference between the age groups, while there are no significant differences between males and females, with the exception of the age groups (50-59 and 60-69), where a significant difference was recorded between the aforementioned groups at a significant level $P \leq 0.05$.

Discussion

The results obtained was showed that the average level of cholesterol is higher in females than in males during all age groups except for the age group 60- 69 was higher in males, and it follows that the average rate of cholesterol accumulation is higher in females, but the number of sick cases are higher in males.

In other study entitled Lipids and cardiovascular disease: do the findings and therapy apply equally to men and women, by (John and Larosa 1992), the study obtained as a result that the lipoprotein risk factors have some special characteristics in females. Low density lipoprotein cholesterol may be a less important risk factor in females, perhaps because the estrogen hormone protects the arterial wall from low-density lipoprotein deposition. HDL cholesterol is a better risk indicator for females than for males, and this is consistent with the current study where the results were similar, and another study in 1986 entitled High density lipoprotein cholesterol is not a major risk factor for ischaemic heart disease in British men, by (Pocock et al 1986) and (Bainton et al 1992), the study showed that the average concentration of high-density lipoprotein cholesterol is lower in males with heart disease, and this also corresponds to the current study. In other study entitled Cholesterol and Heart Disease in Old Persons and Women Review of an NHLBI

workshop, By (Manolio et al 1992), the results showed that elevated total blood cholesterol levels predicted fatal coronary heart disease in middle age (less than 65 years) of female and males, although the strength and consistency of these relationships among older females had diminished. HDL cholesterol levels were reverse predictive of coronary heart disease in middle-aged males and females, and older females, but not in older men. The relative risk estimates were generally lower for older people than for middle-aged people. The absolute increased risk was greater. It is clear that the elderly and middle-aged females with high blood cholesterol levels are at greater risk of coronary artery disease, and the results of this study were close to the current study. While a study was conducted by (Castelli et al 1986) entitled Incidence of Coronary Heart Disease and Lipoprotein Cholesterol Levels The Framingham Study, the result was that non-fasting HDL-C and total cholesterol levels were associated with the development of coronary heart disease in both males and females aged 49 years and over, and this contradicts the current study as the association of cholesterol levels with heart disease was higher in females than in females. Males aged 49 years and over, except for the age group between (60-69 years). Other study detected by (Shimamoto et al 1989) Trends for coronary heart disease and stroke and their risk factors in Japan, The study obtained a result that the average age-adjusted cholesterol levels increased by 22 mg / dL to the 1980-1983 average from 179 mg / dL in males between the ages of 40-69. In females between the ages of 40 and 69 years, the average increased from 29 mg / dL to 192 mg / dL, and this is consistent with the current

study, where the results were close to each other that the average cholesterol level was high in the two age groups between (40-49 years) and (50-59 years) and in the two age groups between (70-79 years) and (80-89 years), while the study contradicts the current study that in the age group (60-69 years) the average cholesterol level was higher in males.

This is what we have noted it from previous studies; it is through our study it became clear that the infection rate higher in males than in females. And that the total number of patients in all age groups of 20-89 years higher for males than females. , while it is reported that the average level of cholesterol is higher in females than in males during all age groups except for the age group 60-69, which was higher in males, and it follows that the average rate of cholesterol accumulation is higher in females.

Conclusion

In the current study on the effect of cholesterol and triglycerides and their effect on the heart, it was conducted on a group of patients who were classified into age groups based on genders.

Data were taken from public hospitals in the city of Tripoli (Tripoli Medical Center and Tripoli Central Hospital)

Most people with high cholesterol suffer from high blood pressure and clots in the coronary arteries of the heart, and it became clear from the study that the number of patients was higher in males, while the highest rates were recorded in females. The age groups that contained the highest number of patients were the age groups (50 – 59) and (60 – 69) years.

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