Original Research Article

Comparative study of liver test, Haemoglobin and plasma glucose levels between alcoholic and normal individuals

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Abstract

Background: Alcohol abuse is a global problem which affects families and society as a whole apart from liver functions it impairs insulin and cardiac structure and functions. **Methods:** 50 (fifty) alcoholic aged between 25 to 65 years were studied and compared with controlled group. Each patient underwent anthropometric, Blood pressure Hb%, FBS, PPBS, S. Bilirubin and significant parameters were noted. **Results:** Hypertensive patients were 11 (22%) in alcoholics, 3 (6%) in controlled. In alcoholics, 2 (4%) dyslipidemia, 2 (4%) prolapsed of inter vertebral disc, 3 (6%) were obese height of alcoholic was 164.3 (SD±5.82) t test was 3.13 p<0.001 weight of the alcohol was 58.3 (SD±2.2) and 56.8 (SD±4.30 in controlled group t test was 2.19 p<0.01. BMR and BSA were insignificant. In the Bio-chemical analysis, In alcoholic Hb% was 13.2 (SD±1.6), 3.9 (SD±0.7) in controlled, t test was -2.83 and p<0.00. In alcoholics PPBS was 117.6 (SD±11.5) 121.4 (SD±10.10 t test -1.75 p<0.04. In the comparison of liver function test, In alcoholics S. Bilirubin was 1.3 (SD±1.2) and 0.8 (SD±0.2) t test 2.90, p<0.001, In alcoholics, AST level was 80.1 (SD±40.2) and in controlled 27.1 (SD±5.5) t test -9.2 p<0.00. In alcoholics ALT level was 81.2 (SD±36.2) and 29.2 (SD±8.2) in controlled t test 9.8 p<0.01. **Conclusion:** This perspective study will help the physician, cardiologist and endocrinologist to predict the prognosis and treat efficiently to avoid the risk of morbidity and mortality.

Keywords: DM=Diabetes Mellitus, HTN=Hypertension, FBS=Fasting Blood, PPBS=post parandial Blood Sugar, BSA= Body Surface Area, BMI=Body Mass Index.

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INTRODUCTION

Alcohol is known for hepato-toxic, commonly consumed globally leads multiple hepatic complications. Including cirrhosis fibrosis hepatic failure etc. Apart from these effects of alcohol on the insulin – glucose axis can't be ignored [1]. Acutely alcohol impairs insulin sensitivity in chronic alcoholics[2] especially adiposity[3] and atherosclerosis but it has negative correlation with BMI with alcohol intake. Excessive alcohol consumption is also associated with alcoholic cardio myopathy characterised by enlargement of heart, increased left ventricular mass ventricular dysfunction mainly in DM.2 patients[4]. Moreover alcohol intake has been associated with hypertension which also contributes to alteration of cardiac structure and function ultimately leads risk of coronary artery disease (CAD) and risk of heart failure (HF). Hence attempt was made to evaluate the various parameter of LFT, HTN and anthropometric to rule out the severity in alcoholics.

MATERIAL AND METHOD

50 (fifty patients) alcoholic patients aged between 25 to 65 years admitted at Shahdan Medical College hospital peeranchuruvu, Hyderabad, Telangana-500086.

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Inclusive Criteria: 50 patients of chronic alcohol. Majority of them were Binge drunkards (as per the DSM – IV criteria) were selected for studied.

Exclusion Criteria: Patients having history of cardiac or rheumatic IHD, congenital heart disease, Diabetic mellitus, smokers tobacco chewers, patients getting anti-depressants, HIV positive were excluded from the study.

Procedure: The same number healthy of volunteers (controlled groups) was also selected for study Majority of the patients belonged to middle socio-economic status. Every patient underwent detailed clinical examination, anthropometric measurements. Blood pressure, Haemoglobin FBS, PPBS, Serum Bilimbin AST and ALT. Blood pressure was recorded by spignomano metre early in the morning to get ideal parameters. Weight was measured in Digital Weighing machine, BMI was also measured in every patients (Normal BMI – 18.5 to 22.9 over weight BMI-23-24.9, Obesity BMI was ≥ 25 kg/m^2) venous blood was collected from both group for Bio-chemical analysis.

The duration of study was from July-2017 to December-2018.

Statistical analysis: was carried in SPSS software to compare the parameters in both alcoholic and controlled groups. The ratio of male and females was 2:1.

This research paper was approved by ethical committee of Government medical college and hospital Vijaywada-520008 (Andhra Pradesh)

OBSERVATION AND RESULTS

Table-1: In the base line manifestation of both alcoholic and controlled group 11 (22%) alcoholic and 3 (6%) hypertensive were observed, 2 (4%) Dyslipidemia, 2 (4%) prolapsed of inter vertebral disc, 3 (6%) obesity was observed only in alcoholic group.

Table-2: In the study of anthropological parameters height of alcoholic was 164.3 (SD±5.82) and 160.2 (SD±7.2) in controlled group t test value was 3.13 and p<0.01 (p value was highly significant)

58.3 (SD±2.2) was the weight (grams) of in alcoholic, 56.8 (SD±2.19) in controlled group, t test value was 2.19 and p<0.01 (p value was highly significant)

BMI (kg/m^2), BSA (in m^2) were insignificant.

Table-3: Comparison of Bio-chemical analysis 13.2 (SD±1.6) haemoglobin in alcoholic and 13.9 (SD±0.7) in controlled group t test value was -2.83 and p<0.00 (p value was highly significant).

In PPBS – 117.6 (SD±11.5) in alcoholic 121.4 (SD±10.1) t test value 1.75, p<0.04 p value was significant.

FBS values in both groups were found to be insignificant.

Table-4: In the comparative study of serum Bilirubin AST, and ALT (Liver function test parameters)

Serum Bilirubin – 1.3 (SD±1.2) in alcoholics, Bilirubin level 0.8 (SD±0.2) t test value was 2.90 and p<0.01, p value was highly significant. AST level was 80.1 (SD±40.2) in alcoholics and 27.1 (SD±5.5) in controlled group t test value was 9.2, p<0.000 (P value was highly significant), ALT parameters in alcoholics was 81.2 (SD±36.3) and 29.2 (SD±8.2) in controlled group t test value was 9.8 and p<0.00 (P value was highly significant)

Table 1: Base line manifestations in both alcoholic and controlled group

Sl. No	Particulars	Alcoholics (50) Number with %	Controlled (50) Number with %
1	Hypertension	11 (22%0	3 (6%)
2	Dyslipidemia	2 (4%)	--
3	Prolapsed of inter vertebral disc.	2 (4%)	--
4	Obesity	3 (6%)	--

Table 2: Study of Anthropological parameters in both alcoholic and controlled group

Particulars	Alcoholic group (mean value)	Controlled group (mean value)	T Value	P Value
Height (cm)	164.3 (SD±5.82)	160.2 (SD±7.2)	3.13	P<0.001
Weight	58.3 (SD±2.2)	56.8 (SD±4.30	2.19	P<0.001
BMI kg/m^2	21.6 (SD±2.10	22.5 (SD±2.7)	1.86	P<0.06 NS
BSA (in m^2)	1.72 (SD±0.2)	1.70 (SD±0.7)		P<0.4 NS

(NS = Not significant)

Table 3: Comparison of Bio-chemical analysis in both groups

Particulars	Alcoholics group (50) Mean value	Controlled group (50) Mean value	T test value	P Value
Haemoglobin	13.2 (SD±1.6)	13.9 (SD±0.7)	-2.83	P<0.00
FBS	86.2 (SD±12.6)	84.2 (SD±10.1)	080	P<0.3 (NS)
PPBS	117.6 (SD±11.5)	121.4 (SD±10.1)	1.75	P<0.04

Table 4: Comparative study of serum Bilirubin AST and ALT (Liver function test parameters)

Particulars	Alcoholic group (50) mean value	Controlled group (50) mean value	t test value	P value
Serum Bilirubin	1.3 (SD±1.2)	0.8 (SD±0.2)	2.90	P<0.01
AST	80.1 (SD±40.2)	27.1 (SD±5.5)	9.2	P<0.00
ALT	81.2 (SD±36.3)	29.2 (SD±8.2)	9.8	P<0.00

DISCUSSION

In the Present study of liver function test haemoglobin and plasma glucose between alcoholic and normal in 11 (22%) of alcoholics, 3 (6%) in controlled group, 2 (4%) of dyslipidemia 2 (4%) of prolapsed of Inter-vertebral disc, 3 (6%) obesity in alcoholics (Table-1), Mean value of height in alcoholics was 164.3 (SD±5.82) and 160.2 (SD±7.2) in controlled t test 3.13 and p<0.01 mean value of weight in alcoholics was 58.3 (SD±2.2), 56.8 (SD±4.3) in controlled t test 2.19, p<0.01, BMI and BSA values remained insignificant (Table-2). In comparison of Bio-chemical analysis Hb% was 13.2 (SD±1.6) in alcoholics 13.9 (SD±0.7) in controlled t test -2.83 p<0.00 mean value of PPBS ion alcoholics was 117.6 (SD±11.5) 121.4 (SD±10.1 t test 1.75 p<0.04 (highly significant). (Table-3). In the comparative study of liver function test Mean value serum Bilirubin in alcoholics was 1.3 (SD±1.2) 0.8 (SD±0.2) in controlled t test 2.90 and p<0.01 (highly significant). Mean value of AST in alcoholics was 80.1 (SD±36.3), 29.2 (SD±8.2) in controlled t test 9.8, p<0.000 (p value is highly significant) (Table-4). These findings are more or less in agreement with previous studies[6,7,8]. Alcohol is also known dose dependent cardiac toxin but myocardial damage may be consequence of direct toxic effects of alcohol or its metabolites by ethanol induced apoptosis associated hypertension[9]. Alcoholic cardiomyopathy is character by enlargement of heart increased LV mass and ventricular dysfunction. It is reported that, moderate to heavy alcoholics subjects would result in reduced insulin sensitivity which leads to hyperglycemias[10] and reduce the influence of hepatic enzyme induction Alcoholic liver disease (ALD) particularly cirrhosis has been one of the most prevalent and devastating conditions caused by alcohol consumption and one of the leading causes of alcohol related death. The pathogenesis of ALD is multi factorial. Toxic metabolites can damage key liver cells (hepatocytes and parenchyma) cells which is irreversible process. In addition to its direct effect on the liver, alcohol can increase the "leakiness" of the intestine cell wall allowing a harmful component of gram negative. Bacteria called endotoxin to pass more readily into the blood. The body responds to this increase in endotoxin levels by launching a coordinated immune response marked by activation of immune cells residing in the liver (ie kuffer cells). When activated kuffer cells secrete a variety of cytokines, including tumour necrosis factor (TNF) X and several types of interleukins (ILS)[11]. Cytokines also can have damaging roles, however when produced in excess amounts pushing the immune system response into overdrive and as a result promoting the progression of liver disease.

SUMMARY AND CONCLUSION

The present comparative study of alcoholics and non-alcoholics us key factor to study the alcohol – related disease like steatosis, alcoholic hepatitis, cirrhosis, cardio-vascular diseases, metabolic disorders. Hence this study demands further, nutritional, pharmacological, molecular biological, patho-physiological studies because exact pathogenesis of alcoholics' toxicity is still-unclear.

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