

COMPARISON OF SERUM LIPID PROFILE IN MIDDLE AGED ALCOHOLICS & NON ALCOHOLICS

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ABSTRACT

INTRODUCTION

Alcoholism has become a major burden in developing countries like India, especially in rural areas. Multiple reasons like financial burden of being low socio economic status, heavy field work leading to physical stress & mental stress. Added to this illiteracy, lack of knowledge about ill effects of alcohol, people consume it regularly & become addictive.

AIMS & OBJECTIVES

The present study was conducted to study the lipid profile of alcoholics & compare them with normal subjects.

MATERIALS & METHODS

30 males between the age group of 35-60 years who consumed alcohol (>250 ml/day) regularly for more than 15 years in Chittoor and surrounding villages were recruited for the study group. 30 subjects of same age group attending SVIMS OPD, Tirupathi were taken as control group. Fasting serum lipid profile was done on both the groups by collecting their venous blood samples.

RESULTS

We found that serum cholesterol (234.66+10.34), Triglycerides (178.38+8.8), (LDL) Low density lipoprotein (160.6+10.3) & (VLDL) Very Low density lipoprotein (35.09+7.56) were significantly ($p < 0.05$) higher in study group than compared to control group. Whereas High density lipoprotein HDL was significantly lower in study group (38.2) than control group (41.2).

CONCLUSION

Alcohol consumption leads to liver diseases which may present with clinical and biochemical features, mainly impaired serum lipid profile.

KEYWORDS

Serum lipid profile, Alcohol, Liver cirrhosis.

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INTRODUCTION: Alcoholism has become a major burden in developing countries like India, especially in rural areas. In an alarming revelation, the Global Status report on alcohol and health 2014, released by the World Health Organization (WHO) states that the amount of alcohol consumption has raised in India between the periods of 2008 to 2012. The data was compiled taking into account individuals over the age of 15 and above, who consumed alcohol. According to the report, around 30% of the total population of India consumed alcohol in the year 2010. 93% of alcohol was consumed in the form of spirits, followed by beer with 7% and less than 1% of the population consumed wine.¹

Alcohol consumption causes fatty liver, alcoholic hepatitis and ultimately, alcoholic cirrhosis in some

patient.^{2,3} In Western countries, alcohol is the major cause of liver cirrhosis, and it is gradually increasing in countries like Japan and India.^{4,5}

Further in our alcohol consuming group, country liquor was the only form consumed. An earlier study has suggested some relation between country liquor, which although has been found to have lower alcohol percentage, causes more damage to liver. This became an area of interest for us.⁶

Alcoholic cirrhosis is the end spectrum of alcoholic liver disease (ALD), which includes fatty liver or simple steatosis, alcoholic hepatitis, fibrosis, cirrhosis and superimposed hepatocellular carcinoma.⁴ Fatty liver is the most common form of ALD, which develops in more than 90% of heavy drinkers. But, only about 30% of heavy drinkers develop a more severe form of ALD, such as liver fibrosis and cirrhosis. Cirrhosis is the final result of chronic liver damage, which is characterized by parenchymal injury leading to extensive fibrosis and nodular regeneration. As about 30% of the heavy drinkers develop cirrhosis, there are many other factors that are involved in the development of alcoholic cirrhosis, which include sex, obesity, drinking patterns,

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dietary factors, non-sex-linked genetic factors and cigarette smoking.^{7,8}

The liver plays a key role in the metabolism of plasma lipids and lipoproteins. As majority of endogenous cholesterol is synthesized in the hepatic microsomes, synthesis and metabolism of cholesterol is impaired in chronic liver disease. So the present study was conducted to study the serum lipid profile in alcoholics.

AIMS & OBJECTIVES:

1. To estimate serum lipid profile in alcoholics and non-alcoholics.
2. To compare serum lipid profile of alcoholics and non-alcoholics.

MATERIALS & METHODS:

Inclusion Criteria:

1. Subjects above 35 to 60 years of age are included
2. People consuming alcohol for more than 10 years were selected.

People suffering from chronic infections like T.B., pulmonary disease, and heart disease were excluded.

30 male subjects who fulfilled inclusion criteria in Chittoor and surrounding villages were recruited for the study group. 30 subjects of same age group attending SVIMS Outpatient department (OPD), Tirupathi were taken as control group. Fasting serum lipid profile was done on both the groups by collecting their venous blood samples.

Sample Collection: The subjects were instructed to attend the OPD in the morning hours with 12 hrs. fasting. Venous blood samples collected randomly from alcoholic subjects and non-alcoholic subjects and allowed to clot for half an hour following which the sample was centrifuged for 15 min. and the serum was separated and analysed. The serum sample were analysed for cholesterol, triglycerides and HDL (high density lipoprotein), LDL (low density lipoprotein), VLDL (very low density lipoprotein).

STATISTICAL ANALYSIS: SPSS 16.5 version was used for analysis of the data. Descriptive statistics like mean & standard deviation were calculated. Student t-test was applied. P value <0.01 was considered statistically significant.

RESULTS: We found that serum cholesterol (234.66±10.34), Triglycerides (178.38±8.8), (LDL) Low density lipoprotein (160.6±10.3) & (VLDL) Very Low density lipoprotein (35.09±7.56) were significantly (p<0.05) higher in study group than compared to control group. Whereas High density lipoprotein HDL was significantly lower in study group (38.2) than control group (41.2). (table 1)

Lipid profile	Alcoholics {n = 30}	Non alcoholics {n = 30}	t value	Sig (2 tailed)
S. cholesterol	234.66±10.34	145.2±3.65	-13.676	0.00
S. Triglycerides	178.38±8.87	90.66±24.7	-6.813	0.00
LDL	160.6±10.31	86.23±3.3	-13.386	0.00
VLDL	35.09±1.65	18.04±1.06	-7.617	0.00
HDL	38.23±1.22	41.00±1.23	6.984	0.00

Table 1: Comparing lipid profile in alcoholics & non-alcoholics

Out of 30 study subjects, 11 of them had history of alcohol consumption for 10-15 years, whereas remaining 19 for more than 15 years. There was no significant difference in their lipid profiles (table 2).

Lipid profile	Group 1 {n = 11}	Group 2 {n = 19}	t value	Sig. (2-tailed)
S. Cholesterol	212.88±15.34	251.2±12.4	-1.349	0.214
S. Triglycerides	164.22±13.94	189.00±10.97	-.524	0.615
LDL	141.22±15.31	175.00±12.8	.216	0.834
VLDL	32.77±2.76	36.82±1.62	-1.238	0.251
HDL	39.11±1.93	37.5±1.61	-5.25	0.614

Table 2: Lipid profile & duration of alcohol consumption

Group 1: Duration of alcohol consumption 10-15 years.

Group 2: Duration of alcohol consumption >15 years.

Also we categorised subjects based on amount of alcohol consumed per day, there was no significant difference in their lipid profiles (table 3).

Lipid profile	Group 1 {n = 12}	Group 2 {n = 18}	t value	Sig. (2-tailed)
S. Cholesterol	224.54±45.29	246.26±48.00	-08.34	0.426
S. Triglycerides	161.00±41.15	197.84±31.47	-02.63	0.026
LDL	152.72±45.61	169.40±49.90	00.60	0.512
VLDL	32.09±45.61	39.40±06.00	-02.66	0.562
HDL	39.36±05.76	37.30±05.43	00.68	0.026

Table 3: Lipid profile & quantity of alcohol consumption

Group – I - Up to 180 ml.

Group – II - More than 180 ml.

DISCUSSION: In our study, age of the patients ranged from 35 years to 60 years with a mean age of (41.38±9.05) years. We found that the most common age group involved by alcoholic cirrhosis is 41-50 years. This result corroborates with previous studies, which show that the mean age for alcoholic cirrhosis is 44 years in South Asian males.⁹ Cases in our study consumed different types of alcoholic beverages like molasses preparation, rice beer, brandy, toddy etc.,

The safe limit of alcohol intakes is controversial.⁵ Guidelines recommended by the Royal College of Physician advice a weekly limit of alcohol intake of 210 g for men and 140 g for women. Most previous retrospective studies have shown that the risk of developing irreversible liver damage increases with the amount of alcohol consumed above a level of 40-80 g/day.^{10,11} In our study we found majority (60%) of subjects consumed 180 g of alcohol per day.

Majority of our subjects had a history of regular alcohol consumption for more than 15 years (60%). Becker et al. found that when compared for 0-6 years and 6-12 years periods, the relative risk of developing alcoholic cirrhosis was almost equal.³ However, in another study, it was found that the mean duration of alcohol intake was 21 years and 20 years for men and women, respectively, for developing alcoholic cirrhosis.¹²

We have found that serum total cholesterol values were higher in alcoholic patients compared with the normal, healthy individuals. The serum LDL cholesterol and VLDL cholesterol & triglycerides levels are also significantly increased in alcoholics when compared with the control group. Heavy drinking puts more fat into the circulation in your body, raising your triglycerides level. Our results were similar with other studies like Varghese et al¹³ and Singh b et al.¹⁴

CONCLUSION: Alcohol consumption leads to liver diseases which may present with clinical and biochemical features, mainly impaired serum lipid profile.

Increased serum lipids have been implicated in cardiovascular morbidity and mortality. We conclude that there is a need to educate people regarding the ill effects of alcohol on the liver and heart.

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