

Original research article

Study of Blood Indices in Alcoholic individuals**^{1*} Dr. Sandeep Pawar, ² Dr. Ade Vittal****^{1,2} Assistant Professor , Department of General Medicine , RIMS Adilabad, Telangana State .****Corresponding Author: Dr. Sandeep Pawar****Abstract**

Alcohol being one of the most commonly used drug, whose consequences include changes of CBC. The main causes leading to changes of CBC (complete blood count) are, myelosuppression that is accompanying with slight reduction in all blood cells, blood loss from gastrointestinal tract, malnutrition etc. Alcoholics may suffer from moderate anemia, characterized by enlarged, structurally abnormal RBC's. Multiple organs can be involved like Hepatobiliary system, cardiovascular system, Central nervous system, Haematopoietic system. Impact of alcohol on haematopoietic system divided into direct and indirect effects. 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 . Detection of hematological changes in alcoholics and giving psychiatric counseling and treatment for alcohol dependence will decrease the future complications

Key words : Blood Indices , Alcoholic individuals.

Introduction

Alcoholism is one of the most serious global public health problem. Regarding disease Burden Alcohol is the world's third largest risk factor. [1] It is estimated that the total number of the population classified as alcohol consumers in the world goes up to 2 billion, while 76.3 million people develop alcohol use disorder.[2,3] The effects of alcohol depend on the amount of ethanol consumed per kg body weight. Levels from 0:02 to 0:03 g / dl are achieved after consumption of one or two standard drinks.[4] Alcoholism (Alcohol use disorder) is defined as repeated alcohol related difficulties in atleast 2 of 11 life areas that cluster together in the same 12 months period.[5]Lifetime risk for an AUD in most of the western countries is about 10-15% for men and 5-8% for women. Approximately 60% of the risk for AUD is attributed to genes. The factors increasing risk of liver disease in alcoholics are quantity and duration of intake, Sex (Females susceptibility twice as males), co-infection with Hepatitis C, Genetic factors, Malnutrition, Obesity, Smoking and Iron over load. Hence alcohol consumption is known for morbidity and mortality, being a serious health hazard of the world. Many a times haematological changes are left undetected and untreated which could progress to cardiac failure.[6]Alcoholism is characterised by increased tolerance and physical dependence on alcohol, affecting an individual's ability to control alcohol consumption safely. According to national council of alcoholism and drug dependence, alcoholism is a primary chronic disease

with genetic, psycho social and environmental factors influencing its developmental manifestations. As per figures released by World health organisation in 2011 have shown that alcohol is responsible for causing almost 2.5million deaths per annum. 4% of all deaths worldwide. Worldwide 6% all male deaths are related to alcohol, just over 1% deaths in women. Almost 1 in 10 deaths among young people age 18-29 years from alcohol . Hence alcohol consumption is known for morbidity and mortality, being a serious health hazard of the world. Multiple organs can be involved like Hepatobiliary system, cardiovascular system, Central nervous system, Haematopoietic system. Impact of alcohol on haematopoietic system divided into direct and indirect effects .Direct effect seen in bone marrow and involves red cell, white cell and platelet lines. Indirect effect due to metabolic or physiologic alterations resulting in liver disease and nutritional abnormality such as folate deficiency [7]. This study is done to evaluate effect of alcoholism on blood indices.

Material and Methods

This study was done in patients coming to OPD in medicine department of RIMS Adilabad hospital. 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 .

Results

Table 1 : Age groups of Alcoholic individuals

Age groups (Years)	Alcoholic individuals n=50	Percentage
30-40	05	10 %
41-50	14	28 %
51-60	22	44 %
>60	09	18 %

Table 2: Blood Indices in Alcoholic individuals

Blood Indices	Blood Indices values Mean \pm SD	Normal values range
Hb % (gm%)	9.2 \pm 1.1	13-16 gm%
MCV(fl)	95 \pm 10.2	76-91 fl
MCH (pg)	30.34 \pm 2.2	27-32 pg
MCHC (%)	32.3 \pm 3.2	31-35 %
RBC count (million cells/mm ³)	3.12 \pm 0.72	4.5-5.5 million cells/mm ³

Table 1 shows 44% individuals were in age group of 51-60 years and 10 % were in age group of 30-40 years.

Table 2 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 .

Discussion

Alcohol as well as alcohol induced cirrhosis leads to decreased Red blood cell 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. Hypersplenism, blood loss, liver disease, folic acid deficiency, and reduced RBC production are causes of low haemoglobin levels in alcoholics. Alcoholism has effect on blood indices[8].

Alcohol abuse is a growing epidemic in India, especially among men, and nowadays, 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 as 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% of alcoholics have a macrocytosis (mean corpuscular volume (MCV) between 100 and 110 femtoliter (fL) 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 2–4 months for the macrocytosis to disappear after the patient becomes abstinent. The results of the study are in concordance with that of the previous study. Earlier studies have found that prolonged and excessive consumption of alcohol through direct or indirect effect suppresses hematopoiesis in individuals with alcohol dependence.[9] 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

Anemia is common in moderate to severe alcoholics . Early detection of anemia in alcoholics can help to prevent future complication of anemia and reduce mortality. This study will help to create awareness for diagnosis of anemia by estimating Hemoglobin content , RBC count , MCV,MCH,MCHC in alcoholic subjects.

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