Original Research Article

Markers of alcohol use disorder - its impact on the comorbid diseases and outcomes in patients admitted into tertiary care hospital

M. Sudhakar[1*], A Bikshapathi Rao[2]

[1]Assistant Professor, [2]Professor
Department of General Medicine, Mahatma Gandhi Memorial Hospital / Kakatiya Medical College, Warangal, India
[*]Corresponding author email: **drsudhakar.merugu@gmail.com**

International Archives of Integrated Medicine, Vol. 5, Issue 7, July, 2018.

Available online at http://iaimjournal.com/
ISSN: 2394-0026 (P) **ISSN: 2394-0034 (O)**
Received on: 15-04-2017 **Accepted on:** 15-07-2017
Source of support: Nil **Conflict of interest:** None declared.
How to cite this article: M. Sudhakar, A Bikshapathi Rao. Markers of alcohol use disorder-its impact on the comorbid diseases and outcomes in patients admitted into tertiary care hospital. IAIM, 2018; 5(7): 88-93.

Abstract

Background: The treatment for medical complications of alcohol misuse has been restricted by primary care providers recently by referring patients to specialized alcohol treatment.
Aim: The proposed study aimed to identify the patients with alcohol use disorder and estimation of selected biomarkers like Gamma-glutamyl transferase (GGT) and Carbohydrate-deficient transferrin (CDT) in selected patients with objective of comparing its impact on co-morbid condition, assessment of its outcomes in selected patients.
Materials and Methods: This was a multi-arm observational, interventional study, in which patients of alcohol use disorder were selected as the study population. This study was conducted in Department of General Medicine, Mahatma Gandhi Memorial Hospital, Warangal, Telangana.
Results: In alcoholic patients, age in years was 55.1±8.5 and in non-alcoholic patients' age in years was 58.4±11.6, in alcoholic patients males were 50% and females were 5% and in non-alcoholic patients, males were 40% and females were 4%. In hepatic encephalopathetic alcoholic patients 40% was seen and in hepatic encephalopathetic non-alcoholic patients, 36% was seen. In the alcoholic patients, Ascitis was observed in 49% and 48% of the non-alcoholic patients. 48% of the alcoholic patients had upper gastro-intestinal bleeding and it was 3% in non-alcoholic patients.
Conclusion: The heavy use of alcohol prevalence was very high and was associated with poor prognosis in hospitalised patients which further increased the risk of infection and death.

Key words

Alcohol abuse disorders, Impact on the comorbid disease, Hepatic encephalopathy.

Introduction

The treatment for medical complications of alcohol misuse has been restricted by primary care providers recently by referring patients to specialized alcohol treatment. Alcohol use disorders both acute and chronic are significant problems due to their devastating health impacts and high prevalence throughout the world. All tissues in the body can be affected due to excessive alcohol consumption and a variety of alcohol related disorders are currently known [1]. For successful clinical interventions, hazardous drinking should be detected in an early phase to prevent the affected individuals from entering a stage of severe dependence with associated tissue toxicity. Among the leading public health problems worldwide, alcohol use, hazardous drinking practices and associated morbidity continue to remain underdiagnosed. A more systematic use of biomarkers improves the detection of the specific role of alcohol abuse [2]. By obtaining information on the actual amounts of alcohol consumption through questionnaires and measurements of ethanol and its specific metabolites, interventions should be initiated [3]. For assessing chronic heavy drinking, carbohydrate-deficient transferring is a valuable tool. To provide information on the risk of co-morbidities including insulin resistance, metabolic syndrome and vascular diseases, activities of common liver enzymes are used for screening ethanol-induced liver dysfunction [4]. To assess the severity and prognosis of ethanol-induced tissue damage, conventional biomarkers supplemented with indices of immune activation and fibrogenesis are used. Factors of life style, including weight gain, physical exercise or coffee consumption in an age and gender dependent manner, many ethanol-sensitive biomarkers respond to the status of oxidative stress [5, 6]. To define safe limits of ethanol intake in various demographic categories and establishing common reference intervals for biomarkers of alcohol use disorders more attention should be paid. For long term management of alcohol disorders, primary care is an ideal option. There is an evidence that the length of treatment has more impact than the intensity of treatment on outcome. There are many surveys which show that patients prefer receiving treatment in a primary care rather than in a formal addiction centre. Primary care addiction treatment also enables providing medical care to the addicted patient. Worldwide, excessive alcohol consumption is a public health concern. 4.9% of the world's adult population is suffering from alcohol use disorder. Excessive alcohol intake leads to chronic liver disease and decompensation. Patients with compensated cirrhosis develop acute chronic liver failure which results in high mortality rate. Alcoholic liver disease accounts for 40% of all deaths from cirrhosis. The proposed study aimed to identify the patients with alcohol use disorder and estimation of selected biomarkers like Gamma-glutamyltransferase (GGT) and Carbohydrate-deficient transferrin (CDT) in selected patients with objective of comparing its impact on co-morbid condition, assessment of its outcomes in selected patients.

Materials and methods

This was a multi-arm observational, interventional study, in which patients of alcohol use disorder will be selected as the study population. This study was conducted in Department of General Medicine, Mahatma Gandhi Memorial Hospital, Warangal, Telangana. Sample size of the patients was dependant on the duration of the study and patients admitted to the above mentioned study centre per day, to meet statistical criterion minimum of 10% patients (per day) expected to be recruited in to this study, that would be of approximately 100 patients. Inclusion Criteria was patients who were clinically diagnosed as alcohol use disorder, patients whose age was above 18 years of both genders, patients with

other co-morbid conditions, and patients who signed the informed consent and who were willing to adhere to the protocol requirements. Exclusion criteria were patients whose age was less than 18 years, patients who did not agree to the protocol, and the pregnant women. Patients satisfying the preset inclusion and exclusion criteria will be provided information leaflet and consent form for their consideration to participate in the study. Patients who consented were enrolled; details relevant to study were collected and entered in a structured documentation for further proceeding.

After that, patients' blood samples were collected and analyze the selected biomarkers using pre validated analytical methods. Obtained values of biomarkers were assessed by suitable statistical methods and finally assessed these results with outcomes of the patients resulted in improved patient's clinical condition.

Results

Table - 1 shows that age in years was 55.1±8.5 in alcoholic patients and 58.4±11.6 in non-alcoholic patients, Male were 50% in alcoholic patients and females were 5% and in non-alcoholic patients, males were 40% and females were 4%. 40% was seen in hepatic encephalopathetic alcoholic patients and 36% was seen in hepatic encephalopathetic non-alcoholic patients. Ascitis was observed in 49% of the alcoholic patients and 48% of the non-alcoholic patients. Upper gastro-intestinal bleeding was observed in 48% of the alcoholic patients and it was 3% in non-alcoholic patients.

Table - 1: Patient Characteristics and Clinical Outcomes.

Variables		**Alcoholic (n=55)**	**Non Alcoholic (n=44)**	**P value**
Age (years); mean ± SD		55.1±8.5	58.4±11.6	0.041
Sex	Male (n %)	50(50%)	40(40%)	<0.001
	Female (n %)	5(5%)	4(4%)	
Hepatic Encephalopathy		40(40%)	36(36%)	<0.001
Ascites		49(49%)	48(48%)	<0.001
Upper Gastrointestinal Bleeding		48(48%)	3(3%)	<0.001

Table - 2: Patient Characteristics and Clinical Outcomes.

Variables	**Alcoholic (n=55)**	**Non Alcoholic (n=44)**	**P value**
Hepatocellular Carcinoma	47	40	0.911
Jaundice	48	5	<0.001
Renal Failure	37	39	0.355
Infection	52	15	<0.001
Spontaneous Bacterial Peritonitis	50	22	<0.001
Respiratory tract	42	25	0.002

Table - 3: Patient Characteristics and Clinical Outcomes.

Variables	**Alcoholic (n=55)**	**Non Alcoholic (n=44)**	**P value**
Urinary tract	12	28	0.405
Positive blood culture	5	4	0.400
Cutaneous/Subcutaneous	7	6	0.328
Death (n %)	10	10	0.122

Table - 2 shows that hepatocellular carcinoma was observed in 47 alcoholic patients and in 40 non-alcoholic patients. Jaundice was observed in 48 alcoholic patients and in 5 non-alcoholic patients, renal failure was seen in 37 alcoholic patients and in 39 non-alcoholic patients, infection was seen in 52 alcoholic patients and in 15 non-alcoholic patients. Spontaneous bacterial peritonitis was seen in 50 alcoholic patients and in 22 non-alcoholic patients, Respiratory tract infection was seen in 42 alcoholic patients and in 25 non-alcoholic patients.

Table - 3 shows that urinary tract infections was seen in 12 alcoholic patients and in 28 non-alcoholic patients. Positive blood culture was seen in 5 alcoholic patients, and in 4 non-alcoholic patients, Deaths were seen in 10 each in both alcoholic and non-alcoholic patients.

Discussion

In our study, in alcoholic patients, age in years was 55.1±8.5 and in non-alcoholic patients age was 58.4±11.6 years, in alcoholic patients, males were 50% and females were 5% and in non-alcoholic patients, males were 40% and females were 4%. In hepatic encephalopathetic alcoholic patients, 40% was seen and in hepatic encephalopathetic non-alcoholic patients, 36% was seen. Ascitis was observed in 49% of the alcoholic patients and 48% of the non-alcoholic patients. In the alcoholic patients, upper gastro-intestinal bleeding was observed in 48% and it was 3% in non-alcoholic patients. In alcoholic patients, hepatocellular carcinoma was observed in 47 and in 40 non-alcoholic patients. In alcoholic patients, jaundice was observed in 48 and in 5 non-alcoholic patients, in alcoholic patients renal failure was seen in 37 and it was seen in 39 non-alcoholic patients, in alcoholic patients, infection was seen in 52 and in 15 non-alcoholic patients. In alcoholic patients, spontaneous bacterial peritonitis was seen in 50 and in 22 non-alcoholic patients, in alcoholic patients, respiratory tract infection was seen in 42 and in 25 non-alcoholic patients.

Suyan G.R. Dos Santos, et al. [7]; in their study, it consisted of a total of 388 patients; out of which 259 (66.7%) were men. In these, one hundred fifty-two (39.2%) were considered to be heavy alcohol users. Most of the alcoholic patients were men (n = 144; 94.7%). Mean age was 55.6 ± 8.9 years. In alcoholic patients, hepatic decompensations and infections were more prevalent. Most of the infections were spontaneous bacterial peritonitis and respiratory tract infection. In multivariate analysis, excessive alcohol consumption was associated with mortality (P = 0.009).

Gustot T, et al. [8]; observed that ACLF was observed as a steady or fluctuating course in 30.4%, resolved or improved in 49.2%, worsened in 20.4%. Low-to-moderate (6%-18%) in patients with non-severe early course (final no ACLF or ACLF-1), high-to-very high (42%-92%) in those with severe early course (final ACLF-2 or -3), the 28-day transplant-free mortality was independently of initial grades. CLIF Consortium ACLF score (CLIF-C ACLFs) were independent predictors of course severity and presence of liver failure (total bilirubin ≥12 mg/dL) were used in diagnosis of ACLF. At 1 week, eighty-one percent had their final ACLF grade, resulting in accurate prediction of short-(28-day) and at 3-7 days, mid-term (90-day) mortality by ACLF grade was observed. 75% survived for at least 1 year, among patients that underwent early LT. At 3-7 days, among patients with ≥4 organ failures, or CLIF-C ACLFs >64, and did not undergo LT, mortality was 100% by 28 days. In a study done by Gawryzewski VP, et al. [9]; in the 16 countries, the annual average of deaths where alcohol was a necessary cause was 79, 456 (men comprised 86% and women 14%). Overall, 55% of people aged were represented 40-59 years. Liver diseases (63% overall) and neuropsychiatric disorders (32% overall) were cause of most deaths. Overall age-adjusted rates/100,000 was higher in El Salvador (27.4), Guatemala (22.3), Nicaragua (21.3) and Mexico (17.8) and lower in Colombia (1.8), Argentina (4.0) and Canada (5.7). In most countries, the age groups at the highest risk were 54-59 to 64-69

years. The rates increased earlier in Guatemala, El Salvador and Nicaragua, among those aged 30-49 years. In all countries, male rates were higher than female rates, but the male: female ratio varied widely.

In a study done by Park JK, et al. [10]; out of 544 admissions, 133 (24.4%) cases presented with bacterial infection, of which 116 were community-acquired whereas 17 were hospital-acquired. Pneumonia (38%), biliary tract infection (17%), soft tissue infection (12%), and spontaneous bacterial peritonitis (9%) were most common types of infection. Bacterial infection in patients with ALD were independently associated with diabetes, serum Na <135 mM/L, albumin <2.5 g/dL, C-reactive protein ≥20 mg/L, systemic inflammatory response syndrome (SIRS) positivity. Overall 30-day and 90-day mortalities in patients with bacterial infection were significantly ($P < 0.001$) higher than those without infection (22.3% vs. 5.1% and 32.3% vs. 8.2%, respectively). Furthermore, bacterial infection (HR, 2.2; 95% CI, 1.049-4.579, $P = 0.037$), SIRS positivity (HR, 2.5; 95% CI, 1.240-4.861, $P = 0.010$), Maddrey's discriminant function score ≥32 (HR, 2.3; 95% CI, 1.036-5.222, $P = 0.041$), and hemoglobin <12 g/dL (HR, 2.4; 95% CI, 1.081-5.450, $P = 0.032$) were independent predictors of short-term mortality.

Otete HE, et al. [11]; observed before cirrhosis diagnosis, that fifty-eight per cent of cases compared to 29% of controls had at least one alcohol-attributable condition. Intentional injuries (35.9% vs. 11.9%) and cardiovascular diseases (23.2% vs. 15.6%), followed by diabetes (12.8% vs. 5.3%), digestive diseases (6.1% vs. 1.2%) and epilepsy (5.0% vs. 1.1%) were the most frequent conditions (proportion in cases vs. controls). Among those aged 18-44 years, the strongest association with alcoholic cirrhosis was found for digestive diseases [OR 5.4 (4.4-6.7)], epilepsy [OR: 4.4 (3.5-5.5)] and injuries [OR: 4.0 (3.7-4.4)].

Conclusion

The heavy use of alcohol prevalence was very high and was associated with poor prognosis in hospitalised patients which further increased the risk of infection and death.

References

1. Esser MB, Hedden SL, Kanny D, Brewer RD, Gfroerer JC, Naimi TS. Prevalence of alcohol dependence among US adult drinkers, 2009-2011. Prev Chronic Dis., 2014; 11: 1-11.
2. Gao B, Bataller R. Alcoholic liver disease: pathogenesis and new therapeutic targets. Gastroenterology, 2011; 141: 1572-85.
3. Bean P., Harasymiw J., Peterson C.M., Javors M. Innovative technologies for the diagnosis of alcohol abuse and monitoring abstinence. Alcoholism: Clinical and Experimental Research, 2001; 25(2): 309–316.
4. Conigrave K.M., Davies P., Haber P., Whitfield J.B. Traditional markers of excessive alcohol use. Addiction, 2003; 98(Suppl. 2): 31–43.
5. Gitto S, Vitale G, Villa E, Andreone P. Update on Alcohol and Viral Hepatitis. J Clin Transl Hepatol., 2014; 2: 228-33.
6. Mathurin P, Bataller R. Trends in the management and burden of alcoholic liver disease. J Hepatol., 2015; 62: S38-46.
7. Suyan G.R. dos Santos, Angelo A. Mattos, Marcela M. Guimarães, Bibiana de S. Boger, Gabriela P. Coral. Alcohol consumption influences clinical outcomes in patients admitted to a referral center for liver disease. Annals of hepatology, May-June 2018; 17(3): 470-475.
8. Gustot T, Fernandez J, Garcia E, Morando F, Caraceni P, Alessandria C, Laleman W, et al. Clinical Course of acute-on- chronic liver failure syndrome and effects on prognosis. Hepatology, 2015; 62: 243-52.

9. Gawryszewski VP, Monteiro MG. Mortality from diseases, conditions and injuries where alcohol is a necessary cause in the Americas, 2007-09. Addiction, 2014; 109: 570-7.
10. Park JK, Lee CH, Kim IH, Kim SM, Jang JW, Kim SH, Kim SW, et al. Clinical characteristics and prognostic impact of bacterial infection in hospitalized patients with alcoholic liver dis- ease. J Korean Med Sci., 2015; 30: 598-605.
11. Otete HE, Orton E, Fleming KM, West J. Alcohol-attributable healthcare attendances up to 10 years prior to diagnosis of alcoholic cirrhosis: a population based case-control study. Liver Int., 2016; 36: 538-46.