

Study of Blood Indices in Alcoholic Subjects

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Abstract

Alcoholism is a chronic, progressive, and potentially fatal disease. The major health risk of alcoholism includes liver disease, heart disease, pancreatitis, central nervous system disorders, disorders of hematopoietic system, and certain forms of cancer. The effects on haemopoietic system are both direct and indirect, with anemia being commonly seen in alcoholics. This study is done to evaluate effect of alcoholism on blood indices. Total 50 moderate to severe alcoholics were included in study. Blood indices which included Hemoglobin, RBC count, MCV, MCH, MCHC were estimated by cell counter. Results shows mean haemoglobin content and RBC count was less than normal values which tells that most of alcoholics are anemic. Mean values of MCV was more than normal range, which shows anemia seen in alcoholics was macrocytic. MCH and MCHC mean values are almost normal which tells that anemia in alcoholics was of macrocytic normochromic.

Keywords: Blood Indices, Alcoholic Subjects.

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Introduction

Alcohol consumption is one of the leading causes of death.[1] It contributes to 3.5% of the global burden of disease and is causally related to more than 60 different medical conditions.[2] A large epidemiological study observed a significant rise in health-related problems among alcohol users in India.[3] Regular excessive alcohol consumption may affect wide variety of hematological parameters. The principal, well-known abnormality is an increase in erythrocyte mean cell volume (MCV).[4] The exact mechanism responsible for the increase is still unknown, but it is evidently due to the direct toxic effect of alcohol on the developing erythrocyte.[5,6] Studies reported the effect of substance use on various red cell parameters. Abnormalities involving leukocytes, platelets (PLTs), and erythrocytes may occur alone or in various

combinations. Alcoholism is characterized by increased tolerance and physical dependence on alcohol, affecting an individual's ability to control alcohol consumption safely. As per National Council of Alcoholism number of alcohol induced death excluding accidents and homicides 21,081.1 No. of alcoholic liver disease deaths 12,5481 The office for national statistic revealed that number of deaths due to alcohol was 4144 in 19911 have increased to 8386 by 20061. Hence alcohol consumption is known for morbidity and mortality, being a serious health hazard of the people all over the world. Multiple organs can be involved like Hepatobiliary system, cardiovascular system, Central nervous system, Hemopoietic system. Many times the hematological changes are left undetected

and untreated which could progress to cardiac failure. Early detection and treatment of hematological changes can prevent complications and reduce the mortality; these are the basis and the need for the study.[7,8]

Material and Methods

This study was done in patients coming to OPD in Government medical college hospital during April 2016 to April 2018. A detail history was taken in alcoholics about quantity, type of alcohol and number of years of alcohol consumed. Name, age, gender, occupation and socioeconomic status was noted. General and systemic examination was done. All adult patients

who are moderate alcoholics that is who consume alcohol less than 80 to 90 mg alcohol which is about 11 drinks per day. All adult patients who are severe alcoholics that is who consume more than 80 to 90 mg alcohol or more than 11 drinks per day. Total 50 male, moderate to severe alcoholics were included in study. All patients who are less than 18 years. Patients with other hepatic disorders. Patients receiving hepato-toxic drugs were not included in this study. Blood indices which included Hemoglobin content, RBC count, MCV, MCH, MCHC were estimated by cell counter in complete blood count -CBC. Analysis was done and results were tabulated in numbers and percentage.

Results

Table 1: Distribution of Age of Alcoholic subjects

Age in years	Number of alcoholics	Percentage
21-30	05	10 %
31-40	12	24 %
41-50	20	40 %
51-60	13	26 %
Total	50	100 %

40 % subjects were of 41-50 age group.

Table 2: Presenting complaints of Alcoholic subjects.

Complaints	Number of alcoholics	Percentage
Jaundice	35	70 %
Pain in abdomen	10	20 %
Distension of Abdomen	07	14 %
Edema feet	10	20 %
Altered sensorium	02	04 %

70 % alcoholic subjects had complaint of Jaundice.

Table 3: General examination of alcoholic subjects.

General examination	Number of alcoholics	Percentage
Pallor	12	24 %
Icterus	35	70 %
Clubbing	10	20 %
Edema feet	20	40 %
Ascitis	08	16 %
Other signs of liver failure	05	10 %

40 % subjects had edema feet, 70 % had icterus, 24 % had pallor.

Table 4 shows mean values of haemoglobin content and RBC count was less than normal values which tells that most of alcoholics are anemic. Mean values of MCV was more than normal range, which

shows anemia seen in alcoholics was macrocytic. MCH and MCHC mean values are almost normal which tells that anemia in alcoholics was of macrocytic normochromic.

Table 4 : Blood Indices in Alcoholic subjects.

Blood indices	Mean \pm SD	Normal range
RBC count	2.9 \pm 1.5	4.5-5.5 millions/mm ³
HB%	8.5 \pm 1.3	12-16 gm%
MCH	29.4 \pm 3.2	27-32 pg
MCHC	31.2 \pm 2.4	31-35 %
MCV	98 \pm 9.6	76-91 fl

Discussion

Alcohol abuse is a growing epidemic in India, especially among men and now a day it is becoming a major problem among young adults. The clinical manifestations of alcohol-induced hematologic disorders are profoundly influenced by the patient's social and economic status, and the presence or absence of other factors, such nutritional deficiency or alcoholic cirrhosis. Most of these changes result, either directly or indirectly, in anemia and when extensive liver disease is present, the patient may develop an abnormally functioning fibrinogen or other coagulation disorders, which may initiate or exacerbate bleeding. Studies had shown that even before anemia appears, approximately 90 percent of alcoholics have a macrocytosis (mean corpuscular volume [MCV] between 100 to 110 femtoliters [fL]) and it was almost in par with our study where we found mean MCV was 98 \pm 96 fl among severe alcoholics and it was very high .[9-11] Alcohol-induced macrocytosis occurs even though patients are folate and cobalamin replete and do not have liver disease. The mechanism is unknown, but it takes two to four months for the macrocytosis to disappear after the patient becomes abstinent.

Alcohol as well as alcohol-induced cirrhosis lead to decreased RBC production. Hypersplenism can cause premature RBC destruction. Folic acid deficiency impairs RBC production and results from decreased ingestion, decreased absorption, and abnormal metabolism of folic acid.[12] Hypersplenism, blood loss, liver disease, folic acid deficiency, and

reduced RBC production are causes of low hemoglobin levels in alcoholics.[13]

Present study shows mean haemoglobin content and RBC count was less than normal values which tells that most of alcoholics are anemic . Mean values of MCV was more than normal range, which shows anemia seen in alcoholics was macrocytic. MCH and MCHC mean values are almost normal which tells that anemia in alcoholics was of macrocytic normochromic . Detection of hematological changes in alcoholics and giving psychiatric counseling and treatment for alcohol dependence will decrease the future complications like cirrhosis liver, cardiac and renal disease, cerebellar degeneration, neuropathy, pancreatitis, etc. and reduce the morbidity and mortality in alcoholics.

Conclusion

Mean values of haemoglobin content and RBC count was less than normal values which tells that most of alcoholics are anemic . Mean values of MCV was more than normal range, which shows anemia seen in alcoholics was macrocytic. MCH and MCHC mean values are almost normal which tells that anemia in alcoholics was of macrocytic normochromic .Early detection of anemia in alcoholics can help to prevent the future complication of anemia and reduce mortality. This study will help to create awareness of the diagnosis of anemia by estimating low hemoglobin levels in alcoholic subjects. Detection of hematological changes in chronic alcoholics and giving psychiatric counseling and treatment for alcohol dependence will decrease the future complications like cirrhosis liver, cardiac

and renal disease, cerebellar degeneration, neuropathy, pancreatitis, etc. and reduce the morbidity and mortality in alcoholics.

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