



ISSN: 2277- 7695

TPI 2015; 4(5): 24-27

© 2015 TPI

www.thepharmajournal.com

Received: 25-05-2015

Accepted: 25-06-2015

Raghu S. Holalkere

Department of Biochemistry,
Kuvempu University,
Shivamogga-577451, Karnataka,
India.

Preethi Shanbhag

Manasa Nursing Home and
Alcohol De-addiction Centre,
Shivamogga-577201, Karnataka,
India.

Ashok K. Pai

Manasa Nursing Home and
Alcohol De-addiction Centre,
Shivamogga-577201, Karnataka,
India.

Rajeshwara N. Achur

Department of Biochemistry,
Kuvempu University,
Shivamogga-577451, Karnataka,
India.

Correspondence:

Rajeshwara N. Achur

Department of Biochemistry,
Kuvempu University,
Shivamogga-577451,
Karnataka, India.

A clinical profile of alcoholic subjects in south western Karnataka, India

Raghu S Holalkere, Preethi Shanbhag, Ashok K. Pai, Rajeshwara N. Achur

Abstract

Alcoholism or alcohol use disorder is a broad term for problems with ethanol and generally referred as alcohol addiction. In the present study, the samples from alcoholic patients admitted to the study center were analyzed for liver function, biochemical and hematological tests. The results indicate a significant elevation in SGOT (72%) and SGPT (31%) indicating the liver damage or liver cirrhosis. Apart from this there was an elevation in ALP (20%), total bilirubin (40%), ESR (90%) and MCV (40%). The history of patients reveals that all of them were regular users of alcoholic beverages for long period of time and more than 85% of these individuals have other types of addictions also such as smoking, chewing tobacco and gutka apart from long period of addiction to alcohol. Further studies are needed to correlate these results with duration of addiction and effect of other co-addictions apart from alcoholism.

Keywords: *alcoholism, alcohol addiction, liver function tests, clinical tests, liver damage.*

1. Introduction

Alcoholism or alcohol use disorder is a broad term for problems with ethanol, generally referred as alcohol addiction. It is uncontrolled consumption of alcoholic beverages to detriment the drinker's health, personal relations and social standing. The American Medical Association considers the alcoholism as a disease [1, 2]. The effect of chronic alcohol abuse can cause both medical and psychiatric problems [3]. The increased rate of alcohol consumption has adverse effects on society, economy, youth, health, safety and absenteeism [4]. In recent years, there is a steady increase in alcohol consumption and alcoholic patients in south western Karnataka, India [5]. The present study was aimed to correlate the clinical manifestations of alcoholics with their history of alcoholism as it was not analyzed previously in this region of Karnataka, India.

Consumption of excess alcohol has adverse effects on brain, heart, liver, pancreas, immune system and increases the risk of developing cancer. But the prominent organ affected by excess consumption of alcohol is the liver. Hence, the intactness and functionality of liver is used to assess the affect of alcoholism. Liver function tests (LFTs) are a group of clinical laboratory tests performed to get information about the state of patient's liver [6]. The test includes assay of enzymes such as Aspartate transaminase (AST) or SGOT, Alanine transaminase (ALT) or SGPT, alkaline phosphatase (ALP) and estimation of liver metabolites which include albumin, globulin, bilirubin (direct and indirect) and total proteins. The assay of liver enzymes indicates the intactness of liver and analysis of liver metabolites indicates the normal functionality of liver. Apart from these tests other hematological tests such as estimation of hemoglobin, RBC count, packed cell volume (PCV), erythrocyte sedimentation rate (ESR), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), platelet count and WBC count which involves counting of polymorphs, lymphocytes, eosinophils, monocytes are also used to assess the patients health.

2. Materials and methods

2.1 History of alcoholic patients

Alcoholic patients from south western Karnataka who were admitted to Manasa de-addiction centre, Shimoga, Karnataka, India, were randomly selected with informed consent for the current study. Blood samples and history of alcoholism were collected from these individuals during the year 2012. The background data such as age, sex, period of addiction, type of alcoholic beverages consumed, type of alcoholic addiction, other addictions and clinical conditions were collected and analyzed.

2.2 Liver function tests

The liver enzymes such as SGOT, SGPT, ALP and liver metabolites such as albumin, globulin, bilirubin (direct and indirect) as well as total proteins were analyzed in the serum samples. These tests were performed using sysmex analyzer following the manufacturer's instructions under standard conditions.

2.3 Biochemical tests

Based on background information, biochemical tests such as random blood sugar (RBS) and serum creatinine levels in serum were measured using sysmex analyzer following manufacturer's instruction under standard conditions.

2.4 Hematological tests

Hematological tests were conducted in sterile environment using standard procedures. These tests include estimation of hemoglobin, RBC count, PCV, ESR, MCV, MCH, MCHC, platelet count and WBC count which involves counting of polymorphs, lymphocytes, eosinophils and monocytes.

2.5 Test for HIV and retro virus

The presence of HIV and retro virus in these patients blood samples were also tested using tri dot ELISA kits.

3. Results and Discussion

3.1 History of alcoholic patients

The history of patients reveals that the majority of patients were regularly alcohol addicted persons. All the addicted individuals were males with an age ranging between 17-62 years and 60% of them were between 20-40 years of age group. About 95% of them consume alcoholic beverages such as brandy and whisky which have high concentration of ethanol. More than 85% of these subjects were addicted to other habits such as smoking, gutka, tobacco and ganja apart from alcoholic addiction. In case of period of alcohol addiction, 40% of these patients have more than 10 years of addiction, 35% of them have 5 or more than 5 years of addiction and 25% of them have less than 5 years of addiction. Irritability, lack of appetite, sleeplessness and stomach pain are the most common clinical conditions with which patients visit de-addiction centre (Table 1).

Table 1: History of Alcoholic patients

Sl.no	Age	Sex	Type of alcoholic beverage consumed*	Period of addiction (in years)	Type of addiction	Any other addictions	Clinical conditions
1	29	M	Rum and whisky	3	Regular	No	Vibrations, Irritability
2	17	M	Beer	1	Irregular	No	Vibrations, Irritability
3	35	M	Whisky and Brandy	10	Regular	Gutka	Lack of sleep
4	35	M	Whisky	3	Regular	No	Irritability and shakiness
5	20	M	Whisky	2	Regular	Gutka	Back pain, joint pain, chest pain
6	45	M	Brandy	5	Regular	Smoking	Irritability
7	32	M	Whisky	13	Regular	Tobacco	Irritability
8	35	M	Whisky	6	Regular	Tobacco	Lack of appetite
9	21	M	All	4	Regular	Ganja, Smoking	Anger, Irritability
10	40	M	Whisky	15	Regular	Smoking	Sleeplessness, loss of memory
11	55	M	Whisky	35	Regular	Smoking	Sleeplessness
12	30	M	Whisky	9	Regular	Smoking and Gutka	Shivering
13	32	M	Brandy	12	Regular	smoking	Stomach ache, vomiting
14	28	M	Whisky	4	Regular	Smoking	Stomach ache
15	29	M	Brandy	7	Regular	Gutka	Anger
16	46	M	Whisky and Brandy	12	Regular	Gutka	Lack of appetite, sleeplessness
17	45	M	Whisky	6	Regular	Smoking	Lack of appetite, sleeplessness
18	54	M	Whisky	8	Regular	Smoking and Gutka	Stomach ache
19	62	M	Whisky and Brandy	12	Regular	Smoking	Irritability, Stomach ache
20	42	M	Whisky	15	Regular	Smoking and Gutka	Lack of appetite, sleeplessness

*Alcohol content of Beer (6-8%), Whisky (40-50%), and Brandy (40-60%).

3.2 Liver function test

The results of liver function test indicate a significant elevation in liver enzymes SGOT and SGPT (Table 2). Increase of 72% and 31% were observed in SGOT and SGPT enzymes respectively. It was also observed that 20% of these subjects showed elevated levels of ALP and 40% of them showed elevated levels of total bilirubin. SGOT along with SGPT are used as biomarkers of liver health [7]. Elevated levels of SGOT and SGPT in serum indicate liver injury or liver cirrhosis [8]. The ratio of SGOT to SGPT is useful in differentiating

between causes of liver damage [9, 10]. Significantly elevated levels of SGPT often suggests the existence of other medical problems such as viral hepatitis, diabetes, heart failure, liver damage, bile duct problems, infectious mononucleosis, or myopathy [11, 12]. Further, the liver damage is also analyzed by measuring the albumin which is a protein made specifically by the liver. Albumin levels found to decrease in chronic liver disease, such as cirrhosis [13]. Increased level of total bilirubin is indication of impaired liver function which may further

leads to clinical complications such as jaundice. These results confirm that uncontrolled and excess consumption of alcohol causes liver damage or liver cirrhosis.

Table 2: Liver function test

Sl.No	SGOT (10-35) U/L*	SGPT (9-43) U/L	ALP (36-141) U/L	Albumin (3.8-5.0) gm**%	Globulin (2.3-3.5) gm%	A/G	Total bilirubin (0.2-1.0) mg/dl***	Direct bilirubin (0.0-0.4) mg/dl	Indirect bilirubin mg/dl	Total Protein (6.0-8.0) (gm%)
01	35.5	63.6	38.6	3.66	2.38	1.53	0.44	0.15	0.29	6.09
02	56.8	39.8	148.8	4.04	1.99	2.03	0.21	0.06	0.15	6.03
03	106.9	124.4	80.4	2.89	3.32	0.87	1.26	1.08	0.18	6.21
04	70.6	69.3	123.8	3.5	2.6	1.3	0.28	0.13	0.15	6.1
05	36.7	40.9	110.1	3.15	3.6	0.87	0.39	0.32	0.07	6.75
06	60.3	39.7	82.3	3.15	4.42	0.8	1.14	0.43	0.71	7.97
07	49.9	52.8	135.4	3.55	3.5	0.9	0.89	0.59	0.3	6.7
08	60.5	45.9	98.9	3.2	3.7	0.8	0.41	0.2	0.21	6.7
09	78.2	25	152.3	4.2	3	1.4	1.32	0.43	0.89	6.45
10	46.5	62.5	138.6	3.65	4.2	0.8	1.56	0.62	0.94	6.52

* units/liter, ** gram, *** milligram/deciliter

3.3 Biochemical tests

Biochemical tests include analysis of random blood sugar (RBS), total protein and serum creatine levels in serum. The results show that random blood sugar, total protein and creatinine levels are within the normal range (Table 3).

Table 3: Biochemical tests

Sl. no	Serum Creatinine (0.8-1.2) mg/dl*	Random blood sugar(RBS) (80-120) mg/dl
01	0.77	99.5
02	0.8	102.6
03	0.69	71.5
04	0.72	80.3
05	0.78	121.5
06	0.63	145.4
07	1.07	135.3
08	0.95	129.1
09	0.82	98.6
10	0.74	108.8

*milligram/deciliter

3.4 Hematological tests

The results of hematological tests illustrate that about 90% of them have increased levels of ESR and 40% of them have elevated levels of MCV, whereas 50% of them showed decreased levels of PCV (Table 4). It is also notable that 70% of them have depleted levels of hemoglobin. Mean cell volume

(MCV) is one of the markers of excess alcohol intake¹⁴. A high level of ESR represents inflammations which may be caused due to liver damage or cirrhosis^[15], which intern is due to excess alcohol intake or alcoholism. Depleted levels of hemoglobin indicate anemic condition.

Table 4: Hematological tests

Sl. no	PCV (40-54) %	MCV (76-96) fL*	MCH (27-32) Pg**	MCHC (30-34) %	ESR (0-8) mm	RBC (4.5-6.0) Millions /cc***	Hb (13-16) (gm%)	WBC (4000-10800) /cmm	Poly morphs (45-70) %	Lympho cytes (25-40) %	Eosino phils (2-8) %	Mono cytes (1-5) %	Platelets (1.5-4.0) Lakhs /mm
01	35.7	96	50.9	32.2	28	3.7	11.5	13800	63	30	04	03	2.00
02	41.4	83.1	26.5	31.9	09	4.9	13.2	8500	62	28	05	05	2.90
03	30.5	107.0	35.1	32.8	60	3.1	11	6000	60	32	04	04	0.37
04	38.0	87.0	30.0	34.5	16	4.3	13.1	9700	65	30	03	02	2.20
05	41.0	99.0	31.1	31.2	18	4.1	12.8	5000	48	47	03	02	0.67
06	37.5	94.5	30.3	32.2	34	3.9	12.1	4900	55	38	03	04	1.00
07	36.1	41.3	29.2	32.8	08	4.0	12	10800	64	31	04	01	1.60
08	48.2	95.1	31.6	33.2	10	5.6	16	11700	60	36	03	01	3.80
09	52.6	92.6	33.2	32.6	42	3.8	11.5	8000	62	35	04	02	0.82
10	73.5	98.5	34.1	33.5	12	5.2	12.2	12300	66	33	04	04	1.56

*femtoliters, **picograms, ***Millions/cubic centimeter

3.5 Tests for HIV and retro virus

The tests were also performed for the presence of HIV and retro virus in these serum samples. There were no positive results for the presence of both HIV and retro virus.

The history of alcoholics reveals that 75% of them are addicted to alcohol for 5 or more years and 95% of them consume mainly brandy and whisky which have high concentration of ethanol. Apart from this more than 85% of them are addicted to other addictions. The clinical results indicate elevated levels of liver enzymes such as SGOT,

4. Conclusions

SGPT, ALP and metabolites such as total bilirubin and albumin in serum. Hematological tests showed increased MCV which confirms liver damage or cirrhosis and higher values of ESR indicate inflammation which may be due to the liver damage. Depleted levels of hemoglobin indicate anemic condition due to chronic inflammation. The other addictions also have affected these individuals apart from excess consumption of alcohol. The cumulative effect of alcohol and other addictions has to be studied in detail to conclude the specific effect of other addictions. Hence further studies are needed to correlate between liver damage and cumulative effect of all the addictions along with alcoholism as well as duration of addiction.

5. References

1. AMA Policy H-95.983 Drug Dependencies as Diseases.
2. AMA Reports of the Council on Science and Public Health: Substance Use and Substance Use Disorders AMA Annual meeting, 2008.
3. Caan, Woody, Belleruche, Jackie de. Drink, Drugs and Dependence: From Science to Clinical Practice, 1st ed. Routledge, 2002, 19-20.
4. Benegal V, Velayudham A, Jain S. Social Cost of Alcoholism: a Karnataka perspective, NIMHANS Journal 2000; 18(1-2):67.
5. Raghu SH, Rajeshwara NA. Five Years Trend Analysis of Patients Admitted to McGann Hospital in Shimoga District, Karnataka: A retrospective study. WJPPS 2014; 3(10):1106-09
6. Johnston DE. Special considerations in interpreting liver function tests. Am Fam Physician 1999; 59(8):2223-30.
7. McClatchey, Kenneth D. Clinical laboratory medicine. Lippincott Williams & Wilkins, 2002, 288.
8. Mengel Mark B, Schwiebert L. Peter. Family medicine: ambulatory care & prevention, McGraw-Hill Professional, 2005, 268.
9. Nyblom H, Berggren U, Balldin J, Olsson R. High AST/ALT ratio may indicate advanced alcoholic liver disease rather than heavy drinking. Alcohol Alcohol 2004; 39(4):336-339.
10. Nyblom H, Björnsson E, Simrén M, Aldenborg F, Almer S, Olsson R. The AST/ALT ratio as an indicator of cirrhosis in patients with PBC. Liver Int. 2006; 26(7):840-845.
11. Wang CS, Chang, Ting-Tsun, Yao, Wei-Jen, Wang *et al.* Impact of increasing alanine aminotransferase levels within normal range on incident diabetes. J Formos Med Assoc 2012; 111(4):201-8.
12. Ghouri N, Preiss, David, Sattar, Naveed. "Liver enzymes, nonalcoholic fatty liver disease, and incident cardiovascular disease: a narrative review and clinical perspective of prospective data". Hepatology 2010; 52(3):1156-61.
13. Anderson, Douglas M. Dorland's illustrated medical dictionary, 29th ed. Philadelphia [U. S. A.]: Saunders. 2000, 860.
14. Tonnesen H, Hejberg L, Frobenius S, Andersen J. Erythrocyte mean cell volume--correlation to drinking pattern in heavy alcoholics. Acta Med Scand 1986; 219(5):515-8.
15. Westergren A "Diagnostic tests: the erythrocyte sedimentation rate range and limitations of the technique". Triangle 1957; 3(1):20-5.