STUDY OF LIPID PROFILE IN ALCOHOLIC AND NON-ALCOHOLIC INDIVIDUALS

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خلاصہ

اس تحقیق میں شراب نوشی کرنے والے مرد حضرات اور شراب نوشی نہ کرنے والے افراد کے BMI اور لپڑ پروفائل (Lipid Profile) کا موازنہ کیا گیا اس مطالعے کے لئے ت عمر کی ۵۵ سے ۵۴ سال مقرر کی گئی کنٹرول اور ل (Alcoholic) افراد کو BMI کی بنیاد پر ۴ گروہوں میں تقسیم کیا گیا یعنی کم وزن، نارمل وزن، زیادہ وزن اور موٹے لوگ کم وزن والے شراب نوشی کرنے والے افراد BMI اُن کے گرہ کے کنٹرول کے مقابلے میں کم تھا، اسی نارمل وزن والے شراب نوشی کرنے والے افراد کا BMI بھی کم دیکھا گیا۔ لیکن Overweight اور obese افراد جو کہ شراب نوشی کرتے تھے۔ ان میں BMI زیادہ پایا گیا بہ نسبت اُن کے گروپ کے کنٹرول، نارمل Alcoholic افراد کے مقابلے میں جبکہ لپڈ پروفائل کے لئے چاروں گروپ میں متفرق نتائج سامنے آئے۔

Abstract

The aim of this study was to determine the Lipid profile in alcoholic males of Karachi. This study was conducted at Federal Urdu University of Arts, Science and Technology (FUUAST) Gulshan-e-Iqbal campus Karachi. In this study 100 alcoholic and 100 non-alcoholic persons were included between ages 26-45 years. Randomly selected volunteers were further divided in to four categories according to Body Mass Index (BMI), which was underweight, normal weight, overweight and obese. Primary outcome measures were total cholesterol (TC), low-density lipoprotein (LDL), triglyceride (TG) and high-density lipoprotein (HDL).

The mean (19.1 ± 1.09) BMI of underweight control volunteers was significantly higher (P<0.001) than alcoholic persons (18.8 ± 0.09). Average BMI in normal weight (23.5 ± 6.5) volunteers was non-significantly higher as compare to alcoholic (22.01 ± 5.4) subjects. Mean BMI of overweight control (26.5 ± 8.5) subjects were significantly lower (P < 0.001) than alcoholic volunteers (27.8 ± 1.2). The average BMI in obese control (28.1 ± 3.9) subjects was significantly higher (P < 0.001) than alcoholic subjects (26.7 ± 2.3).

The highest mean value of TC, TG, LDL and HDL was 34.2 ± 3.7 mg/dl, 37.7 ± 4.9 mg/dl, 33.8 ± 2.8 mg/dl and 41.2 ± 4.2 mg/dl in normal weight persons of Alcoholic group. The P value for TG and TC between alcoholic and non-alcoholic group is < 0.001. The LDL mean value is not found to be statistically significant between normal weight of control and study group. For HDL cholesterol P value is statistically significant <0.001.

Keywords: Alcoholic, Non- Alcoholic, Lipid profile, Overweight, Obese

Introduction

Alcohol is a drug and may be classified as a sedative, tranquilizer, hypotonic or anesthetic depending upon the quantity consumed. Alcohol is the psychoactive drug as well as source of energy (7.1 kcal/g). Increased alcohol consumption mainly contributes in developing risk of overweight, obesity and malnutrition (Molina *et al*., 2003).

Alcoholism cause many diseases and higher intake may leads to death (mortality) (WHO 2011). Alcoholic persons usually suffered with alterations in blood lipid profile and blood pressure. Alcohol consumption in both men and women about 3-4 days a week is associated with lower risk of myocardial infraction. Moderate use of alcohol reveal the cardio protector effect and also increase about 50% of the serum HDL-c concentration (Mukamal *et al*., 2005).

Adequate consumption of ethyl alcohol (30 g/day) improved the concentration of HDL-c in approximately 4 mg/dl and reduced the risk of about 24.7% of heart diseases (Hines and Rimm, 2001). However, this improvement in HDL-c depends upon frequency, quantity or type of drink (Volcik *et al*., 2008). Moreover alcohol stimulate reduced breakdown of HDL-c and increase metabolism of LDL-c by liver (Van der Gaag *et al*., 2001). Chen *et al*., (2012) demonstrated higher risk levels of triglycerides in people using 10 g of alcohol

daily. While consuming more than 50 g/day significantly lowered the risk of developing low levels of HDL-c but elevated the risk of developing high levels of cholesterol.
The purpose of present study was to observe the effect of alcohol on BMI and lipid profile in alcoholic persons.

Materials and Methods

The study is being carried out in 100 healthy male control and 100 healthy male alcoholic individuals. After obtained written consent, detailed history and physical examination was done.
Inclusion criteria for alcoholic and nonalcoholic:

1. Subjects had not fatty alcoholic liver disease.
2. The subject BMI were less than 32

Exclusion criteria for alcoholic and nonalcoholic:

1. Subjects having diseases mentioned below known to influence blood lipids were excluded from the study.
    a. Diabetes mellitus
    b. Smoking
    c. Hypertension
2. Subjects who were on following drugs:
    a. Beta blockers
    b. Diuretics

The parameters used for comparison were

- BMI

After overnight fasting following laboratory investigation were done in all subjects:

- Serum total cholesterol (TC)
- Serum high density lipoprotein (HDL)
- Serum low density lipoprotein (LDL)
- Serum triglyceride (TG)

Total cholesterol and triglyceride level estimations are carried out by enzymatic kit method. HDL-C is estimated by precipitation of non-HDL lipoprotein and estimation was done by supernatant.
The statistical tests used in the study are:

1. T – test was used between two groups for significant comparison.
2. Pearson Product Moment was used for correlation between two groups.

Results and Discussion

The purpose of study was to investigate the effect of alcohol on body mass index and lipid profile of local population of Karachi. For this purpose randomly selected 100 control and 100 alcoholic male volunteers. These volunteers further divided into four categories (control and alcoholic) which was underweight, normal weight, overweight and obese. The control groups were compared with alcoholic groups.

Alcohol consumption and obesity are progressively more general cause of metabolic abnormality and statues in the liver. It is well known that advance liver disease does not develop in all alcohol user or obese persons. Several diseases may be developed by consumption of alcohol. Use of alcohol quantity per day may increase risk factor of cardiovascular diseases as well as malnutrition and body weight.

The comparison of control and alcoholic volunteers were base in term of number (Table 1).

Table 1. percentage of control and alcoholic subjects.

Subjects	% of control subjects	% of alcoholic subjects
Under weight	10	12
Normal weight	42	52
Over weight	32	21
Obese	16	15
Total	100	100

This study disclosed that in control subject maximum level of BMI was shown in obese and minimum level was in underweight volunteers. On the converse in alcoholic subjects the maximum level was observed in overweight and minimum level in underweight subjects. While these account evoke strongly evidence that the individual response towards the significance ($P > .001$) (Table 2).

In our study body mass index increased in overweight subjects with consumption of alcohol. Previous studies show positive (Gordon and Kannel, 1983) or negative (Camargo *et al*., 1987) association between consumption of alcohol and obesity. According to Romeo *et al*. (2007) weight stability is more in alcoholic person as compare to non-alcoholic users. The effect of alcohol on body weight is vary person to person as Skrzypczak *et al*., (2008) observed inverse association between quantity of alcohol and BMI in women and other study shows positive correlation (Arif and Rohreer 2005). In addition, studies found a positive association among men (Breslow and Smothers, 2005) whereas in our finding BMI significantly increase in overweight and obese individuals.

The consumption of ≥ 30 g of alcohol per day may alter the balance of energetic homeostasis and body weight gain (Navarro *et al*., 2010). These results show increasing trend of BMI same as we found in current study.

A variety of obesity risk factors are related to alcohol consumption such increased abdominal fat (Rissanen *et al*., 1991) decrease capability to oxidize lipids, consumption of high calories diet (Kachani 2008). However, in our findings only in underweight subjects show non-significant decrease level of cholesterol as compare to other BMI groups. The decreased cholesterol level in underweight people are might because of not consuming the energy dense diet.

Table 2. BMI of control and alcoholic subjects

Subjects	BMI of control subjects (Kg/m^2)	BMI of alcoholic subjects (Kg/m^2)
Under weight	19.1±1.09	18.8±0.09
Normal weight	23.5 ± 6.5	22.01 ± 5.4
Over weight	26.5±8.2	27.8±1.2
Obese	28.1±3.9	26.7±2.3

The comparative results suggest that the maximum level of TC was found in normal weight from control group whereas level of TC was high in alcoholic group of normal weight subjects. The P-value was statistically significant. The TG level was high in normal weight of alcoholic and control groups while observed low trend in over weight in alcoholic and control. Noticeable reading of LDL was found in normal weight of control and alcoholic individuals. Moreover the HDL level indicates the least amount in underweight volunteers from control and alcoholic group (Table 3).

Our result show an increase level of HDL-C in over weight and obese volunteers while a decline trend has been noticed in underweight and normal subjects. It is estimated that the cardio protector effect of alcohol may be attributed to 50% of the HDL-C increase (Mukamal *et al*., 2005, Langer *et al*., 1992).

The present review shows that the additional consumption of alcohol will promote metabolic changes, weight gain, increasing the risk of cardiovascular diseases, altering the lipid profile.

Table 3. Lipid profile mean estimated values in control and alcoholic subjects.

	Under Weight (Kg/m^2)			Normal Weight (Kg/m^2)		
Parameters	**Control**	**Alcoholic**	**P values**	**Control**	**Alcoholic**	**P values**
TC(mg/dL)	30.1±3.9	31.5±4.9	>0.05	38.12±27.6	34.2±3.7	<0.0001
TG(mg/dL)	33.7±8.1	34.6±7.1	<0.0001	43.1±16.3	37.7±4.9	<0.0001
LDL(mg/dL)	28.2±6.1	27.2±5.6	>0.05	59.1±27.9	33.8±2.8	>0.05
HDL(mg/dL)	23.0±7.3	22.3±9.3	<0.0001	48.15±15.6	41.2±	<0.0001

	Overweight (Kg/m^2)			Obese (Kg/m^2)		
Parameters	**Control**	**Alcoholic**	**P values**	**Control**	**Alcoholic**	**P values**
TC(mg/dL)	36.3±3.04	33.5±4.04	<0.0001	31.4±1.2	29.3±4.69	<0.0001
TG(mg/dL)	30.4±2.1	27.9±3.7	<0.0001	35.69±4.3	30.4±8.474	<0.0001
LDL(mg/dL)	29.6±7.1	28.2±3.0	>0.05	30.9±2.3	25.7±4.11	>0.05
HDL(mg/dL)	31.9±4.4	33.9±6.5	>0.05	29.8±4.6	31.2±7.65	>0.05

Conclusion

Consumption of Alcohol is associated with alteration in Lipid Profile and BMI. Current study shows changes in metabolic rate, increase intake of alcohol may cause obesity. Excess amount of alcohol show incline trend in TC which may raise diseases related to cardiovascular. These abnormalities are directly proportional to alcoholism.

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