ORIGINAL RESEARCH PAPER

Volume-8 | Issue-1 | January-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

SEVERITY AND DIFFERENT TYPES OF ANEMIA IN SPECTRUM OF ALCHOLIC LIVER DISEASE

Gastroenterology

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ABSTRACT

AIM & OBJECTIVES OF THE STUDY: To know the type & severity of anemia in spectrum of alcohoic liver disease. Correlation between type of anemia and amount of alcohol consumption.

METHODS: Current study Severity and types of anemia in spectrum of alcoholic liver disease done on 50 patients visiting to Department of Gastroenterology, Osmania General Hospital, Hyderabad.

RESULTS: Total 62 patients are taken into the study and the results were analysed

DISCUSSION: In this study 27 patients have cirrhosis, 15 patients have altered echotexture of liver, 20 patients have hepatomegaly.

CONCLUSION: Our study was done in 62 patients at osmania hospital, hyderabad. Anemia most commonly seen in the age group of 30 to 50 years age group with mean age is 40years. Patients who consumed more amount of alcohol developed more severe liver disease. Macrocytic anemia (77%)is most common type of anemia followed by normocytic anemia (22.5%) in our study.

KEYWORDS

INTRODUCTION

Alcohol is consumed all over the world. Few people get addicted to alcohol. Alcohol consumption leads to adverse health events, affect major organs in the body and it causes psychological problems like abuse, dependence.[1]

It affects all blood cell lines, patients with alcoholic liver disease develop anemia due to blood loss in the form of upper gastrointestinal and lower gastrointestinal blood loss and require blood transfusions[2].

Alcohol mainly causes folic acid deficiency and affect the RBC production. Alcohol affects the bone marrow that leads to thrombocytopenia. In this study we evaluated alcoholic liver disease patients having anemia wihtout active bleeding manifestations to know the severity and type of anemia in those patients[3].

Few alcoholic liver disease patients develop anemia without any bleeding manifestations it may be due to decreased dietary intake which leads to nutritional deficiency of vitamins. Generally there is little hormonal regulation to pace the rate of alcohol elimination. Alcohol elimination was originally followzero-order kinetics.the average metabolic capacity to remove alcohol is about 170 to 240 g per day for a person with a body weight of 70 kg 4,5

There is no plasma protein binding of alcohol. Different individuals have different blood alcohol concentration for same dose of alcohol per unit of body weight because of variations in proportions of fat and water in their bodies, and the low lipid/water partition coefficient of ethanol. Women generally have a smaller volume of distribution for alcohol than men, first-pass metabolism is greater in men. Women have higher peak blood alcohol levels than men when given the same dose of alcohol as grams per kilogram body weight, but no differences occur when given the same dose per liter of body water[6].

Aims and Objectives of the study

1. To know the severity & type of anemia in spectrum of alcohoic liver disease
2. Is there any correlation between severity of anemia and amount of alcohol consumption
3. Correlation between type of anemia and amount of alcohol consumption
4. To know does alcohol itself causes anemia

MATERIAL & METHODS

Current study Severity and types of anemia in spectrum of alcoholic liver disease done on 50 patients visiting to Department of Gastroenterology, Osmania General Hospital Hyderabad.

Detailed case history was taken from the patient regarding presenting complaints, duration, type of alcohol consumption, CAGE questionnaire, AUDIT-C questionnaire, systemic examination of the patient was done.

Patients hemoglobin <13gr/dl for males, <12 gr/dl for females are diagnosed as anemia, without any evidence of active bleeding in present admission or recent past(<6 months) were taken into the study.

Inclusion criteria

Age >18 yrs with history of alcohol consumption

Exclusion Criteria

History of chronic kidney disease, Patients with alcoholic liver disease having active bleeding, Patients with alcoholic liver disease with history of bleed in past 6 months.

RESULTS

Total 62 patients are taken into the study and the results were analyzed.

Table- 1: Age Group

Age Groups	Frequency of alcoholic liver disease	Percent
21-30	11	17.7
31-40	21	33.9
41-50	24	38.7
51-60	6	9.7
Total	62	100

Different age groups and frequency of alcoholic liver disease in study, highest frequency of alcoholic liver disease are in the age group of 41-50 yrs with 38.7%.

Table - 2: Minimum and maximum alcohol consumption in all age groups and hemoglobin level

Variable	N	Minimum	Maximum	Mean	Std. Deviation
AGE	62	26	60	40.44	8.523
ALCOHOL	62	40	280	96.29	39.473
Hemoglobin (gr/dl)	62	5	11	8.753	1.0311
Mean corpuscular hemoglobin (pg)	62	25	38	29.635	2.2448
Mean corpuscular volume (fl)	62	85	110	100.374	5.536
Serum Folic Acid	62	1.18	6.5	3.469	1.76766
Serum Vit B12	62	110	910	407.13	157.185
Serum Iron	62	38	165	92.87	34.616
Total Iron binding capacity	62	272	594	391.5	80.396
Body mass Index	62	15	21	18.269	1.3207

Minimum and maximum alcohol consumption in all age groups and hemoglobin level, serum folic acid, serum Vit. B12 and its standard deviation.

Table- 3: Cause of Anemia in Spectrum of Alcoholic Liver disease

Cause of anemia	Number	frequency
Folic acid defeciency anemia	25	40.3%
Malnutrition	16	25.8%
Anemia due to cirrhosis	12	19.3%
Anemia due to alcohol	08	0.12%

Showing different causes for anemia in spectrum of alcoholic liver disease

Table-4: Anemia in spectrum of alcoholic liver disease

Type of anemia	Number	frequency
Normocytic anemia	14	22.5%
Macrocytic anemia	48	77.4%

Type of anemia in spectrum of alcoholic liver disease

DISCUSSION

27 patients have cirrhosis, 15 patients have altered echo texture of liver, 20 patients have hepatomegaly. Mean age of presentation with anemia is 40.4 yrs. Mean hemoglobin concentration 8.7 gr/dl. Mean folic acid level is 3.4. Mean MCV value is 100 which is upper limit for nomocytic anemia. Mean BMI value is 18.2 i.e. under nutrition. Mean vitamin B12 levels are 407 pg/ml which is normal.

Hemoglobin levels are low as amount of alcohol increases but it is not correlated with duration of alcohol consumption. Which is similar to Arjun Maitra study understanding the Pathophysiological Basis of Alterations of Hematological Picture in Alcohol Abuse Patients.

Mean age in our study is 40.5 yrs, a study done by savage et al. mean age of anemia was 51 yrs.

In our study folic acid deficiency is most common cause of anemia followed by anemia due to cirrhosis and malnutrition. Only 7 patients had anemia due to alcohol toxicity. Study done by savage et al 44.6% of patients had anemia due to single cause, 37.2% had anemia due to 2 causes and 18.2% had anemia due 3 or more causes.

In this study minimum duration of alcohol consumption is 5 yrs, minimum alcohol consumption is 60 gr/day. As duration of alcohol consumption increases severity of anemia increases. it may be due to folic acid deficiency or cirrhosis itself causing anemia. Which is similar Panasuik A and Kimono A study, patients of alcohol abuse show low hemoglobin concentration level[7]

Macrocytic anemia is common in our study however MCV value is upper limit of normal, macrocytic anemia is because of folic acid deficiency anemia which is similar to study of anemia in alcohol abusers[8].

Savage et al study shows patients presenting with megaloblastic anemia have macrocytosis, macroovalocytosis, reticulocytopenia, depression in plasma and RBC folate levels[9].

Mean serum iron level is high in more than 120 gr/day alcohol consumption group and all patients had liver cirrhosis in our study. Mean serum iron levels in our study was 92.8 and it showed statistically significant positive correlation showed between alcohol intake and serum iron levels.

In our study none of patient had absence of iron stores. In savage et al study a significant number of patients had absence of marrow iron and they presented with history of acute blood loss. In our study we did not considered acute or recent blood loss patients.

Increased Vit B12 levels are correlating with increased amount of alcohol consumption and severity of liver disease. Similar results were seen in Cylwik B et al. study. The vitamin B12 concentration reflects the degree of hepatocytes injury by alcoholic patients[10].

A study done by Thomas D Stevenson et al. showed elevated vitamin B12 levels in patients with liver disease and increased levels correlated with severity of disease. Increased serum level observed in patients with liver disease did not alter the absorption of vitamin B12.

Most obvious explanation for increased serum Vit. B12 levels in the presence of liver as result of hepatocellular necrosis. Serum content was increased In the presence of liver disease, declined towards normal with improvement of hepatocellular function.

In our study serum iron levels were increasing as amount of alcohol consumption increases and severity of liver disease. Mean serum iron levels in our study is 92.87, it has positive correlation with amount of alcohol intake with the p value of 0.009.

Similar results were seen in R.W. Chapman et al study[11], Mean serum iron concentrations were significantly higher in the patients with alcohol-related liver disease. Mean liver iron concentration was increased in the alcoholics with fatty liver, in the high normal range in the alcoholic cirrhotic, and in the low normal range in the patients with primary biliary cirrhosis.

In our study serum iron levels were increasing as severity of liver disease increases but levels were within normal limits.

In our study TIBC capacity was decreasing as amount of alcohol increases and severity of liver disease increases. Mean TIBC concentration was 391.5 with negative person correlation of value -0.25 and p value of the study was 0.04.

Similar results seen in study done by Potter et al., in their study they showed that lower TIBC levels and low serum transfer in frequently seen in alcoholic cirrhosis. Reason for decreased transfer in levels in chronic liver disease is decreased synthesis and normal catabolic rate. Although increased serum iron levels in liver disease not well understood[12].

Limitations of the Study

1. Our study is cross sectional observational study
2. Sample size is limited upto 62
3. Follow up of the patients was not done, so we did not the chronology of their disease process.
4. We did not do bone marrow biopsy in all cases
5. Only serum folic acid was done. The study will be better if we include RBC folate levels.
6. We did not know the serum transfer in levels of all patients
7. We did only stool examination for 3 consecutive days to rule out active parasitic infection. We has less specificity with high sensitivity.

Conclusion of the study

Our study was done in 62 patients at Osmania General Hospital, Hyderabad. Anemia most commonly seen in the age group of 30 to 50 years age group with mean age is 40years. Mean Alcohol consumption is 96 grams per day in patients who presented with anemia. Mean hemoglobin concentration was varying from 5 gr/dl to 11 gr/dl, with mean hemoglobin concentration was 8.7 gr/dl. Folic acid deficiency is most common cause for anemia in our study, But levels of folic acid was not statistically correlating with amount of alcohol consumption. Mean folic acid levels in our study was 3 mg/dl. Mean serum vitamin B12 levels are 407 pg/ml which is normal. But vitamin B12 levels show positive correlation as patients develop advanced liver disease and alcoholic hepatitis except in malnourished cases. Mean serum iron levels in our study 92 mg/dl with positive correlation seen with amount alcohol consumption. Because patients who consumed more amount of alcohol developed more severe liver disease. Macrocytic anemia (77%) is most common type of anemia followed by normocytic anemia (22.5%) in our study

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