



A COMPARATIVE STUDY OF LIPID PROFILE IN CHRONIC ALCOHOLICS AND NON ALCOHOLICS IN TERTIARY HOSPITAL

General Medicine

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ABSTRACT

BACKGROUND: Alcoholism is a significant threat to public health in developed and developing countries. Over the last 30-40 years, alcohol consumption has increased in quantity and frequency. Alcohol use predisposes subjects to changes in lipid profile associated with coronary risk.

AIM:

1] To study lipid profile in chronic alcoholics by measuring serum total cholesterol triglycerides, HDL, LDL and VLDL.

2] To compare lipid profile changes in chronic alcoholics and non-alcoholics

MATERIALS AND METHODS: A Hospital-based cross-sectional study was conducted with patients attending the General Medicine department in Santhiram medical college and general hospital, of which 30 alcoholic and 30 non-alcoholic were taken into the present study.

RESULTS: There was a significant rise in TC, TGL, HDL, LDL and VLDL of chronic alcoholics compared with non-alcoholics with p-value 0.001, <0.001, 0.004, 0.290, <0.001, respectively. Lipid profile was compared among moderate and heavy drinkers and found increased levels of TC, TGL, LDL & VLDL with p-value <0.001, 0.001, 0.002 & 0.001 respectively in heavy drinkers. There is a decrease in HDL cholesterol among heavy drinkers compared with moderate drinkers, p-value 0.011, which is significant. But remains elevated compared to non-alcoholics.

CONCLUSION: This study shows that alcohol intake increases lipid parameters. Moderate alcohol intake increases HDL cholesterol, whereas heavy alcohol consumption increases TC, TGL, LDL & VLDL and decreases HDL.

KEYWORDS

INTRODUCTION:

Alcohol is a chemical compound that has pharmacological effects similar to narcotics, such as central nervous system and respiratory depression, euphoria induction, tolerance, and addiction.¹

Alcohol consumption has increased in quantity and frequency over the last 30-40 years. Alcohol abuse has now become a global social and medical issue. Alcohol is viewed as a symbol of social status and prestige, as projected by their role models, as a result of rapid socio-economic and cultural changes. The average age at which people begin drinking has also decreased.² Heavy alcohol consumption for prolonged periods result in marked perturbation of the lipid transport system, reflecting both effects of alcohol on lipid metabolism in hepatic and extrahepatic tissue and its marked toxic impact on liver function.³

The capacity of lipoprotein production and hyperlipemia development increases during chronic alcohol consumption, probably due to the concomitant hypertrophy of the endoplasmic reticulum and Golgi apparatus. However, this compensation is relatively inefficient in ridding the liver of fat. This inefficiency may be linked to alteration of hepatic microtubules induced by ethanol or its metabolites which interferes with the export of protein from the liver to serum, promoting the hepatic accumulation of protein and fat. As liver injury aggravates, hyperlipemia wanes and liver steatosis is exaggerated. The change in serum lipid is a sensitive indicator of the progression of liver damage in alcoholics.⁴

AIMS AND OBJECTIVES:

- 1] To study lipid profile in chronic alcoholics by measuring serum total cholesterol triglycerides, HDL, LDL and VLDL.
- 2] To compare lipid profile changes in chronic alcoholics and non-alcoholics

MATERIALS AND METHODS:

A Hospital-based cross-sectional study was conducted in the Department of General Medicine, Santhiram Medical College, and General Hospital for six months after approval from the Hospital Ethics and Research Committee.

Sampling Technique And Sample Size: The study was conducted with patients attending the department of General Medicine in

Santhiram medical college and general hospital, 30 test subjects were male patients of age 30 – 50 years who are chronic alcoholics with regular alcohol intake for at least eight years with dependence symptoms, and 30 control subjects are males of age 30 – 50 years with no history of drinking.

These subjects were given a medical exam using a pre-validated, pre-structured, and pre-tested fixed proforma. An interview and a questionnaire were used to assess the participants' alcohol consumption history. Data from questionnaires are used to establish the number of standard drinks consumed, duration, type, the pattern of alcohol intake.

The test subjects are classified into moderate and heavy drinkers depending on the number of drinks consumed. Moderate drinkers include 2 – 3 drinks/week, and heavy drinkers include ≥ 4 drinks/week.

Inclusion Criteria:

1. Test subjects include 30 males aged 30 – 50 years who are chronic alcoholics.
2. Control subjects include 30 males aged 30 – 50 years who are non-alcoholics.
3. Those who are willing to participate in the study and have given informed consent

Exclusion Criteria:

- Patients with clinical evidence of
- Diabetes mellitus
 - Hypertension
 - Renal disease
 - Liver disease other than alcoholic liver disease
 - Pancreatitis
 - Malnutrition
 - Family history of hyperlipidemia
 - Subjects on drugs affecting lipid metabolism
 - Individuals belonging to other age groups
 - Females
 - Those who have not given informed consent

Data Analysis:

The present study has carried out descriptive statistical analysis. The results of continuous measurements are displayed as Mean SD (Min-

Max), while the results of categorical measures are shown as a number (per cent). Significance is assessed at a 5 % level of significance. Student t-test (two-tailed, independent) has been used to find the significance of study parameters on a continuous scale between two groups Intergroup analysis) on metric parameters. Chi-square/ Fisher Exact test has been used to find the significance of study parameters on a categorical scale between two or more groups.

RESULTS:

Table no. 1: Comparison of age distribution

Age in years	Controls		Cases	
	No	%	No	%
30-35	8	26.7	7	23.3
36-40	8	26.7	10	33.3
41-45	7	23.3	8	26.7
46-50	7	23.3	5	16.7
Total	30	100.0	30	100.0
Mean $\pm$ SD	40.17 $\pm$ 6.19		40.13 $\pm$ 5.20	

Samples are age-matched with $p=0.982$.

Table2: Duration of Alcoholics

Duration of Alcoholism	Number of patients	%
<10	13	43.3
>10	17	56.7
Total	30	100.0

43.3% of cases consumed alcohol for less than ten years, and 56.7% consumed alcohol for more than ten years.

Table 3: Type of drinker

Type of drinker	Number of patients	%
Moderate drinker	12	40.0
Heavy drinker	18	60.0
Total	30	100.0

Depending on the type of drinking, cases are classified as moderate drinkers and heavy drinkers. 40% of cases are moderate drinkers, and 60% are heavy drinkers.

Table 4: Comparison of Lipid profile in cases and controls

Lipid profile	Controls	Cases	P-value
Total cholesterol (mg/dl)	158.00 $\pm$ 17.04	190.23 $\pm$ 46.01	0.001**
Triglycerides (mg/dl)	111.30 $\pm$ 33.32	205.93 $\pm$ 108.37	<0.001**
HDL (mg/dl)	37.50 $\pm$ 7.24	43.13 $\pm$ 7.33	0.004**
LDL (mg/dl)	98.07 $\pm$ 12.89	106.23 $\pm$ 39.85	0.290
VLDL (mg/dl)	22.30 $\pm$ 6.73	41.20 $\pm$ 21.67	<0.001**

Total cholesterol is raised in cases with a mean value of 190.23mg/dl compared with 158mg/dl controls. There is a significant rise in total cholesterol with a p -value of 0.001.

Triglycerides are raised in cases with a mean value of 205.93mg/dl compared to 111.30 mg/dl controls. There is an increase in triglyceride levels with a p -value <0.001, which is significant.

HDL cholesterol is raised in cases with a mean value of 43.13 mg/dl compared with 37.50mg/dl controls. P -value is 0.004, which is significant.

Table 5: comparison of lipid profile depending on the duration of alcohol

Lipid profile	Duration of alcoholic		P-value
	<10 years	>10 years	
Total cholesterol (mg/dl)	176.62 $\pm$ 38.18	200.64 $\pm$ 49.80	0.160
Triglycerides (mg/dl)	183.93 $\pm$ 108.08	222.76 $\pm$ 108.75	0.339
HDL (mg/dl)	44.00 $\pm$ 8.76	42.47 $\pm$ 6.22	0.580
LDL (mg/dl)	95.76 $\pm$ 22.61	114.24 $\pm$ 48.36	0.214
VLDL (mg/dl)	36.85 $\pm$ 21.63	44.52 $\pm$ 21.75	0.345

There is raise in total cholesterol, triglycerides, HDL, LDL and VLDL in cases with more than ten years of drinking with a p -value of 0.160, 0.339, 0.580, and 0.345, respectively. But there is no significant rise.

Table 6: Comparison of Lipid profile in cases according to the alcoholic

Lipid profile	Type of alcoholic		P-value
	Moderate drinker	Heavy drinker	
Total cholesterol (mg/dl)	154.08 $\pm$ 25.38	214.33 $\pm$ 40.74	<0.001**
Triglycerides (mg/dl)	132.41 $\pm$ 56.41	254.94 $\pm$ 107.79	0.001**
HDL (mg/dl)	47.16 $\pm$ 9.32	40.44 $\pm$ 4.03	0.011*
LDL (mg/dl)	80.42 $\pm$ 26.31	123.44 $\pm$ 38.44	0.002**
VLDL (mg/dl)	26.50 $\pm$ 11.29	51.00 $\pm$ 21.55	0.001**

Total cholesterol is raised in heavy drinkers with a mean value of 214.33 mg/dl compared to moderate drinkers, 154.08mg/dl. This raise shows a significant p -value of <0.001.

Triglyceride levels are raised in heavy drinkers with a mean of 254.94 mg/dl compared to moderate drinkers, 132.41 mg/dl. This raise shows a significant p -value of 0.001. HDL cholesterol is low in heavy drinkers with a 40.44 mg/dl mean value than moderate drinkers, 47.16mg/dl. There is a significant change in HDL cholesterol with a p -value of 0.011.

DISCUSSION:

Alcohol use predisposes subjects to increased risk of coronary disease, and changes in lipid profile are associated with coronary risk. This study is similar to the study done by Drago et al., who found the average values of serum cholesterol (231 plus minus 34.6 mg % v/s 188.2 plus minus 28.5 mg%), triglycerides (196.9 plus minus 42.5 mg % v/s 92.5 plus minus 20.6 mg %), high-density lipoprotein (60.2 plus minus 7.18 mg % v/s 41.9 plus minus 7.6 mg %), were significantly higher in chronic alcoholics compared to non-alcoholics which was independent of the duration of Alcoholism.⁵ This study is consistent with the study done by Vaswani M et al. in which total cholesterol, triglycerides, HDL, VLDL except LDL were significantly higher ($p < 0.001$) in alcoholic dependents compared to non-alcoholics.⁶ This result is similar to the study done by Arun Lakshmi pathy et al., who found an increase in HDL levels when alcohol is used in moderation. Still, there may be a decline in HDL when alcohol is used in excessive quantity.⁷

CONCLUSION:

1. In the general population, elevations in LDL cholesterol are correlated with an increased risk of coronary artery disease. Increases in HDL cholesterol are associated with protection. Elevated serum triacylglycerols have been identified as an independent risk factor for cardiovascular disease. Increasing alcohol consumption beyond moderation is associated with increased heart disease.
2. Our study showed increased lipid parameters with significant p values compared to alcoholics and non-alcoholics. Also showed a significant rise in lipid parameters in heavy drinkers compared with moderate drinkers except for HDL cholesterol which is decreased but remains elevated compared to controls.
3. Hyperlipidemia is a common finding in chronic alcoholics. Our study supports elevated lipid parameters in chronic alcoholics compared with non-alcoholics; lipid parameters can be used to assess the prognosis in chronic alcoholics and henceforth reduce morbidity associated with hyperlipidemia.

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