International Journal of Medical and Health Research
ISSN: 2454-9142, Impact Factor: RJIF 5.54
www.medicalsjournals.com
Volume 2; Issue 6; June 2016; Page No. 12-14

Original Article - Clinical profile of alcoholic liver disease patients in a tertiary care teaching hospital and its correlation with type of alcoholic beverage consumption

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Abstract
Introduction: Alcoholic liver cirrhosis is a major cause of morbidity and mortality worldwide. Various studies conducted on western populations show contradictory results on type of alcoholic beverage consumption and development of cirrhosis. South Asian populations are prone to develop ALD, and majority of population consuming country made alcoholic beverages. This study was carried out to evaluate the extent of complications and prognosis of alcoholic liver disease in the different types of alcohol beverage consuming patients.
Materials and Methods: 100 patients who were admitted in Osmania General Hospital, Hyderabad, between April 2014 and April 2016, over a period of two years, were evaluated to correlate development of complications and prognostic markers (Discriminant function [DF] score, Model for end stage liver disease [MELD] score and Child-Pugh score) with different types of alcoholic beverage consumption (Country made Wine, Variable drinking).
Results: Ascites was most common complication in Alcoholic liver disease patients followed by hepatic encephalopathy, upper GI bleed, renal failure and spontaneous bacterial peritonitis both of which correlated significantly with country made beverage ($p< 0.05$). All the prognostic markers measured correlated significantly with type of alcoholic beverage consumed ($p< 0.05$).

Keywords: alcoholic liver, alcoholic beverage consumption, Alcoholic liver cirrhosis

1. Introduction
Alcoholic consumption is a major risk factor for development of chronic diseases worldwide, and remains 3rd major cause for chronic liver disease [1]. The spectrum of liver injury varies from simple steatosis to cirrhosis, which is linked to amount of alcohol consumption. Chronic liver disease is the end result of cirrhosis characterized by nodular regeneration and extensive fibrosis. It is estimated that about 30% of heavy alcohol consumers develop cirrhosis, other factors contributed to development of alcoholic cirrhosis include sex, obesity, duration of alcohol intake, non sex linked genetic factors and cigarette smoking [2]. Other causes of cirrhosis of liver include chronic viral hepatitis, autoimmune hepatitis, bilary cirrhosis, non-alcoholic steatohepatitis, Inherent metabolic disorders such as Wilson's disease, α_1 anti-trypsin deficiency and cystic fibrosis [3].
Clinical features of cirrhosis include jaundice, spider angioma, nodular liver, splenomegaly, caput medusa, Cruveilhier Baumgarten syndrome, Palmar erythema, white nails, Hypertrophic osteoarthropathy / Finger clubbing, Dupuytren's contracture, Hypogonadism, anorexia, fatigue, weight loss, muscle wasting [4].
Complications of cirrhosis in ALD patients include development of ascites- portal hypertension, encephalopathy, Upeer GI bleed, Renal failure and spontaneous bacterial peritonitis. Abstinence from alcohol is the cornerstone of the therapy along with good nutrition and medical supervision [3].
Various studies have shown relation with drinking pattern including amount and duration, however there are uncertain results about the type of alcohol intake and development of cirrhosis [2, 5]. Study conducted by Askgaard *et al*. in Danish population showed lower risk of alcoholic cirrhosis with wine consumption compared to beer and liquor [6].
Since there are variations in results of the studies about type of alcohol intake and alcoholic cirrhosis, with very few studies on Indian population who majorly consume county made alcoholic beverage we conducted this study to assess the relation between the type of alcohol consumed and cirrhosis of liver.

2. Materials and Methods
Sample: The study was carried out on one hundred patients admitted in general medicine ward of Osmania general hospital, Hyderabad. The study was carried out for a period of 19 months from July 2014 to March 2016.

Inclusion and exclusion criteria: Adult patients of both the sexes diagnosed with alcoholic liver disease were included in the study. Immunocompromised patients, viral hepatitis B and C positive and hemodynamically unstable patients were excluded from the study. The study was carried out for a period of 19 months from July 2014 to March 2016. 100 subjects were enrolled in the study based on above criteria.

Method: Detail history of patient pertaining to alcohol consumption and clinical history was taken from the patient; a detailed medical examination was conducted. Various biochemical (CBP, RFT, LFT, INR and CUE) and radiological findings (USG- Abdomen) were recorded in a specially designed Performa. Type of alcohol consumed (Country made, beer, wine) and complications of the patients were noted. Based on this clinical and biochemical data prognostic markers

were studied (DF score – Maddrey's Discreminant function score, MELD score – Model for end stage liver disease, Child pugh score) were calculated for each patient. Complications during hospital stay were observed and subsequently managed. The data was calculated to determine

1) Rate of complications observed in ALD patients.
2) Correlation of different disease prognostic markers with type of alcoholic beverage consumed

Statistical Analysis: Graphpad prism version 6.0.1 was used. Chi-square test was done to compare categorical data and odds ratio with 95% confident interval was obtained. Contingency trend was calculated and plotted for prognostic markers with type of alcoholic beverage consumed.

3. Results

The study included 100 alcoholic patients of either sex with a mean age of 45.4±8.68 years. Majority of the patients have been consuming country made spirit (80%), other alcoholic beverages included whisky (11%) and beer (9%).The most complications observed in ALD patients were ascites (40%) followed by hepatic encephalopathy (22%), upper GI bleeding (18%), renal failure (15%) and spontaneous bacterial peritonitis (5%). Ultrasound revealed hepatomegaly in 54% of patients where as shrunken liven was seen in 18% of ALD patients. Acute pancreatitis (38%) was seen in ALD patients where as chronic pancreatitis (27%) was observed.

Table 1: Profile of Complications observed in ALD patients

Complication observed	Number of patients (N= 100)
Ascites	40
Hepatic Encephalopathy	22
Upper GI bleed	18
Renal Failure	15
Spontaneous Bacterial Peritonitis [SBP]	5

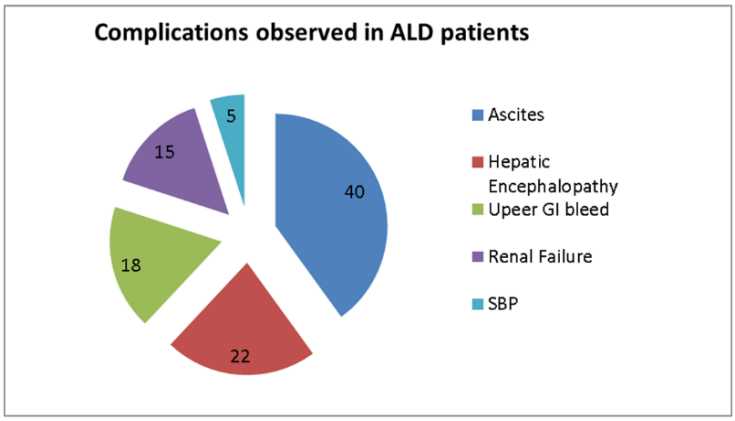

Fig 1: Complications observed in ALD patients

Anaemia was common findings in 82% with mean Hb of 10.2±0.9 mg/dL, leukocytosis was seen in 43% of patients. Liver function tests showed elevated AST and ALT levels with mean AST/ALT ratio of 2.55±0.76. Hyperbilirubnemia was seen in 84% of patients with mean range of 5.08±6.41 mg/dL. Mean albumin levels were found to be 3.1±0.34 g/dl. Mean INR was found to be 2.1±0.6.

Table 2: Correlation of disease prognostic markers with type of alcoholic beverage consumed.

		Country (N= 80)	Wine (N=11)	Variable (N= 9)	*p*-value
Prognostic Markers in ALD	DF Score	60.23	51.80	48.09	0.039
	MELD Score	23.11	20.46	18.22	0.017
	Child-Pugh	11.54	10.85	10.08	0.019

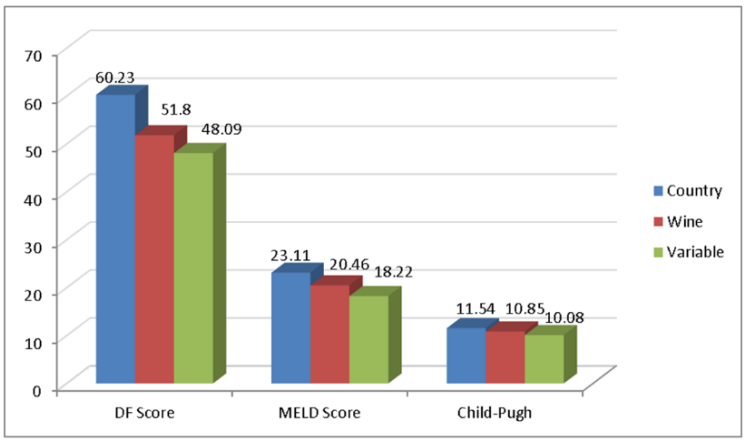

Fig 2: Correlation of type of alcohol beverage with prognostic markers.

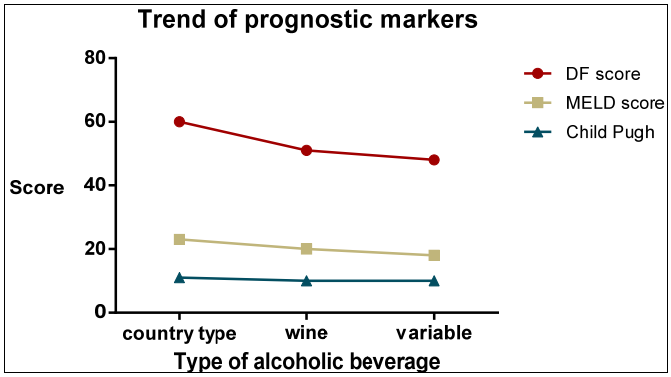

Fig 3: Trend of prognostic markers with type of alcoholic beverage consumed

Prognostic outcome measures correlated well with type of alcoholic beverage consumed (Table 2) (Figure 2), Maddrey DF score correlation was found to be 0.039 ($p< 0.05$), MELD score was significantly correlated with p value of 0.017 ($p< 0.05$) and child-pugh score correlation was found to be 0.019 ($p< 0.05$).

The contingency trend was plotted for three prognostic markers calculated (Figure 3), which shows country type of beverage with higher mean DF, MELD and Child-Pugh score compared to wine and variable drinkers.

4. Discussion

Development of cirrhosis with type of alcoholic beverage consumption is not well established, various studies have demonstrated variable results with type of alcohol consumed. Research in the area of alcoholic cirrhosis majorly shows that there is a positive correlation with amount and duration of alcoholic consumption to the development of cirrhosis. In country like India, where there is a major chunk of rural population the type of alcoholic beverage majorly consumed is country type, the process of development of cirrhosis in patients with different alcoholic beverage consumption is not understood clearly and it warrants further research.

In a prospective cohort study conducted by Askgaard G *et al*. on alcohol drinking pattern and development of cirrhosis, on 55,917 participants in Danish population it was found that there was a lower risk of cirrhosis in wine drinking subjects compared to subjects who consume liquor and beer [6]. Bellantani S *et al*. in their cohort study on drinking habits as a cofactor of risk for alcohol related liver injury, in 6917 subjects concluded that drinking multiple different alcoholic beverages increases the risk of developing alcohol related liver injury [7]. Kerr WC *et al*., compared beverage specific alcohol consumption and mortality due to cirrhosis in a group of English specific beer drinking countries. The results of the study point out spirit consumption rather than beer or wine is associated with higher risk of cirrhosis mortality in primary beer drinking countries [8].

In our study, most of the patients were consuming country made liquor (80%), there was a significant difference found between disease severity and branded wine consumers which correlated significantly with the three disease prognosis markers. When correlated with complications ascites was most common complication in country made spirit followed by encephalopathy, GI bleed didn't correlated significantly with type of alcohol consumed.

South Asian population is more prone to develop ALD due to genetic polymorphism of the genes responsible for alcohol metabolism like CYP2E1, ADH and ALDH [4].

It is to be noted that to toddy drinking in the region of Telangana is considered culturally and socially acceptable especially among women [9]. In a study conducted on north East Indian on 100 patients by Phukan JP *et al*. on serum lipid profile of alcoholic cirrhosis patients, there was no correlation observed with type of alcoholic beverage consumed and cirrhosis [10]. This results might have been observed due to variations in genetic polymorphisms of populations living in north Easter India.

5. Conclusion

Our study concludes that there is a significant correlation in development of alcoholic liver disease with type of alcoholic beverage consumed. Country made alcoholic beverage showed a significant development of complications i.e. ascites and encephalopathy and poor prognosis. GI bleeding was not significantly correlated with type of alcohol consumed in our study. Further studies on larger sample size may be warranted to further support the effect of type of alcoholic beverage consumed and development of alcoholic cirrhosis especially in southern India.

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