ORIGINAL RESEARCH PAPER

Psychiatry

CORRELATION OF ANXIETY SYMPTOMS IN PERSONS WITH ALCOHOL DEPENDENCE AND GGT LEVELS

KEY WORDS: Alcohol dependence, GGT, Anxiety symptoms.

Dr. Malar Moses Assistant Professor , Department of Psychiatry, Madras Medical College, Chennai,Tamilnadu, india

ABSTRACT

Background: Alcohol is one of the oldest and most commonly used substance of abuse. There is a high co-morbidity of anxiety symptoms in persons with alcohol dependence. The serum gamma glutamyl transferare is a common screening test for alcohol dependence objective.

Materials and Methods: A care control study was conducted with alcohol dependence patients as cases and two control groups of which one were relatives and the other non-relatives were selected. The instruments administered were the other Alcohol use Disorders Identification Test, Addiction Severity Index,Clinical Institute Withdrawal Assessment scale – Alcohol (revised) and the Hamilton Rating Scale – Anxiety. Cases and controls were matched for age, marital status and social status. Serum GGT levels were estimated for cases twice and controls once.

Results: There was a significant reduction in HAMA scores after deaddiction treatment. The mean HAM A scores on the 21st day of deaddiction was 6.03 with SD of 4.35. The difference was statistically significant between cases and control groups. About 43% of alcohol dependents had increased GGT levels. The mean GGT value of alcohol dependents on day 0 was 0.52 with SD of 24.49 and that of relatives was 3.30 with SD of 1.68 and that of non relatives was 3.37 with SD of 1.90. The difference was statistically significant. Person correlation and two tailed test was done between HAM – A scores and GGT levels. But there was no significant statistical co-rrelation.

Conclusion: The findings of this study are clinically more relevant as earlier treatment could prevent and lower the psychopathology associated with alcohol dependence like anxiety.

INTRODUCTION :

Alcohol has been one of the most commonly used chemical substances for intoxication by humans in history. In an epidemiological study conducted in a locality in North Chennai city by R.Ponnudurai et al, a prevalence of 16.7% of alcoholism was noted. Similarly other studies from Tamil Nadu by Chakravathy and Mathrubootham observed rates of 17% and 33% among men.

Co-occurrence of anxiety and alcohol use disorders is clinically important, these disorders commonly co-occur and the relationship is often complex and bidirectional. The symptomatology may involve anxiety, panic attacks and phobias. In clinical studies, between 20 to 70 percent of patients with alcoholism also suffer from anxiety disorders. The risk for anxiety disorders and alcohol use disorders is about three times higher given the presence of the other.

In a study on fifty-one male patients of alcohol dependence attending the deaddiction clinic at PGI, Chandigarh, Varma V.K et al found that late-onset alcoholics were anxiety prone and guilt prone and had less alcohol related problems. In another study on thirty alcoholic inpatients, Trivedi et al showed only 3% had anxiety.

In a study by Marquey et al, in 73.1% of patients with phobic disorder, onset of alcohol use was previous to panic disorder onset. Panic disorder subjects with alcohol use disorders were found to have an earlier age at panic disorder onset. Reddy and Prasanna in 1999 assessed the comorbidity of anxiety disorder rather than psychosis or severe mental illness in alcoholism. The authors reported presence of phobias, generalized anxiety disorder and panic disorder (in decreasing order of occurrence) among alcoholics.

Reliable biological tools for assessing alcoholism and harmful alcohol consumption are an utmost necessity for the success of efforts to prevent and treat alcohol induced damage to both individuals and to society. Biological monitoring of alcohol usage is also important in evaluation of prevention efforts and alcoholism treatment programs. The serum gamma glutamyl transferase is a widely used screening test for alcohol abuse. The rise in this enzyme level results mainly from enzyme induction, although hepatocellular damage and cholestasis may contribute. There are many false positives due to other factors such as drugs, other diseases and the patient having a value at the upper limit of the normal range.

In an study conducted by Dr.Selami GUL et al in Turkey among the male patients aged between 20-65 years and using alcohol at least once a week and the last alcohol intake was within the last three days, were recruited excluding these who had positive history for diseases or drugs which might influence laboratory markers, GGT had the highest predictive sensitivity of 69% to determine alcohol dependence. Combination of GGT+CAGE showed 100% sensitivity and 79% specificity in determining alcohol dependence. In a study conducted by Puukka Katri et al in alcohol users, serum GGT was found to be a highly sensitive indicator of ethanol consumption although its diagnostic value could be improved by using reference data based on abstainers of normal weight, or else, BMI specific reference intervals. GGT activity is also age dependent. In this context a study of the relationship of anxiety symptoms with gamma glutamyl transferase in persons with alcohol dependence was considered.

METHODOLOGY

The study was conducted over a period of seven months from July 2017 to January 2018 on every 3rd patient fulfilling the inclusion criteria and admitted in the deaddiction ward at a tertiary medical centre in Chennai.

The local ethical committee's approval was obtained before conducting the study. The study design is a case control study. The study group consisted of persons with alcohol dependence. The inclusion criteria were age 20 to 50 years, male gender, patients fulfilling the criteria for alcohol dependence according to ICD-10 and patients admitted in the deaddiction ward at the centre.

The exclusion criteria were female gender, concomitant substance dependence other than alcohol, comorbid medical complications, gross cognitive impairment,previous history of psychosis, presence of psychosis and use of hepatotoxic medication

Two control groups were selected. The first control group consisted of the first or second degree male relatives who do not meet the criteria for alcohol abuse or dependence. The exclusion criteria for the above group were those with major medical illness, history of psychosis, presence of psychosis and gross cognitive impairment.

The second control group consisted of the non-relatives of the patients who do not meet the criteria for alcohol abuse or dependence. They consisted of parents of mentally retarded children, who attend the Special Clinic at the centre. The exclusion criteria for the above group were those with major medical illness,

history of psychosis, presence of psychosis, gross cognitive impairment and female gender.

The need for including two control groups was to minimize the genetic influence. The cases were selected from 65 patients of alcohol dependence who was screened using alcohol use disorder identification test (AUDIT) questionnaires and meeting the criteria for alcohol dependence according to ICD-I0. Among the 65 patients, 10 patients did not have first or second degree male relatives who were willing to participate in the study. 8 patients were on medication for co-morbid medical illness. About 7 patients were not willing to participate in the study, about 5 patients dropped out of the study. Two patients were diagnosed to have psychosis and were excluded from the study. Three patients had comorbid substance abuse and were not included in the study. The remaining 30 patients constituted the study group.

The diagnosis was confirmed by two consultants. The patients should have consumed alcohol within the last 72 hours.

Blood samples were collected on admission observing all aseptic precautions and on the 21st day of deaddiction. 5 ml of venous blood was collected and transferred immediately to a sterile container to which anticoagulant had been added.

The laboratory facilities at the centre were utilized for the study.

The measurement of serum GGT was done using semi autoanalyser with commercially available kits. The instruments were administered to the controls only once. The cases were assessed twice, once on admission day and then on day 21 of deaddiction treatment.
Instruments used
1. Proforma for sociodemographic data
2. Alcohol Use Disorders Identification Test (AUDIT)
3. Addiction Severity Index (ASI)
4. Clinical Institute Withdrawal Assessment Scale-Alcohol (revised) CIWA-Ar.
5. Hamilton Rating Scale-Anxiety (HAM-A)

Socio- demographic information like education, occupation, mode of income, marital status, type of family and religion were collected in the proforma for socio-demographic data sheet for both cases and controls.

The subjects and informants were independently interviewed and the control groups were matched for age, marital status and social status. Data analysis was done using 'SPSS-11' statistical software by a statistician. Methods used are
1. Student t test
2. Chi-square test
3. Other statistical methods whenever needed

OBSERVATION AND RESULTS

In this study 46.67% were in the 31 to 40 year group. In the control group namely, relatives 40% were in the 41-50 group. The control group non-relatives 43.33% were in the 31-40 group. There was no significant statistical difference in the distribution of age among the three groups. The mean age of cases was 34.7, relatives was 35.43 and non-relatives was 35.76.There was no significant statistical difference in the mean age among the three groups. Table 1 compares the HAM-A scores of alcohol dependents. On day 0 the mean HAMA score was 15.13 with SD of 6.12. On day 21, the mean score was 6.03 with S.D. 4.35. There was a significant reduction in HAMA scores. On admission, 70% had anxiety symptoms which were reduced to 5% after deaddiction.

Table 1
Comparison of HAM-A scores of alcohol dependents on day 0 and day 21

HAMA scores	Mean	S.D.	Paired t test	p value
Day 0	15.13	6.12	7.34	<0.001
Day 21	6.03	4.35		

The CIWA-Ar scores on alcohol dependents on day 0 and day 21 were compared. The mean score was 5.77 with S.D. of 3.72 on day 0. On day 21, the mean was 1.00 with S.D. of 1.53 on day 21. The values were statistically significant.

The HAMA scores of cases on day 21 were compared with that of controls on day 0. The mean HAMA score of cases was 6.03 with S.D. of 4.35. The mean HAM-A score of relatives was 1.97 with S.D. of 2.95. The mean HAMA score of non relatives was 1.07 with S.D. of 1.53. The difference was statistically significant between cases and control groups.

TABLE 2 Comparison of GGT values of all three groups

Groups	Mean	S.D.	t value	p value
Alcohol dependents	52	24.49	117.1881	<0.001
Relatives	3.30	1.68		
Non-relatives	3.37	1.90		

Table 2 compares the GGT value of all three groups. The mean GGT value for alcohol dependents on day 0 was 52 with S.D. of 24.49. The mean GGT value of relatives was 3.30 with S.D of 1.68. The mean GGT value of non-relatives was 3.37 with S.D. of 1.90. The difference is statistically significant. About 43% of alcohol dependents have increased GGT values.
The difference is statistically significant.

TABLE 3
Correlation between HAM- A scores and GGT values of alcohol dependents

	GGT Day 0	GGT Day 21
HAM-A (Day 0)	0.022 Pearson's correlation	0.075 Pearson's correlations
HAM-A (Day 21)	0.910 Sig (2tailed)	0.692 Sig (2tailed)

Table 3 shows correlation between HAM-A scores and GGT among alcohol dependents. Correlation was tested using Pearson's correlation and 2 tailed test. There was no significant statistical correlation between HAMA scores and GGT.

DISCUSSION

This study was done primarily to correlate the anxiety symptoms of alcohol dependent persons with levels of gamma glutamyl transferase, the biological maker of alcohol.

In the present study, persons suffering from alcohol dependence did not differ in the socio demographic profiles from the two control groups.

ANXIETY

In the present study, 70% of alcohol dependents had symptoms of anxiety on day 0. This was reduced to 5% after three weeks of abstinence. The mean HAM-A score on day 0 was 15.13 with S.D. of 6.12 among alcohol dependents. The mean HAMA score on day 21 was 6.03 with S.D. of 4.3 among the alcohol dependents.

This finding is in accordance with that of Schuckit MA et al who reported that in a study in 171 primary alcoholic male veterans, 98% reported at least one symptom of anxiety during drinking or withdrawal, including 80% who reported shortness of breath and/or palpitations. In addition, seven men (4%) fulfilled criteria for generalized anxiety sometimes even when abstinent for 3 or more months.

Similarly, in a study by Mullaney and Trippett in 102 inpatient alcoholics, one-third was found to have social phobia and an additional one- third had phobic symptoms.

Bowen et al studied a group of 48 inpatient alcoholics of which, forty-four percent of the sample were found to have a co-existing anxiety disorder.

Gamma Glutamyl Transferase in alcohol dependents

In the present study, GGT values of all the three groups were compared. About 43% of alcohol dependents had increased GGT.

There was a significant difference in the GGT values of cases and controls. This was similar to the findings of Johanna Hietala et al who showed that GGT values in heavy drinkers with >40 grams of alcohol per day was significantly higher than in moderate drinkers and abstainers. Also L.Papoz et al found significant correlation between daily alcohol intake and GGT and MCV values.

Also, GGT values were found to significantly increase with increase in BMI (Body mass index) by Katri Pukka et al (2006). But, the body weight was not taken as a variable in the present study. Further, Klopocka (2007) reported that liver function tests were determined by gastric pH, H. pylori infection, smoking besides the hepatotoxic effect of alcohol drinking.

In the present study, higher anxiety levels of alcohol dependents were present with high levels of GGT at the start of deaddiction. After three weeks of deaddiction, there was a significant lowering of anxiety symptoms and also lowering of GGT levels.

This was in agreement with the study of Ioannis A. Liappas et al (2006) who reported improved anxiety profile in 100 alcohol dependents after four weeks of deaddiction which was accompanied by markedly reduced hepatic enzyme levels to almost normal levels. Furthermore, the statistical correlation between enzyme levels and psychopathology suggests that liver function profile is related to mood status of alcohol dependent individuals, in the sense that as the consumption of alcohol increases, liver damage is enhanced and the mood of the individual deteriorates.

The findings of this study are clinically more relevant as earlier treatment could prevent and lower the psychopathology associated with alcohol dependence like anxiety.

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