



EFFECTS OF ALCOHOL ON LIPID PROFILE ON BASIS OF TYPES AMOUNT AND DURATION OF CONSUMPTION

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Abstract

Since thousands of years alcohol is an addiction as well as tradition in countries almost throughout the world. Many studies in the last couple of years reported that if taken in heavy amounts can cause cirrhosis of liver, hypertension, coronary artery disease, and so on. It can be beneficial if taken in moderate amounts. The aim of the study is to make a relationship between type of alcohol, amount consumed and effect of duration of intake with lipid profiles of the patients. The present study was undertaken in a small subset of Malwa region of Punjab state. A total of 200 males that included 100 alcohol consumers and 100 controls who gave no history of taking alcohol were taken for study. Subjects were taken attending OPD or IPD of GGS Medical College, Faridkot. The age group of 20-60 years was taken as a parameter. Inclusion criteria was consumption of alcohol > 5years. In our study, almost all of alcohol consumers were having alcohol predominantly in the form of whisky (49%) and country liquor (49%), Beer consumers was (1%). No case consuming rum, gin, Vodka or brandy. Although most of the consumers were taking mixed type of beverages, but we selected an alcoholic with particular type of beverage, if taking approximately two thirds of a particular beverage.

Keywords: Addiction, Coronary artery syndrome, whiskey, Malwa, Vodka or brandy

INTRODUCTION

In this study it was found that heavy drinkers had Serum Cholesterol levels mean 216.2 mg/dl in heavy drinkers in comparison to mean of 183.5 mg/dl in mild to moderates as compared to mean of 176.9mg/dl, in case of controls. Serum triglycerides mean value of mean 165.9 mg/dl in patients in comparisons to controls having mean value of 147.7 mg/dl. In heavy drinker's mean was 191.5mg/dl in comparison mild to moderate case 142.01mg/dl was shown. HDL cholesterol was as mean 43.3mg/dl in controls as compared to mean value of 35.87mg/dl in moderate to heavy drinkers. So, the value was markedly reduced. We could find serum levels of LDL as mean value 130.5mg/dl in controls as compared to mean of 149.07mg/dl in heavy and 121.67mg/dl in light to

moderate cases. Serum VLDL level had mean value 26.2mg/dl as compared to cases where it was mean as 31.9mg/dl. We also detected effect on lipid parameters of whisky and country liquor. Serum cholesterol and triglycerides are almost same in both the groups, where whisky consumers showed more favorable parameters. But as a whole no brand was scot free. We tried effect on Liver functions. Serum AST levels were increased in 96% cases and serum ALT was increased in 71% of cases. Among heavy users' serum GGT, AST, ALT activities were far more than either abstainers or moderate cases. Similarly, the level of serum ALP was raised in cases as compared to controls.

CONCLUSION: -

Type of alcohol and its quantity are of paramount importance as far as effects of alcohol on LFT and total profile of lipids. Owing to economic and social reason, most of the labor class sometimes takes spirit which often ends in hooch tragedy and blindness due to damage to optic nerve damage. If the consumption is endless then liver and lipid metabolism is markedly

affected. Duration of intake also affects liver with injured liver. All these possible hazards require early detection. So, type, quantity and duration of alcohol can damage the body and mind. These are to be kept in mind if major disasters are to be avoided. Our study does not favor any relation of type of beverage and duration of consumption on lipid profile.

OBSERVATIONS

Table 1 AGE WISE DISTRIBUTION OF CASES AND CONTROLS

Age in Years	Controls	Cases
20-30	10	1
31-40	30	13
41-60	40	45
51-60	20	31
TOTAL	100	100

This shows that 45% of cases were in the age group 41-60 and 31% of cases were in age group 51-60 years. In this region of Punjab, majority of alcoholics are in the age group 41-60 years with youngest alcoholic of age 29 years.

Table 2: - RELATIONSHIP OF ALCOHOL CONSUMPTION AND ITS EFFECT ON SERUM CHOLESTEROL LEVEL

	Serum cholesterol <150 mg/dl	Serum cholesterol 151-200 mg/dl	Serum cholesterol 201 mg/dl <	Total
Case	11	46	43	100
Controls	12	63	25	100
TOTAL	20	112	68	200

Table 2 shows that 43% of cases have serum cholesterol level equal or above 201 mg/dl. Serum cholesterol is higher in cases as compared to control and is found to be significant. (p value 0.02)

Table 3:- OF ALCOHOL CONSUMPTION AND ITS EFFECT ON SERUM TG LEVEL

	Serum cholesterol <150 mg/dl	Serum cholesterol 151-200 mg/dl	Serum cholesterol 201 mg/dl <	Total
Light to moderate alcoholics	5	32	13	50
Heavy alcoholics	6	14	30	50
TOTAL	11	46	43	100

Table 3 shows 30 cases (60%) of heavy alcoholics have serum cholesterol level equal or more than 201 mg/dl as compared to 13 cases (26%) light to moderate alcoholics. Most of light-moderate alcoholics (64%) had serum cholesterol between 151-200 mg/dl. Results are highly significant (p value 0.0001).

Table: - 4 **RELATIONSHIP OF ALCOHOL CONSUMPTION AND ITS EFFECT ON SERUM TRIGLYCERIDES (TG) LEVELS**

	Serum triglycerides 40-150 mg/dl	Serum triglycerides 151-200 mg/dl	Serum triglycerides l 201 mg/dl <	Total
Light to moderate alcoholics	5	10	6	50
Heavy alcoholics	6	22	14	50
TOTAL	11	32	20	100

Table: - 4 shows that 34 (68%) light-moderate alcoholics have serum TGs between 40-150 mg/dl in compression to 14 (28%) heavy alcoholics have Serum TGs levels >201 mg/dl. While mild-moderate alcoholics have 6 (12%) P-Value justifies the significance of data (p value = 0.00003).

Table: -5 **RELATIONSHIP OF AMOUNT OF ALCOHOL CONSUMPTION AND ITS EFFECT ON SERUM HIGH DENSITY LIPOPROTEINS (HDL) LEVELS**

	Serum HDL <40 mg/dl	Serum HDL 41-50 mg/dl	Serum HDL 50 mg/dl < 201 mg/dl <	Total
Light to moderate alcoholics	12	10	10	50
Heavy alcoholics	42	22	2	50
TOTAL	54	32	12	100

Table: - 5 shows 42 (84%) of heavy alcoholics have HDL less than 40 mg/dl in respect to 12 (24%) light to moderate alcoholics. Only 2 (4%) heavy alcoholics have HDL 50 mg/dl and 10 (20%) light-moderate alcoholics have this value respectively. Relation is highly significant as p is > 0.0001.

Table: -6 **SHOWS RELATIONSHIP OF AMOUNT OF ALCOHOL CONSUMPTION AND ITS EFFECT ON SERUM LDL LEVELS**

	Serum LDL 40-150 mg/dl	Serum LDL 151-200 mg/dl	Serum LDL 201 mg/dl <	Total
Light to moderate alcoholics	5	10	6	50
Heavy alcoholics	6	22	14	50
TOTAL	11	32	20	100

Table-6 shows 23 (43%) heavy alcoholics have serum LDL > 160 mg/d. whereas only 2 (4%) patients in light-moderate group have this value. P value <0001 is highly significant.

Table: -7 SHOWS RELATIONSHIP OF AMOUNT OF ALCOHOL CONSUMPTION AND ITS EFFECT ON SERUM VLDL LEVELS

	Serum VLDL 5-20 mg/dl	Serum VLDL 26-35 mg/dl	Serum VLDL 36 mg/dl <	Total
Light to moderate alcoholics	20	10	6	50
Heavy alcoholics	5	22	14	50
TOTAL	25	32	20	100

Table-7 shows 38 (74%) heavy alcoholics have serum VLDL level equal to or more than 36 mg/dl in comparison to 5 (5%) light-moderate alcoholics. As depicted it is highly significant (p value 0.0001).

Table: -8 RELATIONSHIP OF DURATION OF ALCOHOL CONSUMPTION AND SERUM CHOLESTEROL LEVELS: -

Duration of alcohol consumption	Serum cholesterol < 150 mg/dl	Serum cholesterol 150-200 mg/dl	Serum cholesterol 201 mg/dl	Total
5-10 years	3	15	16	36
11 years <	8	31	27	64
TOTAL	3	39	43	100

It shows that 27 (27%) cases which is consuming alcohol for equal for or more than 11 years are having serum cholesterol to or > 201 mg/dl, 16 cases (47%) consuming alcohol for less than 10 years have serum cholesterol equal or more than 201 mg/dl. These values are statistically non-significant (p value 0.7945).

Table: -9 RELATIONSHIP OF DURATION OF ALCOHOL CONSUMPTION AND SERUM TRIGLYCERIDES (TG LEVELS)

Duration of alcohol consumption	Serum triglycerides < 150 mg/dl	Serum Triglycerides 150-200 mg/dl	Serum Triglycerides > 201 mg/dl	Total
5-10 years	12	12	16	36
11 years <	36	20	27	64
TOTAL	48	32	43	100

Table: -9 Shows there is no significant correlation between duration of alcohol consumption with serum TGs, as p value is 0.1231.

Table: -10 **RELATIONSHIP OF DURATION OF ALCOHOL CONSUMPTION AND SERUM LDL (LDL LEVELS)**

Duration of alcohol consumption	Serum LDL < 100 mg/dl	Serum LDL 101 to 160 mg/dl	Serum LDL 161 mg/dl	Total
5-10 years	4	22	8	36
11 years <	19	30	17	64
TOTAL	23	42	25	100

There is no significant correlation between duration of alcohol consumed and serum LDL, as p value is 0.107 which is not significant

Table: -11 **RELATIONSHIP OF DURATION OF ALCOHOL CONSUMPTION AND SERUM HDL (HDL LEVELS)**

Duration of alcohol consumption	Serum HDL < 5-40 mg/dl	Serum HDL levels 41-50 mg/dl	Serum HDL levels < 51mg/dl	Total
5-10 years	16	13	5	34
11 years <	38	21	7	66
TOTAL	54	34	12	100

Table: -11 Shows there is no significant correlation between duration of alcohol consumption with serum HDL, as (p value is 0.6942).

Table: - 12 **RELATIONSHIP OF DURATION OF ALCOHOL CONSUMPTION AND SERUM VLDL (VERY LOW-DENSITY LIPOPROTEIN LEVELS)**

Duration of alcohol consumption	Serum VLDL 5-40 mg/dl	Serum VLDL levels 41-50 mg/dl	Serum VLDL levels < 51mg/dl	Total
5-10 years	10	9	15	34
11 years <	15	22	29	66
TOTAL	25	31	44	100

Table-12 depicts that there is no significant correlation between duration of alcohol consumed with serum VLDL, as p value is not significant (p value=0.6907)

Table: - 13 RELATIONSHIP OF TYPE OF ALCOHOL CONSUMED WITH SERUM CHOLESTEROL LEVEL—

It is important to mention that out of 100 alcoholics, we get 49 whisky consumers, 49 country liquor consumers, only one predominant beer consumer and only one was wine consumer solely. To get a statistic value study, we excluded beer and wine consumer and considered it separately. To get a relation between remaining types of alcohol and lipid parameters we applied statistics as described below.

Type of alcohol consumed	Serum cholesterol<150 mg/dl	Serum Cholesterol 150-200 mg/dl	Serum Cholesterol >201 mg/dl	Total
Whisky	5	21	23	49
Country liquor	6	23	20	49
Total	11	44	43	98

Table-17 shows that there are almost equal number of cases, 23 (43.93%) and 20 (40.81%) and 20 (40.81 %) for whisky and country liquor having serum cholesterol more than 200 mg/dl. No correlation can be made. (p value is 0.8228).

Table: - 14 RELATIONSHIP OF TYPE OF ALCOHOL CONSUMED WITH SERUM TRIGLYCERIDES LEVEL—

Type of alcohol consumed	Serum triglycerides 40-150 mg/dl	Serum triglycerides 150-200 mg/dl	Serum triglycerides >201 mg/dl	Total
Whisky	21	17	11	49
Country liquor	25	15	9	49
Total	46	32	20	98

Table: -14 show that serum triglycerides levels are approximately same in both types of alcohol group. But no significant correlation was found with serum triglycerides level and consumption of whisky or country liquor. P value is 0.7153.

Table: - 15 RELATIONSHIP OF TYPE OF ALCOHOL CONSUMED WITH SERUM HDL LEVEL—

Type of alcohol consumed	Serum HDL 5-40 mg/dl	Serum HDL 41-50 mg/dl	Serum triglycerides 51 MG/DL	Total
Whisky	21	17	11	49
Country liquor	25	15	9	49
Total	46	32	20	98

Table:-15 show that serum HDL levels are approximately same in both types of alcohol group. But no significant correlation was found with serum HDL level and consumption of whisky or country liquor. P value is 0.1838.

Table: - 16 Relationship of type of alcohol consumed with serum LDL level—

Type of alcohol consumed	Serum LDL <100 mg/dl	Serum LDL 41-50 mg/dl	Serum LDL >161 mg/dl	Total
Whisky	13	28	8	49
Country liquor	9	23	17	49
Total	22	51	25	98

Table-20 show that 8 (16.32mg/dl) cases in whiskey group and 17 (34.69 %) cases in country liquor group have serum LDL 161 mg/dl—p value is 0.1075 which is non-significant .

Table: - 17 RELATIONSHIP OF TYPE OF ALCOHOL CONSUMED WITH SERUM VLDL LEVEL—

Type of alcohol consumed	Serum LDL <100 mg/dl	Serum LDL 41-50 mg/dl	Serum LDL >161 mg/dl	Total
Whisky	13	28	8	49
Country liquor	9	23	17	49
Total	22	51	25	98

Table:-17 show that serum VLDL is approximately same in both types of alcohol group. But no significant correlation was found with serum triglycerides level and consumption of whisky or country liquor. P value is 0.1165 which is non-significant.

LIVER FUNCTION TESTS IN CASES

We found in our cases that 4 (4%) patients were having AST in range of 5-40 IU/L, 72 % were in the range of 41-80 IU/L and 24 % in range of 41-80 IU/L and 24 % were having AST >80 IU/L. While 71 % of cases had ALT level in range of 41-80 IU/dl and 29 % cases had ALT in range of 5-40 IU/L. Mean value of ALP in cases is 154.02 IU/L as compared to controls, who have this value 88.44 IU/L.

DISCUSSION

Present study has been carried out in a small sublet of Malwa Region of Punjab. Total of 200 males including 100 alcohol users and 100 who were non-alcoholics were studied in separate groups in comparative age group of 20-60 years of age. They were further divided according to alcoholic intake. One group contained light to moderate alcoholics and other group contained heavy alcoholics as defined by Dawson DA et al (1995) and Dufour MC et al (1999). Patients with liver cirrhosis were excluded. Fasting lipid profile estimation was done for all and its relation to alcohol amount, type, and duration of alcohol consumption was studied. Most of alcoholics fall in age group of 41-

60 years of age. This age distribution is very similar to ATTICA study done by Christina et al in 2001-2002 in Greece to see chronic alcohol consumption on lipid levels, inflammatory and Haemostatic factors in general population. They found that middle-aged male participants (45-65 years old) seem to consume higher alcohol quantities compared with younger or older individuals. In our study majority comprised whiskey or country liquor which comprised 49 % each and only 1% cases of beer intake. In this region of Punjab, most of the alcoholics (76%) are in the middle age of 41-60 years. Total serum lipids were higher in alcoholics. Serum LDL and serum VLDL was found to be higher in alcoholics. On the other hand serum HDL was lowered in the cases. These were much higher in the healthy controls but this was particular in the heavy consumers. There is no correlation was found in of type of beverage consumed and serum lipid profile but further studies are required to explore this further. No significant correlation exists on duration of alcohol consumed and lipid profile. Higher body mass index exists in alcoholics than controls. Liver function tests derangement were found higher in alcoholics than

controls. High AST levels in particularly consists with alcoholism in comparison to ALT.

CONCLUSION

Our study concludes that alcohol is a “double edged sword” as it is beneficial in light to moderate amount and harmful in heavy drinkers. There is no correlation between type of beverage and its duration of consumption on lipid profile. But this is a common myth and will have to study in wider prospective. In 2014 hypertensive men, higher consumption of alcohol was associated with a decreased risk of low HDL-C and a J-shaped increase in risk of high triglycerides. However, the risk of a high non-HDL-C and a high triglyceride to HDL-C ratio were not significantly associated with alcohol consumption. Our results suggest that the beneficial effects of alcohol among hypertensive men may be attributable to the lowered risk of low HDL-C, whereas the harmful effect of alcohol may be attributable to increased triglyceride levels. Moreover, light alcohol consumption may be helpful for hypertensive men to alleviate the risk of dyslipidaemia. However, this becomes very important to state that an alcoholic must be aware while adding more glasses in his daily drinkers. This study is worthy in view of increasing alcohol consumption in this region of Punjab.

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