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Short Communication

A Clinical Study of Alcoholism among Pategar Community of Dharwad, Karnataka, India

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Abstract

Alcohol has been renowned for its hazardous effects on multiple organs. The effects of alcohol are most common in liver, pancreas, stomach, intestines, heart, brain and foetus. Alcohol also has been associated with various types of cancers, high blood pressure, and sexual dysfunction. An attempt has been made here to compare the alcohol dependent patients and healthy controls with laboratory parameters. The laboratory parameters namely, Total Serum Bilirubin, Blood alcohol content (BAC), Total Cholesterol, MCV (Mean corpuscular volume) of Blood, Gamma Glutamyl Transpeptidase (GGT), Alanine amino Transferase (ALT), Carbohydrate-Deficient Transferrin (CDT %), and Aspartate amino Transferase (AST) tests were estimated. A group of 100 alcoholic patients and 100 healthy controls from Pategar community were examined. In the present study the Z values are significant at 99.00 per cent confidence limits in all laboratory parameters. Therefore, all clinical laboratory parameters exhibit significant differences between alcohol dependent patients and controls.

Keywords: Alcoholism, dharwad, laboratory tests, pategar

Introduction

In the past two decades a surfeit of scientific confirmation has been accrued to support the concept that alcoholism is a familial disorder with the presence of genetic factors. It is now recognized that sons of alcoholic fathers are approximately four times more likely to develop alcoholism compared to the male progeny of non-alcoholics. The confirmation supporting the influence of genetic reasons in alcoholism is adequately convincing to warrant a search for markers of the genetic influence.

The alcoholism is a deactivating addictive disorder. It is considered by obsessive and unrestrained drinking of alcohol in spite of its negative effects on the drinker's health, relationships and social status. Alcohol intoxication (also known as drunkenness or inebriation) comprises loss of muscle coordination (ataxia), flushed face, slurred speech, drowsiness, trance, impaired balance, vomiting, reddened eyes, reduced inhibitions, and erratic behaviour.

Biological markers for alcoholism can be alienated into two groups, namely 'Trait' markers and 'state' markers. 'Trait' markers have a genetic tendency for alcoholism. Whereas, 'state' markers are identified drinkers. State markers are divided into two subgroups namely, 'screening' markers and 'relapse' markers. 'Screening' markers are chronic alcoholics and 'relapse' markers are recent alcoholics[1]. Biochemical markers provide an objective assessment in the screening and ratification of recent alcohol consumption, inebriation, relapse, heavy drinking, alcohol use disorders and alcohol-related organ disorder.

For an assessment of alcohol dependency, the laboratory parameters (alcohol markers) such as Gamma glut amyl transpeptidase (GGT), Alanine amino Transferase (ALT), Aspartate amino Transferase (AST), Mean Corpuscular Volume of Erythrocytes (MCV), Total Serum Bilirubin, Total Cholesterol, and CDT were estimated. These tests provide direct or indirect ways to assess the amountof alcohol consumption, the duration of ingestion and also to detect any detrimental effects on body functions resulting from long-term abuse. The liver function tests (GGT, AST and ALT in serum) and the mean corpuscular volume of erythrocytes (MCV) are among the standard diagnostic tools used to identify chronic alcohol consumption. Carbohydrate-deficient transferrin (CDT), which denotes to changes in the carbohydrate composition of serum transferrin, is a more specific marker for identifying excessive alcohol consumption.

The alcohol biomarkers provide more information of drinking patterns. The patient who abuses alcohol or has a tendency for alcohol dependence can be evaluated through the use of laboratory tests. The research into these biological markers will help to comprehend the risk of genetic factors but also support in the treatment of alcoholics through a better understanding of alcohol use/abuse.

For ratification of diagnosis of alcoholism two or more laboratory tests values must be above normal. The aim of this present study is to compare the diagnostic value of laboratory parameters among alcohol-dependent patients and healthy controls of Pategar community.

Material and Methods

Total 200 study subjects were selected from a Pategar community of Dharwad and written informed consent was obtained from each of them. The screening evaluations of all participating individuals were conducted by interview and clinical examinations. Those were based on Structured Clinical Case Taking Proforma. Men who consume 360ml of ethanol a day (ml/day) or above and women who consume 180 ml/day or above were classified as alcohol dependents. A group of 100 healthy controls (non-alcoholic) and 100 alcohol-dependent patients were selected from the Pategar community for comparison. Inclusion criteria for the healthy control group were; i. absence of any neurological or psychiatric illnesses, ii. absence of pregnancy, iii. informed consent. Inclusion criteria for alcoholic patients were; i. diagnosis of alcoholic dependence ii. no history of severe medical conditions iii. absence of pregnancy iv. informed consent.

The SPSS program was used for statistical analysis.

Results and Discussion

The tabulated data of the study has been presented below with associated comments.

The table-1 represents the distribution of clinical laboratory parameters among alcohol dependent patients and controls.The value of ratio Z is more than three times of the standard error (SE), the observed difference is highly significant at 99.00 per cent confidence limits in all variables. It is clear from the table that the total serum bilirubin, BAC %, total cholesterol, MCV, GGT, SGPT, SGOT and CDT% are more significant Clinical laboratory tests.

The table-2 exhibits the sensitivity, specificity, PPV and NPV values of alcohol-dependent patients.It is clear from the table that all the above mentioned clinical laboratory parameters are highly specific and significant.Positive predictive values of all the tests are more than negative predictive values. Hence, the tests are significant.

Table-1
Distribution of Clinical laboratory parameters

Sl. No	Variables	Alcohol-dependent patients (N = 100)			Controls (N = 100)			Z value
		Mean	SD	SE	Mean	SD	SE	
1	Total serum Bilirubin	1.41	0.22	0.02	0.59	0.20	0.02	27.58
2	BAC (% by vol.)	0.04	0.02	0.002	0	0	0	20.00
3	Total Cholesterol	256.59	20.94	2.09	181.07	6.94	0.69	34.23
4	MCV	178.16	33.57	3.36	86.16	3.72	0.37	27.24
5	GGT	51.41	5.79	0.58	28.08	9.35	0.94	21.21
6	SGPT (ALT)	72.01	10.97	1.09	25.44	6.80	0.68	36.08
7	SGOT (AST)	50.81	8.57	0.86	27.94	7.85	0.79	19.68
8	CDT %	2.11	0.30	0.03	0.27	0.17	0.02	53.27

Table-2
Sensitivity, specificity, PPV and NPV values ofalcohol-dependent patients

Sl. No	Variables	Sensitivity %	Specificity %	PPV %	NPV %
1	Bilirubin, total Serum	46.2	92.2	88.9	45.5
2	Blood alcohol content %	56.2	96.4	92.4	42.2
3	Total Cholesterol	32.1	86.6	78.9	62.1
4	Mean corpuscular volume of blood (MCV)	33.3	88.4	77.9	52.8
5	Gamma glutamyl transpeptidase (GGT)	57.6	69.5	77.4	47.5
6	Serum glutamic pyruvic transaminase (ALT)	33.0	88.3	78.0	57.5
7	Serum glutamic oxaloacetic transaminase (AST)	40.9	81.9	74.3	51.9
8	Carbohydrate-deficient transferrin % (CDT%)	47.3	88.6	82.0	60.5

Table-3
Sensitivity, specificity, PPV and NPV values of controls.

Sl. No	Variables	Sensitivity %	Specificity %	PPV %	NPV %
1	Bilirubin, total Serum	90.2	52.2	46.8	88.6
2	Blood alcohol content	92.0	48.9	43.3	90.0
3	Total Cholesterol	84.7	42.1	42.2	91.9
4	Mean corpuscular volume of blood	78.8	54.8	58.8	87.7
5	Gamma glutamyl transpeptidase	86.7	56.2	54.9	78.9
6	Serum glutamic pyruvic transaminase	88.9	52.8	60.0	89.4
7	Serum glutamic oxaloacetic transaminase	90.0	48.9	48.8	88.0
8	Carbohydrate-deficient transferrin %	94.6	44.1	46.7	82.6

The table-3 shows the sensitivity, specificity, PPV and NPV values of controls. It is clear from the table that all the above mentioned clinical laboratory parameters are highly sensitive but not specific; therefore these tests are insignificant. Positive predictive values of all the tests are less than negative predictive values. Hence, the tests are insignificant.

Conclusion

There is no single test to represent accurately the long term andshort-term consumption of alcohol. The best device is to use a combination ofconsistent state and trait marker tests. In this research Total Serum Bilirubin, BAC %, Total Cholesterol, MCV, GGT, SGPT, SGOT and CDT% are significant Clinical laboratory tests. Thesemay serve as biological markers for alcohol-dependent patients.

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