International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2018): 7.426

Study of Serum Lipid Profile in Alcoholiccirrhosis of Liver

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Abstract: ***Liver cirrhosis is a very common disease encountered at both primary and tertiary care by clinicians. A major cause of liver disease is chronic and excessive alcohol consumption. The aim is to study the serum lipid profile (Total cholesterol, HDL, LDL & Triglycerides) in alcoholic cirrhosis of liver &to correlate severity of cirrhosis (CHILD'S criteria & MELD scoring)with lipid profile abnormalities.It is a single centre, cross sectional study meant to study the lipid profile of patients with alcoholic cirrhosis of liver. A total of 100 patients of alcoholic liver cirrhosis admitted to Dr. D.Y Patil Medical College Hospital and research center, from September 2017 to august 2019 were taken up for the study. In this study, most common age group was between 36-45 years. All were male patients and most of them consumed country liquor. Forty five percent of the study population consumed about 90ml (50gm) of alcohol. Majority consumed alcohol for a duration of 5-10 years. All had total cholesterol below 200mg/dl, 74% had TG below 150mg/dl, 62% had HDL below 40mg/dl, 72% had LDL below 100mg/dl. Dyslipidemia is commonly seen in alcoholic liver cirrhosis. Therefore, routine screening for lipid profile should be done in alcoholic cirrhosis patients. The results of this study showed that all the studied variables serum total cholesterol, LDL, HDL cholesterol except triglycerides were significantly low in the cirrhotics.***

1. Introduction

Liver cirrhosis is a very common disease encountered at both primary and tertiary care by clinicians. Cirrhosis is a degenerative condition of the liver in which normal hepatic tissue is replaced by anatomically abnormal structures, which eventually impair liver function. Lipoprotein formation and clearance mainly takes place in liver. Fatty acids and cholesterol are taken up by liver from diet and peripheral tissues. It then packages them into complexes and releases these complexes into the circulation again. Thus, it is of no surprise that diseases of liver affect lipid levels in blood in a many ways. The aim of the study is to study the serum lipid profile (Total cholesterol, HDL, LDL & Triglycerides) in Alcoholic cirrhosis of liver & to correlate severity of cirrhosis (CHILD'S criteria & MELD scoring) with lipid profile abnormalities.

2. Materials & Methods

Type of Study: It is a single center, cross sectional study.
Study Place: The study was conducted in Dr. D. Y Patil Medical College Hospital and research center, Pimpri, Pune.
Period: From September 2017 to august 2019.
Sample Size: A total of 100 patients of alcoholic liver cirrhosis.

Inclusion Criteria

a) Age > 18 years
b) Known and established cases of alcoholic cirrhosis of liver.

Exclusion Criteria

a) Patients below 18 years
b) Cirrhosis of non alcoholic origin like
   - viral causes like HBV, HCV
   - non alcoholicsteatohepatitis
   - cardiac cirrhosis
   - diagnosed cases of alpha-1 anti-trypsin deficiency, primary, biliary cirrhosis, Wilson's disease, hemochromatosis, autoimmune cirrhosis, drug induced.
c) Causes of dyslipidemia other than alcohol like ischemic heart disease, hypertention, diabetes mellitus, chornic kidney disease, nephrotic syndrome, cerebro vascular disease.
d) Patients on lipid lowering drugs.

Statistical evaluation- Data was collected using preformed data collection form and case record form. Data was entered into Microsoft Excel and analysed using SPSS (Statistical Package for Social Sciences) Software 20.

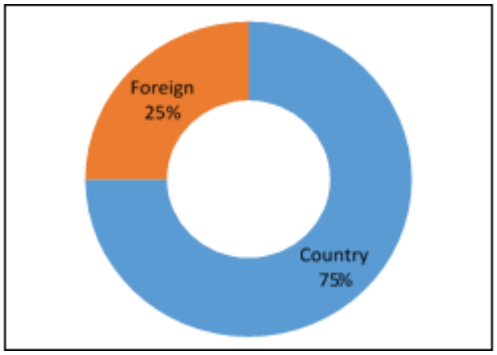
3. Results

Table 1 shows age wise distribution of study subjects. Maximum 41% subjects were in age group of 36-45years followed by 32% who were in age group of 46-55 years. Mean age of study subjects was 45.39+8.69

Table 1: Age distribution of the subjects

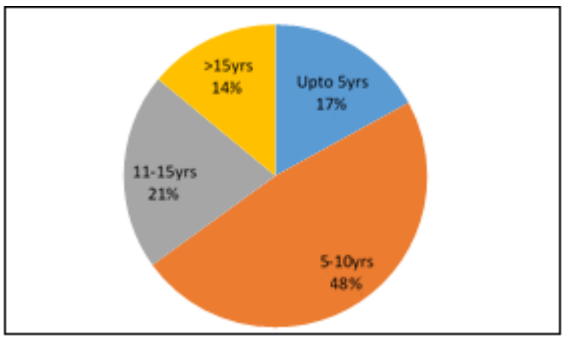
Age group	Frequency	Percent
25-35yrs	14	14.00%
36-45yrs	41	41.00%
46-55yrs	32	32.00%
56-65yrs	13	13.00%
Total	100	100.00%

Most of them consumed country liquor.



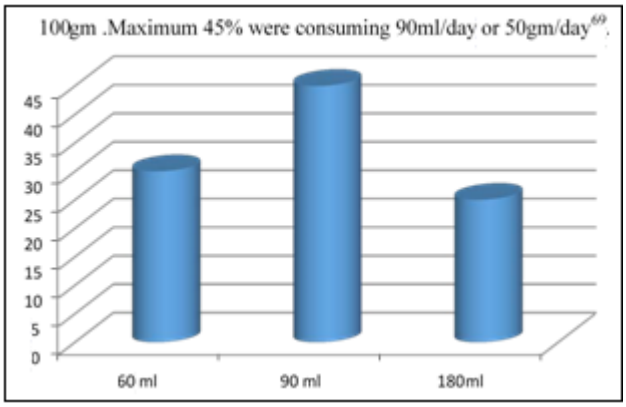
Graph 1: Type of alcohol

Range of duration was 1-25yrs and maximum 48% were consuming for 5-10yrs of duration.



Graph 2: Duration of alcohol consumption

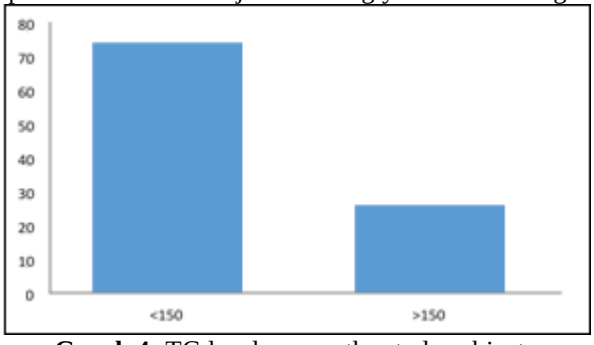
Graph shows amount of liquor consumption by study subjects. It was 60-180ml/day or 33-



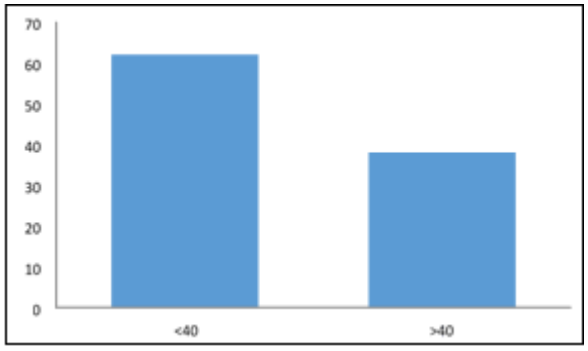
Graph 3: Amount of liquor consumption

100% subjects had total cholesterol <200mg/dl

Graph shows 74% of subjects had triglycerides <150mg/dl

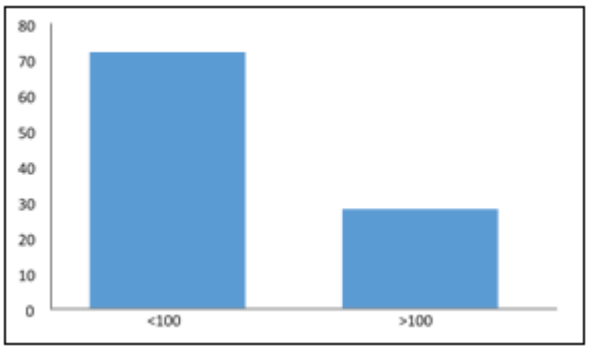


Graph 4: TG level among the study subjects

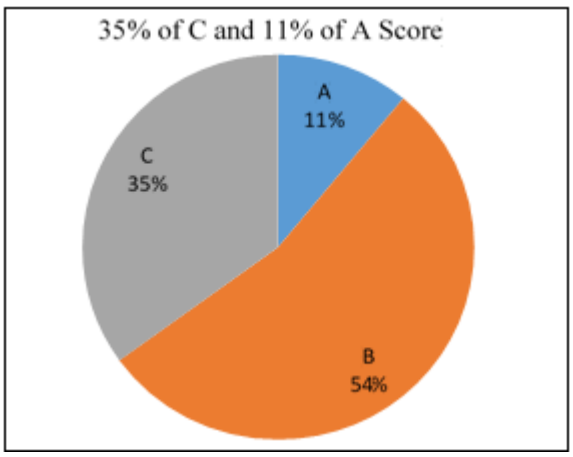


Graph 5: HDL distribution among study subjects .62% of the study subjects has HDL <40 gm%

72% of the study subjects show LDL below 100mg%

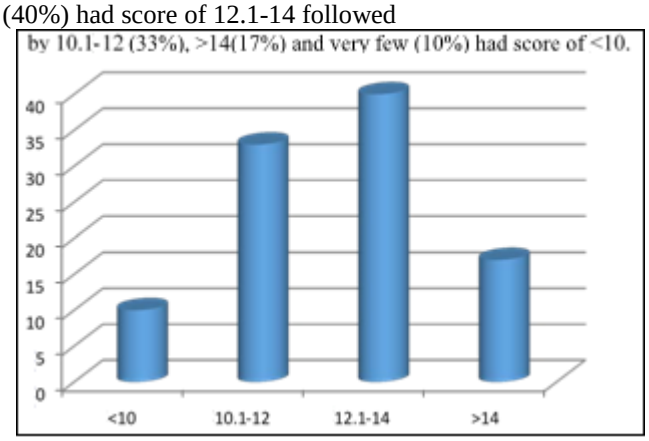


Graph 6: LDL distribution among the study subjects



Graph 7: Shows among study subjects more than half (54%) were of Child pugh B Score,

Graph shows MELD scoring of study subjects. Most of (40%) had score of 12.1-14 followed



Graph 11: MELD score among study subjects

Table 2: Mean value of lipid profile with liver damage according to Child Pugh Criteria

Child-Pugh criteria	N	Total Cholesterol	Triglyceride	HDL	LDL
A	11	122.82+19.68	101.45+31.08	35.91+7.54	75.55+27.54
B	54	126.52+22.18	129.52+38.06	37.54+4.93	88.85+24.43
C	35	128.63+20.67	124.34+32.51	37.86+5.80	78.11+27.15

Table 3: Mean value of lipid profile with liver damage according to MELD Criteria

MELD	N	Total Cholesterol	Triglyceride	HDL	LDL
<10	10	125.40+19.62	118.30+38.19	38.50+5.12	90.70+30.87
10.1-12	33	124.76+19.81	120.00+37.10	36.76+5.93	86.73+25.65
12.1-14	40	128.08+23.96	127.78+36.09	38.13+4.99	82.10+23.94
>14	17	128.88+19.47	129.88+35.02	36.71+6.31	77.06+29.47

4. Discussion

Liver has an important role in metabolism of lipid and various stages of its synthesis and transportation. Therefore an abnormal lipid profile is expected in patients with liver damage. ALD is a prime cause of morbidity and mortality all over the world. Because of reduction of lipoprotein biosynthesis in patient with chronic liver dysfunction a reduced level of serum cholesterol triglyceride, serum triglycerides, high density lipoprotein and low density lipoprotein is expected.

In our study of 100 patients with alcoholic liver cirrhosis, we found that the most common age group was between 36-45 years, mean age of alcoholic cirrhosis patients was 45.39 and all of them were males. This result corroborates with previous study conducted by Kunal et al with mean age of 45.22 and males outnumbered females[4].

Most of the patients in our study consumed alcohol for a duration of 5-10 yrs (48%) this was similar to the study conducted by Phukan et al.

It has been concluded by a western study that a minimal quantity of 30 g of alcohol per day is compatible with a risk of developing cirrhosis in both sexes[5]. Our study showed that most of the cases (45%) had a daily intake of 50g of alcohol, 30% cases consumed 33 g of alcohol per day.

In this study there was a decrease in serum total cholesterol in cases with mean value of 126.85.

In a study by Kackar et al it was found that the serum total cholesterol decreased proportionately with the severity of alcoholic cirrhosis[7].

We found that there was also a reduced level of serum HDL and LDL in our study with mean values of HDL 37.47and the means values of LDL in cases 83.63.

In a study by Phukan, et al serum HDL and LDL cholesterol both were reduced in alcoholic cirrhosis patients compared with the controls in all age groups[1.]

The serum triglyceride levels were also decreased in cirrhosis patients .This was similar to a study done by Singh B et al [6]. There was no correlation of lipid profile abnormality with severity of liver damage according to Child Pugh criteria and also with increase in MELD score.

5. Conclusion

Dyslipidemia is commonly seen in alcoholic liver cirrhosis. Therefore, routine screening for lipid profile should be done in alcoholic cirrhosis patients. The results of this study showed that all the studied variables serum total cholesterol, LDL, HDL cholesterol, triglycerides were reduced in the cirrhotics. The protective effect of high density lipoprotein decreased in alcoholic cirrhosis patients. The amount of decrements measured in the levels of serum total cholesterol, serum LDL and serum HDL in patients with cirrhosis were not related to the severity of liver damage according to Child Pugh criteria.
Further research is required for assessing the predictive values to measure lipid profiles as a mean to estimate the extent of liver damage in cirrhotic patients.

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