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EFFECT OF ALCOHOLISM ON LIVER FUNCTION TEST IN RURAL POPULATION IN INDIA

Dr Richa K Lath, Dr Aniruddha Jibhkate
[1]Associate Professor Dept. of Biochemistry Ananta Institute of Medical Science and Research Center, Rajasthan.
[2]Professor Dept. of Physiology Ananta Institute of Medical Science and Research Center, Rajasthan

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Corresponding author: Dr Aniruddha Jibhkate
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Abstract

Background: alcoholism is one of the major socioeconomic as well as public health problem in India. The problem is occurring equally in urban as well as in rural India. This study was carried out in essence of liver damage in alcoholics and alteration in the biochemical enzymes in the serum with respect to liver damage.

Method: 100 alcoholics and 100 non alcoholic patients were selected from the hospital OPD. Liver function test was performed in both the study group. Liver enzymes ALT,AST,ALP and the total protein and albumin level were compared in the study group and controls.

Results: The results showed there is significant increase in the liver enzymes ALT,AST,ALP in the alcoholic patients as compared to normal individual and significant fall in concentration of the total protein and albumin level in the alcoholics.

Keywords: Alcoholics, liver function test

Introduction

Amid all the public health problem in rural India alcoholism is very important. When consumed alcohol passes through all gastro intestinal tract and one or other way affects all the visceral organ. It is water soluble and can penetrate all the organs and damage organ. Consuming alcohol is a old tradition although it is not considered as a good to conduct. It has been found that the alcohol consumption has essentially increasing trends of lately.[1] In India approximately 26% of inhabitants above age 15 years drink alcohol this includes both males as well as females. Alcohol is indigenous cause of many diseases like, oral cancer, lung, kidney, Brain, heart, gastric ulcer, pancreatitis & reproductive system and so on.[2,3,4] Alcohol being metabolized in the liver, alcohol essentially damages liver with heavy consumption. Many forms of liver diseases are seen with the alcohol consumption like fatty liver disease, alcoholic hepatitis, alcoholic cirrhosis and end stage liver disease.[5,6,7] Morphologically it may cause severe liver fibrosis[8] The damage caused by alcohol is in proportion to the amount of alcohol consumed.[9] Several studies shows that there occurs a change in various liver function biochemical markers such as ALT, AST in alcoholic liver disease.[10] Liver function tests are simple and economical tests which are performed in almost all the biochemistry laboratories. These tests provide a good momentary status of the liver functions. The results of these test are helpful to assess the damage happened to the liver after a prolong alcohol consumption[10]

It has been motioned that consumption of alcohol is accountable for 3.8% of mortality globally and 4.6% of disability-adjusted life-years (DALYs). Alcohol consumption is known to lead to accumulation of fat in hepatic tissue and to induce changes in serum liver-derived enzymes. Clinically, measurements of serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), and glutamyl transferase (GGT) are widely used as markers in evaluating the degree of liver injury. Therefore the present study helps in identifying the changes in liver function tests in the alcoholics in rural Indian population where the alcohol is consumed in avidly.[11,12]

AIMS AND OBJECTIVES

1. The aims and objective of this study is to determine and compare the biochemical parameters of liver function test in the alcoholics and the normal subjects.
2. To find out the liver function status in the alcoholics in rural Indian population.

MATERIAL AND METHOD

Study design

It is a case control type of observational study.

The study was conducted at medical college and Hospital, with prior permission of the ethical committee. 100 alcoholics attending medicine, psychiatry OPD and wards for health checkup were included in study, for comparison 100 subjects attending the OPD but no history of alcoholism were included in study. An informed consent was taken from both the study groups.

Inclusion Criteria:

1. Alcoholic subjects having history regular alcohol intake for more than 10 years.
2. Age from 30 to 50yr
3. Residence in rural area

Exclusion Criteria:

1. Patients with malignancy.
2. Pregnant women
3. Patients with long term clinical illness. **27**

Controls are of age group 30 to 50 years and no history of alcohol consumption

Collection and Analysis of Blood Samples:

5ml of Blood samples was collected by venipuncture by aseptic technique. The serum was separated from the samples after centrifugation of samples at 3000 RPM. Samples were analyzed for following biochemical parameters on semi automated analyzer.

All collected sample were analyzed for the following parameters:

1. Serum AST
2. Serum ALT
3. Serum ALP
4. Serum Total Protein
5. Serum Albumin

Data analysis The results were compared using SPSS, version 21. Data were described using the mean, standard deviation. Student's t test was used to compare mean concentrations of liver enzymes with normal reference range. Independent test was used to compare the differences of liver enzymes between daily and sometime alcoholic groups as well as Active and Sedately life style. Furthermore, the Pearson correlation test was used to evaluate the relationship between study variables and study parameters. All statistical tests were considered significant in *p-value* of <0.05 with a confidence level of 95%.

Results:

Table 1:

Parameters	Mean ±SD Alcoholics	Mean ±SD Controls	P value
Albumin(grm/dl)	3.28±0.64	4.10±0.64	0.005
AST(SGOT)(unit/lit)	60.74±7.20	26.04±8.71	0.008
ALT(SGPT) (unit/lit)	80.82±09.24	26.94±12.36	0.005
ALP(unit/lit)	129.80±60.12	85.74±14.03	0.0001
TP(grm/dl)	6.42±0.89	7.15±0.02	0.008

Table number 1 shows that Mean ± SD and P-Value of liver function test in subjects and Control. The protein and enzymes levels were significantly altered in alcoholics as compared to the control.

Discussion:

Having alcohol is the most proverbial cause of liver disease in community. The risk is more when about 80 gm alcohol (200 ml whiskey or equivalent) consumed per day [13].Estimation of Serum enzymes is the most effective and economic way to assess the liver disease. Alcohol and related toxicity is commonly affects liver leading to alcoholic liver disease. Alcoholic liver disease is one of the commonest causes of alcohol-related death[14]. Previous studies showed that there occurs alteration in the biochemical parameter in alcoholics that includes the liver enzyme of AST, ALT, AST,ALT and GGT and alkaline phosphatase as compared to healthily individuals .[5,11] Present study in the rural population of India showed that the level of total protein, albumin, ALT, AST, ALP are significantly altered in the alcoholics as compared to the normal individuals. The result of this study was in congruence with the results of the previous studies.

Increase in Serum ALT,AST in alcoholic liver disease is supposed to be due the mitochondrial injury in the liver occurring due to alcohol ingestion.[11] Alcohol induced damage to the liver also leads to alteration in the protein synthesis as liver being the important site for protein synthesis. According to study conducted by Usharani et al (2012) Albumin being solely formed in the liver it's concentration is markedly affected by the liver damage in alcoholics. Present study also showed similar results when the total protein and albumin was estimated.[15]

There are many studies showing that alcohol causes deleterious effect on the liver function and which results into change in the biochemical enzymatic alteration. Very few similar studies were conducted in rural Indian population. The present study is an attempt to retrieve data of liver functions in the alcoholics staying in the rural India.

Conclusion:

Liver function test parameters are essential to assess and understand the effect of alcohol on the liver in alcoholics. This study concludes that alcoholics in rural India had significantly AST, ALT, ALP which indicating the mitochondrial damage in the liver tissue. The study further concludes that there is significant decrease in the total protein and albumin level in alcoholics indicating the hampered liver function.

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