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Effect Smoking on the Total Cholestrol and Triglyceride Among Young in the kurdistan region

Graduate Project

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Abstract

There are numerous harmful substances found in tobacco and tobacco smoke. Nicotine is one of these substances that may be acquired through active and passive smoking. In man nicotine is commonly consumed via smoking cigarettes. Therefore, the aim of this study is to show whether smoking has effects on lipid profiles especially total cholesterol and triglyceride among young in Erbil population. 75 subjects were included in this study, 25 none smoking individuals , the other 25 as smoker group and 25 as passive smokers. Total cholesterol and triglyceride tests were done for all participants. The results revealed that the levels of cholesterol and triglyceride were found significantly higher ($P < 0.05$), in smoker group when compared with the non-smoker group. Conclusions: The study concluded that, Smokers are at greater risk for hypercholesterolemia .

Key words: cholesterol, triglyceride, passive smoker, Cigarette smoking, Body mass index.

CHAPTER ONE

Introduction

Cholesterol is an amphipathic lipid that is essential in the membranes and outer layers of plasma lipoproteins. Cholesterol is found in plasma and tissues in the form of stored or free cholesterol. While in the plasma, both forms are transported in lipoproteins. Cholesterol is highly hydrophobic and its structure consists of four fused hydrocarbon rings. Normal cholesterol levels are around 140-200 mg/dL. High cholesterol levels 200-400 mg/dL [1]. According to Nurrahman (2012) Cholesterol is a white wax-like substance that is naturally found in the body. Hypercholesterolemia is excessive cholesterol levels in the blood [2]. Several factors that can increase certain fat levels are family history of hyperlipidemia, obesity, fat rich diet, alcohol use, smoking and lack of exercise and activity [3]. The regulation is stated that there can be disturbances in fatty acid which will increase levels of triglyceride and cholesterol esters [4]. High levels of triglycerides (up to 800 mg/dl or more) can cause enlargement of the liver and spleen and the development of symptoms of pancreatitis (eg, severe abdominal pain) [5]. To monitor the signs and symptoms that appear, it is necessary to measure cholesterol level in order to control cholesterol levels in atherosclerosis [6]. High cholesterol in the blood can cause blood vessels to harden or narrow (atherosclerosis). If bloods flow to the heart is disturbed, heart disease can occur. If atherosclerosis occurs in the arteries that supply coronary arteries, you may feel chest pain [2]. Plaq rupture and cause blood clots to the heart and deprive the heart muscle of oxygen, and if flow is not restored quickly, part of the heart muscle will die [2] Smoking behavior is a behavior that is harmful to health. Cigarettes contain 4000 kinds of chemicals and 20 kinds of deadly poisons that can damage health and kill, the three main toxins in

cigarette are nicotine, tar, and carbon monoxide. In cigarettes the content of a psychoactive substance called nicotine can bring a feeling of pleasure, comfort, fit, and increase productivity, but pharmacologically proven active can cause mutations (mutagenic), cancer (carcinogenic) and change fat metabolism so that will decrease [7] Cigarettes contain 4000 chemicals that are harmful to health, including nicotine which is addictive and tar which is carcinogenic. Smoking can increase LDL levels and reduce HDL levels in the blood so that it can cause an increase in cholesterol in the blood which triggers atherosclerosis and then can cause CHD (Chronic Heart Disease) [8]. Cholesterol is actually useful as an energy source, forming the walls of cells in the body, and as a basic material for the formation of steroid hormones. Smoking reduces the number of filial cells (hair vibrating), increases mucus cells, thereby blocking oxygen to the lungs up to eight times risk of developing cancer than those a healthy life without smoking. Cigarettes also cause several diseases such as impotence, osteoporosis, disorders in pregnancy, coronary heart disease, and respiratory system disorders. Based on research (Rhozaq, et al 2014) with the title "The Relationship of Smoking with Hypercholesterolemia in the Worker Group Bogor in 2012-2014". The results showed that workers with the criteria for light smokers had a 2.32 times chance of suffering from LDL hypercholesterolemia than workers who did not smoke and that moderate smokers had a 4.37 times greater chance of suffering from LDL hypercholesterolemia than non-smokers. The male group of workers had a 1.48 times chance of suffering from LDL hypercholesterolemia than the female group[9,10].

The aim of the current study is to show effect of smoking on the cholesterol and triglyceride among young whose smoker or passive smoker.

CHAPTER TWO

MATERIALS AND METHODS

2.1 Individual selection

The total of 75 volunteers participated in the present study, participants of both genders (60 male and 15female) with age between (20 - 40) who visited hospital (Altun kopri center /Erbil-Iraq) to general checkup. Ages were divided into three groups smokers , non-smokers and passive smokers .

The subjects were screened for a routine biological checkup provided by their medical insurance. All of the subjects were interviewed by trained students who completed a standardized questionnaire, and no visitor received the survey more than once, regarding personal medical history, current treatments, and life-style, behaviors (especially alcohol, food , sport and smoking habits...etc.) . Students recorded clinical parameters, including age, weight, and height).

Body mass index ,was identified Overweight and obesity were defined as a BMI between 25.0 and 29.9 kg/m² and ≥ 30 kg/m², respectively by using weight balance and tap meter for measuring high [8].

2.2. Biochemical tests

Venous blood samples were collected in the morning after an overnight fast. Subjects had stopped smoking for at least 45 minutes to 1 hour before blood collection. 5ml of fasting venous blood was gathered in a without added substances tube after medium-term fasting. Tests were centrifuged to isolate serum. At that point examined by spectrophotometry UV-VIS.

The samples collection after blood drawn was started and collected in the yellow tube , then the sample was transported to centrifuge at 5 minutes after preparation the 1000ml reagent and 10 ml serum after that was stayed in the incubator in room temperature 25c for 10 minutes , spectrophotometry was applied to measure total cholesterol and triglyceride to detect the range of them deepened on the changing color that measured at 500 wavelength.

2.3. Estimation Methods

- 1) Estimation of Cholesterol was finished by CHOD-PAP method.
- 2) Serum triglyceride was finished GPO-PAR method.

2.4. Statistical Analysis

The outcomes were communicated as mean \pm standard deviation.

A $p < 0.05$ was considered measurably huge. Significant study ' t ' test was utilized to think about between the groups. Microsoft Excel was used for data analyzing .

CHAPTER THREE

3. Results and discussion

participants were classified into three groups according to their smoking behavior into smokers, non- smokers and passive smokers(when you breath in the smoke from others peoples cigarettes). As well, individuals who under 18 years old was not taken in the present study . Participants characteristic for both smokers, non-smokers groups and passive smokers were shown in the tables 3.1, 3.2 and 3.3.

Table 3. 1: Baseline characteristics of the smokers.

Smokers group	1st group
Number of individuals	25
Alcohol drinkers%	0
Yearly duration	7±1.2
Daily number of cigarette	3±5.6
Medicine usage %	28.5
Sport %	22.5
Triglyceride mg/dl	242± 22.45
Total cholesterol mg/dl	313±47.3
BMI	25.83± 3.56

±: represented to standard deviation (SD)

BMI for all participants was measured by

$$\text{BMI} = \frac{\text{Kg}}{\text{m}^2} \dots \dots \dots \text{eq}(1)$$

Table 3. 2: Baseline characteristics of the non-smokers.

Non-Smokers group	2nd group
Number of individuals	25
Alcohol drinkers%	0
Yearly duration	0
Daily number of cigarette	0
Medicine usage %	25
Sport %	15
Triglyceride mg/dl	157± 35.45
Total cholesterol mg/dl	123±37.3
BMI	23.43± 4.5

Table 3. 3: Baseline characteristics of the passive smokers.

Non-Smokers group	3rd group
Number of individuals	25
Alcohol drinkers%	0
Yearly duration	0
Daily number of cigarette	0
Medicine usage %	10
Sport %	0
Triglyceride mg/dl	105.33± 35.45
Total cholesterol mg/dl	141.44±27.3
BMI	18.99± 3.24

As described in Table 3.1, 3.2, and 3.3 smoker groups represented 25 persons, while non-smokers totally 50 of both sex (male and female) were participated . Alcohol drinker was calculated to present ratio .so, indicates that no one of them was alcohol habitual. The yearly duration of smoking of each individuals was asked ,clear that the first age group who nearly (7 ± 1.2), while second and third group were no smoking. life style for doing exercise sport such as (running ,swimming, body builder, walking for long time, jumping..... etc.) was a question in a questionnaire. Youngers current smoker had a wide desire to do physical activity than other groups.

individuals who intake medicine and cause of usage was recorded by students to show that percent ratio of using drugs .the data revealed some of (smoker and non-smokers) are suffering from (hypertension ,kidney disease ,hypercholesterolemiaetc) that is why, using highly amount of medicine as treatment .

The value of blood cholesterol and triglyceride are higher than normal range from the first group of smokers while, the second and third one remain normal. Although , the triglyceride from passive smokers reveals that normal but total cholesterol indicates higher if compared with the second group of non-smokers . Researchers indicated that long term exposure to “second-hand” smoke creates a state of permanent inflammation and an imbalance in the lipid profiles that leads to accumulation of lipids in the liver and in the blood vessels of the heart (11).

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