Research Article

A Prospective Study on Alcohol Drinking Patterns, Dependency and Disease Severity in Alcohol Related Liver Cirrhosis

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Abstract:

Aim: To determine the relation between the alcohol dependency and alcoholic liver disease states objectively with well-defined scoring systems.

Design: A prospective observational study conducted on the in-patients diagnosed with Liver Cirrhosis.

Setting: Asian Institute of Gastroenterology, Hyderabad, Telangana, India.

Participants: A total of 255 patients (220 males and 35 females) between October 2017 and January 2018.

Parameters: Alcohol Use Disorders Identification Test (AUDIT), Severity of Alcohol Dependence questionnaire (SADQ) and liver assessment with MELD score, Maddrey's Discriminant Fraction and Child-PUGH score.

Results: Of the 255 patients, 89 were non-alcoholic patients and 166 were alcoholic patients of which 127 were alcohol dependent and 39 were alcohol non-dependent. In the alcohol dependent patients, there were 47/127 mild alcohol dependent, 48/127 moderate alcohol dependent and 32/127 severe alcohol dependent. When compared with the severity levels, we found that most of the alcoholic patients has shown high severity and most of them were alcohol dependents. In non-alcoholic patients, most of them had shown the disease condition to be moderate. When the increasing disease severity was compared with the increasing dependency values, it has shown negative correlation.

Conclusion: From the study, it can be concluded that the cause for the liver cirrhosis in most of the cases is consumption of alcohol but, when the severity scores has been compared it states that the increase in the alcohol dependence is not specifically related to the increasing disease severity.

Keywords: Alcoholic Liver Disease, Liver Cirrhosis, AUDIT score, SADQ score, Alcohol Dependence, Alcohol non-dependence.

Introduction

Alcoholic liver disease (ALD) is the most prevalent cause of advanced liver disease. It encompasses a spectrum of injury, ranging from simple steatosis to frank cirrhosis.[1] It is not necessary that a single stage of the disease occurs, but multiple stages may be present simultaneously in a single individual which includes three stages: fatty liver or simple steatosis, alcoholic hepatitis and chronic hepatitis with hepatic fibrosis or cirrhosis.[2] A subset of patients with ALD develop severe alcoholic hepatitis, which has a substantially worse short-term prognosis. Alcoholic Hepatitis ranges from mild injury to severe and life-threatening injury which later develops into chronic liver disease (liver cirrhosis).[2]

Cirrhosis of Liver is one of the important health issue occurring these days and is the last stage of liver disease. Nearly all liver cirrhosis cases require admission to the hospital and many patients are associated with ascites and hepatic encephalopathy as its complications. Some of the patients are requiring biopsy and liver transplantation due to the deteriorating nature of their liver.[1] In today's lifestyle, there is an increase intake of alcohol and is the leading cause for many health issues of which liver cirrhosis is the most important health hazard occurring due to alcohol.[2] Hence, it is important to review for the relationship between the increasing dependency of alcohol abuse and the disease severity in these liver cirrhosis patients.

Materials and Methods

The study was performed in the liver unit of Asian Institute of Gastroenterology, Telangana, India. It is a well-recognized hospital where people from all over the country visit to get their disease treated. Subjects recruited in the study were admitted as in-patients in the hospital in the period of four months from October, 2017 to January, 2018. This study

determines the relation between the alcohol dependency and alcoholic liver disease states objectively with well-defined scoring systems.

The study was performed by four specially trained 5th-year pharm D students using validated alcohol assessment tools and Liver disease scoring systems. Informed consent was obtained from all the subjects and those who never drank alcohol were asked no further questions based on their drinking habits or alcohol drinking history but were included in the study. Subjects who had a habit of drinking alcohol were interviewed face to face using a structured clinical interview which incorporated the following questionnaires: Alcohol Use Disorders Identification Test (AUDIT)[4], Severity of Alcohol Dependence Questionnaire (SADQ)[5] together with some additional questions.

The subject disease severity was estimated with the help of Model for End Stage Liver Disease (MELD) score, Maddrey's Discriminant Fraction (MDF) and Child- PUGH (CPT) score.

Research Procedure:

A total of 255 patients including 220 males and 35 females were taken as according to the calculated sample size. Alcohol history has been obtained accordingly after taking the informed consent from each of them. Out of the 255 patients took into the study, 154 patients were newly diagnosed with liver cirrhosis and the remaining were previously diagnosed and on treatment since 1, 2 or 3 years. The structured alcohol history was comprised of 38 questions as follows: the first 10 questions were from the AUDIT questionnaire which has been developed by World Health Organization (WHO), allowing us to screen for excessive drinking and dependency among the patients enrolled in the study.[4]

Questions 11-30 were taken from the SADQ which has been developed by the Addiction Research Unit at the Maudsley Hospital, London.[5] This helps in assessing the severity of the alcohol dependency thus allowing us to classify the patients as having mild, moderate or severe alcohol dependency. Patients with no evidence of dependency on the AUDIT questionnaire were omitted from answering the SAD questionnaire and were considered as alcohol non-dependent.

The final part of the history included 8 questions which gives an idea about the pattern of alcohol intake. This helps in understanding over how many days and what type of alcohol they drank and their knowledge about the health hazardous, etc.

After completing the history, clinical details has been collected from the case reports. The obtained clinical data and the test results were re-examined and used to calculate MELD, Maddrey's and CPT scoring. This scores has helped us in assessing the severity of the liver disease. At a later stage, a relation has been formed between the alcohol dependency and the disease severity using the above described scores.

Results and Discussion

Clinical Data and Demographics:

The 255 subjects enrolled in the study comprised of 220 (86.27%) males and 35 (13.73%) females, with an age group of 18-75 years out of which most of the patients (46% of patients) are in their adulthood (36-50 years). One hundred and sixty six patients (65.10%) had alcohol as a major contributory factor for their liver disease (alcoholic liver cirrhosis), where they were either drinking more than 20 units/week of alcohol or had a strong history of alcohol consumption. Out of 166 alcoholic patients diagnosed with liver cirrhosis, 127 had an evidence of alcohol based liver cirrhosis i.e., they were regular drinkers and the remaining 39 were occasional drinkers. 89 (34.90%) patients diagnosed with liver cirrhosis were non-alcoholics. This results were in concordance with the study conducted by Jennifer Hatton, et al in which 68.80% of the patients were alcoholics but had difference in their drinking habits and the remaining 31.20% had no history of alcohol consumption but in contrast there almost equal number of males and females (56.83% male patients and 43.17% female patients).

Levels of Alcohol dependency:

Of the 166 patients with the evidence of alcohol-related cirrhosis or severe fibrosis, 4/166 (2.4%) had no evidence of alcohol dependency in the AUDIT questionnaire, 35/166 (21.08%) had some evidence of alcohol dependency, 47/166 (28.3%) had shown mild dependency, 48/166 (28.91%) were moderately dependent and 32/166 (19.27%) were severely dependent. Our results were in concordance with the study made by Jennifer Hatton, et al., which shows that 33% had no evidence of alcohol dependence in the AUDIT questionnaire, 19% were severely dependent, 21% were moderately dependent and 28% were mildly dependent.

Disease severity states:

We have been using three different parameters to estimate the disease severity which includes MELD Scoring, Maddrey's Discriminant fraction and Child-PUGH Scoring. The scores of this helped in classifying the disease into mild, moderate and severe disease conditions. There were 19 (7.45%) patients with mild disease condition, 102 (40%) patients with moderate disease condition and 134 (52.55%) patients with severe liver cirrhosis.

Correlation between Disease severity and Alcohol dependency:

The number of alcohol dependent patients and the number of alcohol non-dependent patients were separated into 3 categories basing on the CTP class – Child A, Child B and Child C where maximum patients where indicated with Child C (102 patients) of which 88 patients were alcohol dependent and 14 patients were alcohol non-dependent. In the class Child B (54 patients), 33 patients were alcohol dependent and 21 patients were alcohol non – dependent and class Child A (10 patients) shows a total of 10 patients of which 6 were alcohol dependent and 4 were alcohol non – dependent.

Table – 1: Frequency distribution of alcoholic dependent and alcoholic non-dependent patients according to the Child-Pugh

score grouping.

Category	No. of Alcohol Dependent Patients	No. of Alcohol Non-Dependent Patients	Total no. of Alcoholics
Child A	6	4	10
Child B	33	21	54
Child C	88	14	102
Total	127	39	166
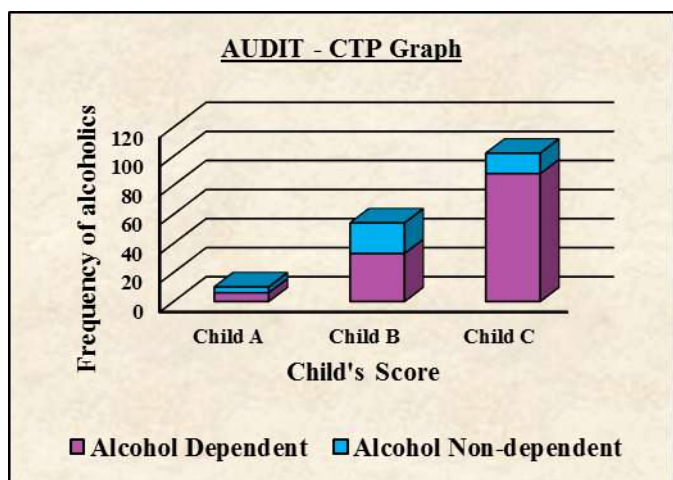
Figure – 1

The results of AUDIT were also compared with the Maddrey's Discriminant Fraction scores. Here they show less severe (MDF < 32) and more severe (MDF > 32) where, in less severe (56 patients) there are 23 patients are alcohol non-dependent and 33 patients are alcohol dependent. 110 patients are highly severe of which 16 patients are alcohol non-dependent and 94 are alcohol dependent. The above two explanations justifies that, there is an increase in the frequency of alcoholic liver cirrhosis cases with increasing in the dependency of alcoholism.
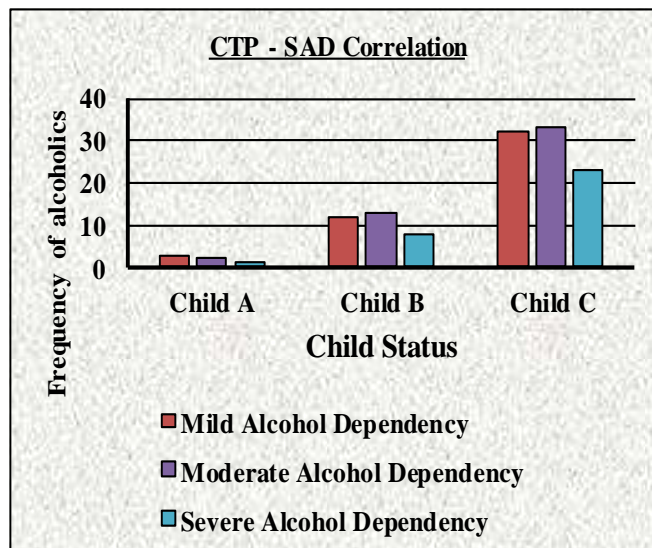
When the AUDIT questionnaire scores has been compared with the CTP scores, it has shown a slight positive correlation (with $R^2 = 0.0369$). Similar result has been shown when AUDIT scores and MELD scores has been compared (with $R^2 = 0.0369$). This explains that there may be little relation in the increasing severity of the disease condition with increasing in the level of dependency. Whereas when the AUDIT scores where compared with the MDF scores, it shows still less correlation (with $R^2 = 6E\text{-}05$). This does not prove that the increasing level of severity of disease is due to the increasing dependency on the alcohol.

The alcohol dependent patients were further divided and compared along with the CTP class divided based on its scores into Class A, Class B and Class C where there were 88 patients in Child C, 33 in Child B and 6 in Child A. Of the 88 patients in child C, maximum patients were moderately (33 patients) and mildly (32 patients) alcohol dependent and 23 patients were severely alcohol dependent. Similarly, in child B 8 were severely alcohol dependent, 13 were moderately alcohol dependent and 12 were mildly alcohol dependent and

in child A, 1 was severely alcohol dependent, 2 were moderately alcohol dependent and 3 were mildly alcohol dependent.

Table – 2: Frequency distribution of alcoholic dependent patients with liver cirrhosis based on SAD scoring system in correlation with the Child score grouping.

Category	Child A	Child B	Child C	Total no. of pt's
No. of Mild Alcohol Dependent pt's	3	12	32	47
No. of Moderate Alcohol Dependent pt's	2	13	33	48
No. of Severe Alcohol Dependent pt's	1	8	23	32
Total no. of pt's	6	33	88	127

Figure - 2

The dependency levels obtained from SAD score were also compared with the Maddrey's Discriminant Fraction. Out of the 95 patients who were highly severe, 35 were mildly dependent, 38 were moderately dependent and 22 were severely dependent and out of the 32 patients who were less severe according to MDF, 12 were mild alcohol dependent, 10 were moderately alcohol dependent and 10 were severely alcohol dependent. This states that most of the patients with Alcoholic liver cirrhosis are moderately dependent on alcohol. When the SAD questionnaire scores has been compared with the CTP scores, it has shown negative correlation (with $R^2 = 0.0096$). Similar results has been obtained when the SAD scores has been compared with MELD scores (with $R^2 = 0.0003$) and Maddrey's Discriminant Fraction scores (with $R^2 = 0.0117$). This negative correlation says that there is no relationship between the increasing level of severity of the disease and increasing alcohol dependency.

Conclusion

From the results and discussions, we found that most of the patients with severe liver cirrhosis were alcoholics which was the main cause of the disease. Whereas, these patients had not shown a clear steep increase in the graph when plotted with the individual scores of the disease severity scales and the alcohol dependence scales.

From the study, it can be concluded that there are some patients with Liver Cirrhosis who met the criteria for severe liver cirrhosis and the disease severity varies among patients either with or without alcohol history. On subjects with alcohol history, when the severity scores has been compared it has been found that the increase in the alcohol dependence is not specifically related to the increasing liver cirrhosis severity.

Alcoholic liver cirrhosis patients should be given with proper required counselling to quit alcohol consumption & smoking habits and maintain healthy diet with high protein diet and reduced salt intake. However, if one is at risk for altered mental function (encephalopathy) because of advanced liver disease, the patient is suggested to limit the amount of protein for a while. He/she will still need protein in the diet to be well nourished and may need to avoid eating large amounts of protein at one time. The patients having a problem with decreasing alcohol consumption can be advised for alcohol rehabilitation centers and support groups. The patient should be informed about decreased quality of life and to take required care.

In this study, we have included all the liver cirrhosis who have been diagnosed newly with the disease as well as the patients who have been on treatment since 1, 2 or 3 years also. Some patients (around 10) were taking treatment since 5-6 years. For these patients, the disease condition has got resolved to some extent and we have been provided with the present laboratory values which has shown a better disease condition than initially present. This may have led to unclear results and the results may have changed if only the first diagnosed liver cirrhotic patients were considered in the study.

Acknowledgement

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