



## A STUDY OF HAEMATOLOGICAL PROFILE IN ALCOHOLICS

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### ABSTRACT

**Introduction :** Alcoholism represents one of the social, economic and health problems worldwide. Excessive alcohol consumption affects all major organ system in the body. The effects of alcoholism on haematopoietic system is easily reflected in any of the blood cell lines.

**Aim:** A study of haematological profile in alcoholics admitted at a tertiary care hospital in North Karnataka.

**Methods:** This study was conducted at S. Nijalingappa medical college and HSK hospital, Bagalkot. This study was a retrospective analysis of haematological profile in alcoholics admitted between June 2016 to March 2017.

**Materials:** The haematological profile of 61 individuals was collected who were admitted in the department of general medicine.

**Results:** A total of 61 cases included in our study. All subjects were males. Anaemia and thrombocytopenia are frequent manifestations of alcoholism. There may be leucopenia or leucocytosis. The patients of chronic alcoholism are prone for various infections and non communicable diseases like diabetes.

**Conclusion :** Alcoholic liver disease affects economically productive age group. It is associated with high morbidity and mortality. The effects are reversible if identified at early stages.

**KEYWORDS :** Anaemia, thrombocytopenia, alcoholism.

### INTRODUCTION

Alcoholism is defined as a chronic and progressive disease characterized by the loss of control over the alcohol use with subsequent social, legal, psychological and physical consequences. Major causes of mortality in alcohol misuse liver diseases, respiratory infections, cancers, cardiovascular diseases, suicide and violence. The direct effect of alcoholism on haematopoietic system is due to toxic effect on bone marrow, progenitor cells and/ or mature cells. Alcohol's indirect effect on blood is due to nutritional deficiencies which will impair production and function of various blood cells (1).

The manifestations of alcohol include infections, abnormal haemostasis in the form of bleeding, stroke etc. The detection of haematological changes can prevent morbidity and mortality (1).

### OBJECTIVES

To study the haematological profile of alcoholics.

### MATERIALS AND METHODS

#### Setting

This study was undertaken at S. Nijalingappa medical college and HSK hospital, Bagalkot in the department of general medicine. The duration of study was June 2016 to March 2017.

#### Design

The study design was retrospective, observational, non comparative, non randomized.

#### Participants

Individuals more than 18 years were included in the study. The study included 61 human subjects.

#### Study size

The haematological profile was collected retrospectively from 61 patients admitted in the department of general medicine.

#### Ethical approval

The approval was given by independent ethics committee and written consent from patients was taken.

#### Method of data collection

Patients more than 18 years with history of alcoholism were

included in the study. The alcohol use disorder criteria was considered for history taking in our study (2). A person who consumes an amount of alcohol capable of producing pathological changes is defined as an alcoholic (7).

### RESULTS

We collected retrospective data of 61 patients admitted in the department of general medicine. All 61 patients were males.

The following table gives the age distribution of individuals considered in our study.

**Table number 1: Age wise patient distribution**

Age in years	Number of patients	percentage
18 to 30	2	3.28
31 to 60	53	86.92
More than 61	6	9.84

All the haematological parameters were collected from the patients which were done while managing the cases in the admitted period.

Haemoglobin normal value in male is 13 to 18 g%. The normal platelets count are 150 to 350 thousand per cumm. The normal mean corpuscular volume is 78-98fl (11).

We noted anaemia (4) in 53 cases (86.92%).

**Table number 2: Distribution of haemoglobin**

Haemoglobin in gram %	Patients in number	percentage
Less than 6	12	19.68
6.1 to 9	20	32.8
9.1 to 12.9	21	34.44

We noted a total of 10 pancytopenia cases (16.4%) in our study. Pancytopenia may be considered a severe form of megaloblastic anaemia (10).

**Table number 3: Distribution of platelets**

Platelets in thousands	Number of patients	percentage
Less than 20	1	1.64
21 to 50	10	16.4
51 to 150	36	59.04

**Table number 4 : Distribution of MCV values**

MCV in fl	Number of patients	percentage
Less than 80	5	8.2
81 to 100	13	21.32
More than 101	2	3.28

**Table number 5 : Peripheral smear details**

Peripheral smear	Number of patients	percentage
Dimorphic anaemia	8	13.12
Normocytic normochromic	12	19.68
Microcytic	5	8.2

**Table number 6 : Leucocytosis details**

Total leucocytosis	19 cases	31.16 %
Leucocytosis with anaemia	4 cases	6.56%
Leucocytosis with thrombocytopenia	15 cases	24.6%

**Table number 7: Infections associated with alcoholic patients**

Infections	Total cases	percentage
Skin	4	6.56
Urinary tract infection	3	4.92
malaria	1	1.64
tuberculosis	2	3.28
HIV	3	4.92
Gastrointestinal	1	1.64
HBV	2	3.28
HAV	4	6.56

Our study noted 4 cases of diabetes mellitus in 61 alcoholic cases (6.56%).

**Table number 8: Complications associated with alcoholism**

complications	Number of cases	percentage
Portal hypertension	36	59.04
Alcoholic hepatitis	6	9.84
Hepatorenal syndrome	2	3.28

**DISCUSSION**

In our study haematological investigations were collected retrospectively from all the patients who had history of alcoholism . We collected data of 61 cases. All patients were male. The most common age group was 31 to 60 years . We noted anemia in 86.92 % cases . A study by Hemang Suthar et al noted anaemia in 30 % cases ( HB less than 8 gram %) ( 3). A study by E Halleys Kumar et al noted anaemia in 86% cases (4). They classified anaemia into mild , moderate and severe anaemia (4). Following table shows comparison of our study with E Halleys Kumar et al .

**Table number 9 : Comparison of anaemia with other study**

Anaemia	Halleys et al study (in %)	Our study(in %)
Severe (HB less than 6)	16	19.68
Moderate (6.1 to 9)	42	32.8
mild (9 to 12.9)	28	34.44

The cause of anaemia may be hemodilution, decrease in erythropoietin level, chronic inflammation, variceal bleed and cobalamin /folate deficiencies (4).

In our study normocytic normochromic anaemia was most common type followed by dimorphic. Following table compares our study with E Halleys study.

**Table number 10 : Comparison of anaemia types**

Type of anaemia	Halleys study	Our study
Dimorphic	14	13.12
Normocytic normochromic	16	19.68
microcytic	42	8.2

Our study noted pancytopenia in 10 cases ( 16.4%). A study by Das et al noted anaemia in 12.5% of alcoholics (5). A study by Anasuya et al noted anaemia in 57% moderate alcoholics and in 79% of severe alcoholics (1). Anasuya et al noted microcytic hypochromic anemia in 36% moderate alcoholics and 29% severe alcoholics, dimorphic anaemia in 14 % moderate alcoholics and 29% in severe alcoholics and normocytic normochromic anaemia was noted in 11% cases of moderate and severe alcoholics.

A study by E Osaro et al noted anaemia in alcoholics . They noted normocytic normochromic anaemia in 55.7% cases , macrocytic anaemia in 20% and microcytic hypochromic anaemia in 10.4% cases (6).

A study by Latwaala J et al noted anemia in 50% alcoholics. A study by Thoma et al noted decrease in hemoglobin as alcohol intake duration increases. In alcoholism though megaloblastic/ macrocytic anaemia is common, even normocytic normochromic anaemia or microcytic anaemia is noted . We have noted dimorphic anaemia (cyanocobalamin/ folate/ iron) in 8 cases. The type of anaemia may also vary based on the prior treatment received , associated comorbidities and other drugs .

In our study thrombocytopenia was noted in 77.08 % cases. A study by O O Taiwo et al noted statistically significant thrombocytopenia in alcoholics (7). According to Dailey heavy alcohol consumption is associated with thrombocytopenia which usually disappears after 3-7 days (7). Weed and Reed said inhibition of bone marrow results in thrombocytopenia in alcoholics (7). In alcoholics who takes bout of alcohol but without cirrhosis have transient thrombocytopenia , however chronic thrombocytopenia is noted in cirrhosis individuals (8). A study by PC Stanley et al noted 144,000 platelets in problem drinkers and 184, 000 in social drinkers (8) .

A study by Das et al noted thrombocytopenia in 22.9% cases (5) . A study by O Harbor et al mean platelet count was 2.53 lakhs in moderate alcoholics and 1.30 lakhs in heavy alcoholics. E Osaro et al noted thrombocytopenia in chronic alcoholics, there is negative co relation between alcoholism and platelet counts (6). Platelet counts and functions are reduced with chronic alcoholism (6).

In our study collected data reveals MCV to be less than 80 fl in 5 cases , between 80 to 100 in 13 cases and more than 100 in 2 cases . In population studies alcohol consumption and MCV studies provide good correlation . An increment in 10 grams alcohol daily will lead to an approximately 1.7 fl increase , however the values of MCV tend to normalize in 2-3 months once alcohol intake cessation is there (8) . In alcohol users MCV of 110.2fl is noted, in social drinkers 86.32 fl and in abstainers it is 82.9% (8). However there is strong correlation between MCV and GGT values with chronic alcoholism (8). The sensitivity will increase if MCV and GGT are combined as this detects early alcohol consumers (8).

A study by Das et al noted significant elevation in MCV in alcoholics. Thyroid disease, blood loss , folate deficiencies, anti epileptics etc may increase MCV hence it is not a sensitive indicator of alcohol intake(5). A study by T Odula et al mean MCV of 84.9fl in moderate alcoholics, 89.7 fl in severe alcoholics(1). Thoma E et al noted MCV of 94.95fl (1). A progressive rise of MCV with thrombocytopenia indicates marrow dysfunction due to alcoholism (1).

A normal to low MCV does not rule out alcoholism as low to normal MCV is noted in bleeding, hemolysis, anemia of chronic disease, sideroblastic anaemia, thalassemia and iron deficient states (9). Thus MCV values in alcoholism needs to consider other illnesses and the method used in estimating MCV.

There are many medical consequences associated with alcoholism, among them one is infection. We noted infections in 32.8% cases.

**Table number 11: Complications associated with alcoholism**

complications	Suthar et al study in % (3)	Our study in %
Cirrhosis/ portal hypertension	36	59.04
hepatitis	24	9.84
Hepatorenal syndrome	20	3.28

Our study being retrospective collected haematological data of all alcoholics admitted in the medicine department, clinical profile and biochemical data were not included. Our study sample size is small. These are our limitations.

### CONCLUSION

In our study 86.92% cases were in 31 to 60 years. Anaemia due to alcoholism may be normocytic normochromic, dimorphic, microcytic hypochromic or pancytopenia. Anaemia which is easily diagnosed by basic blood tests can help us to pick up cases related to alcoholism. Alcoholism has toxic effects on platelets and leucocytes as well. All these parameters may be an indications to identify the severity of alcoholism. The haematological profile with history help us in picking up severe cases at early stage. Hence counseling and appropriate treatment at this stage will avoid possible complications. There is a need to screen all adults who have alcohol abuse with a set of questionnaire and blood investigations.

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