

Original Research Article

## **A study of pattern and causes of anemia in elderly patients admitted at tertiary centre**

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**Abstract:** Anemia in the elderly is common and increasing as the population ages. In older patients, anemia of any degree contributes significantly to morbidity and mortality and has a significant effect on the quality of life. The objective is to study the types and causes of anemia in the elderly. Total of 100 elderly patients of either sex admitted to our hospital with anemia was evaluated by biochemical, pathological and other relevant investigations to assess the type and cause of anemia. 100 patients were included in the study, of which 76 were male and 24 were females. 70 patients were between the ages of 60 to 69 years, 23 patients between 70 to 79 years, 7 patients above 80 years. The major pattern of anemia among patients was normocytic (42%) followed by microcytic (33%) followed by macrocytic/ dimorphic (22%), 3 patients had AML on peripheral smear. Out of 33 Patients with microcytic anemia 16 had anemia due to chronic blood loss, 7 anemia of chronic disease, 5 nutritional deficiencies. Out of 42 normocytic anemia patients 33 had anemia of chronic disease, 7 acute blood losses, 1 patient each of MDS and Aplastic anemia. Out of 22 macrocytic / dimorphic anemias 16 patients had B 12 and folate deficiency and 6 patients had alcoholic liver disease. Normocytic anemia is the commonest pattern of anemia (42%) in elderly and anemia of chronic disease the commonest cause (40%) in our study. Anemia is one of the most common morbidity/ co morbidity in elderly. In our study normocytic anemia was the commonest pattern of anemia in which chronic illness was the commonest etiology. A systematic approach for diagnosing the etiology of anemia in elderly patients is essential, as treatment of anemia goes a long way in improving the overall outcome and quality of life.

**Keywords:** Anemia, elderly, normocytic, anemia of chronic disease, CKD (chronic kidney disease), AML (acute myeloid leukemia)

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### **INTRODUCTION**

Population aging is occurring worldwide with both the number and proportion of older adults increasing globally. Anemia in the elderly is common and increasing as the population ages. In older patients, anemia of any degree contributes significantly to morbidity and mortality and has a significant effect on the quality of life. Over the past decade, anemia has emerged as a risk factor that is associated with a variety of adverse outcomes in older adults, including hospitalization, disability, and mortality [1-3]. The epidemiology of anemia and aging, in general, is particularly challenging because of increased heterogeneity in the distribution of social and biological risk factors with advancing age. There is a wide variation in prevalence of anemia in elderly ranging from 2.9% to 61% in men and 3.3% to 41% in women

[4]. This study was conducted to assess the hematological types and possible etiologies of anemia in elderly.

### **METHODS**

Patients with age more than 60 years fulfilling the inclusion criteria, admitted to our hospital, during period of one year were included in our study. Informed written consent is obtained from all the study patients. Study group was divided into 3 groups according to age (60 to 69 years, 70 to 79 years, 80 years and older) and sex and will be compared.

### **INCLUSION CRITERIA**

Patients aged 60 years and above fulfilling the WHO criteria of anemia hemoglobin of less than 13 gm/dl in males and less than 12 gm/dl in females [5].

**EXCLUSION CRITERIA**

Patient who’s Hb is less than 13gm% but has received blood transfusion in the last 3 months. Patients on treatment with iron, folic acid, B12 supplements.

Microcytic anemia was defined as MCV below 80 fl, normocytic as MCV between 80 and 100 fl and macrocytic anemia by an MCV above 100 fl [6].The following hematological investigations were carried out for all patients—Hb, total leukocyte count (TLC), differential leukocyte count (DLC), erythrocyte sedimentation rate (ESR), platelet count, blood urea, serum creatinine, mean corpuscular volume (MCV), mean corpuscular hemoglobin concentration (MCHC), mean corpuscular hemoglobin (MCH), packed cell volume (PCV), reticulocyte count, peripheral smear for blood picture and serum ferritin. Vitamin B12 and folate assays were done for dimorphic and macrocytic anemia or in patients with normocytic or microcytic

blood picture in which no other cause could be found. Additional investigations as indicated Bone marrow studies (aspiration/biopsy),for detection of underlying cause-chest X-ray,ultrasonography (USG) of abdomen and pelvis, stool for parasites and occult blood, upper gastrointestinal (GI) Endoscopy and colonoscopy, serum electrophoresis, tissue biopsy, imaging-computed tomography (CT)/magnetic resonance imaging (MRI).

**DATA ANALYSIS**

Descriptive statistics used to calculate the frequency, mean, and standard deviation. To examine the linear trend of the proportions, trend chi-square will be used and to find the test of association chi Square will be computed. Microsoft word and excel have been used to generate the tables and figures.

**RESULTS**

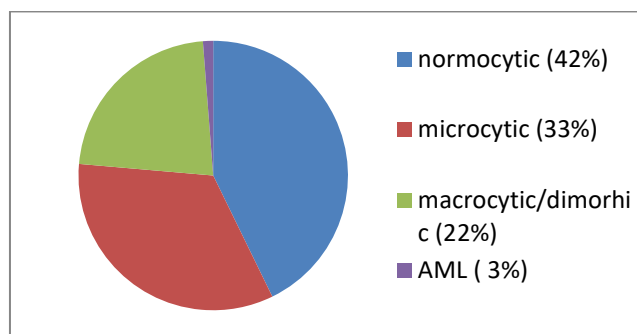
In our study population, age of patients ranged from 60 to 88 years, 76 were male and 24 were females; 70 patients were between the ages of 60 to 69 years,23 patients between 70 to 79 years,7 patients above 80 years (Table 1) .

**Table 1: Age and sex distribution of study population**

|        | Age of the patients in years |       |     | Total |
|--------|------------------------------|-------|-----|-------|
|        | 60-69                        | 70-79 | >80 |       |
| Female | 16                           | 6     | 2   | 24    |
| Male   | 54                           | 17    | 5   | 76    |
| Total  | 70                           | 23    | 7   | 100   |

The mean age was found to be 67.2 years .The major pattern of anemia among patients was normocytic (42%) followed by microcytic (33%) followed by

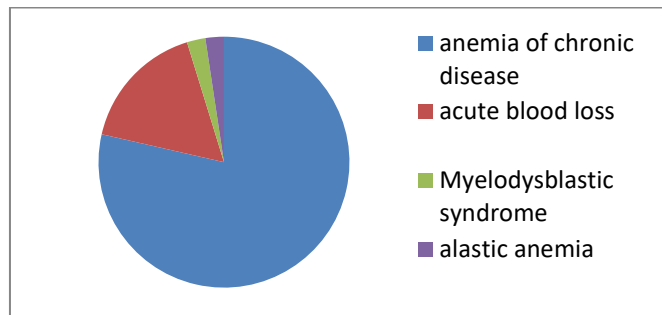
macrocytic/ dimorphic (22%), 3 patients had AML on peripheral smear (Figure 1).



**Fig-1: Anemia characterization based on peripheral smear**

Out of 33 Patients with microcytic anemia 16 had anemia due to chronic blood loss, 7 anemia of chronic disease, 5 nutritional deficiencies. Out of 42

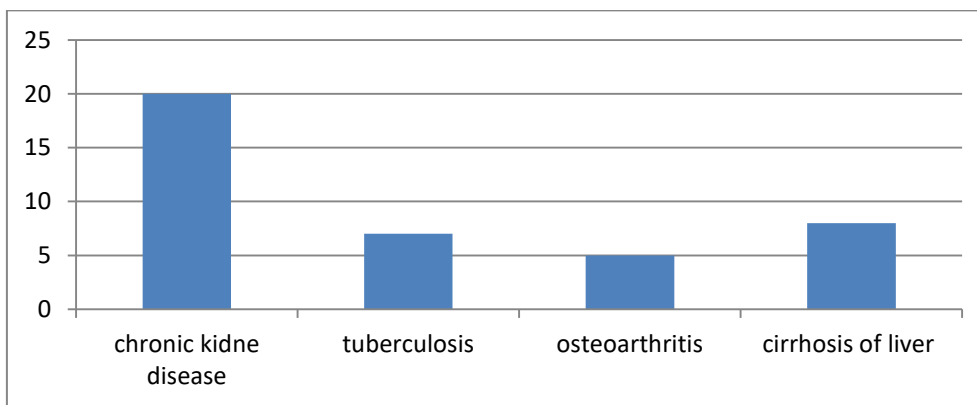
normocytic anemia patients 33 had anemia of chronic disease, 7 acute blood loss, 1 patient each of MDS and Aplastic anemia (figure 2).



**Fig 2: Distribution of normocytic anemia**

Out of 22 macrocytic /dimorphic anemias 16 patients had B 12 and folate deficiency and 6 patients had alcoholic liver disease. Normocytic anemia is the commonest pattern of anemia (42%) in elderly and

anemia of chronic disease the commonest cause (40%) in our study. Distribution of characteristics of Anemia Chronic Disease shown in figure 3.



**Fig-3: Distribution of characteristics of Anemia Chronic Disease**

**DISCUSSION**

Anemia is a common, multifactorial condition among older adults that is associated with a variety of adverse outcomes, including mortality. Anemia in the elderly is particularly relevant as it has a number of serious consequences. Anemia has been associated with a higher incidence of cardiovascular disease [7], cognitive impairment [8], decreased physical performance, and quality of life [9-11], and increased risk of falls and fractures. Furthermore, presence of anemia is significantly associated with longer hospital stays [12] and with an increased risk of mortality. The most common cause of anemia worldwide in elderly is anemia of chronic disease [13]. Iron deficiency is frequently seen in elderly, typically as a result of chronic blood loss through GIT [6]. Vitamin B12 deficiency, folate deficiency, MDS are among other causes of anemia in elderly [14]. The major character of anemia was normocytic (42%) followed by microcytic hypochromic (33%) in our study. In the study by Saurabh R Shrivastava *et al.*; [15] all the types of

anemia based on peripheral smear were evident, normocytic normochromic being the commonest constituting 78.05% like in our study, followed by microcytic hypochromic 11.6%, macrocytic 6.02% and dimorphic 4.24%. It was observed that chronic illness was the major cause for normocytic normochromic anemia (78.57%) in our study. Similar findings were seen in study conducted by K.S. Lamsal [16]. Chronic kidney disease was the most common cause of anemia of chronic illness in our study (50%) followed by cirrhosis of liver (20%), tuberculosis and osteoarthritis which similar to study conducted by Amit Bhasin *et al.*; [17].

**LIMITATIONS OF STUDY**

Incidence of anemia could not be calculated as majority of the elderly with anemia were not willing for evaluation. Less number of the patients with mild anemia is included in the study due to similar reason. Serum EPO level was not done due to non availability of same and drug levels could not be done.

## CONCLUSION

Anemia is one of the most common morbidity/co morbidity in elderly. Non specific symptoms like easy fatigability, loss of appetite and generalized weakness in elderly persons can be secondary to anemia, it should not be considered as the consequence of ageing. In this study majority of the patients were male between the age group of 60 to 69 years. Normocytic Normochromic anemia was the most common type anemia and CKD being most common cause. An effort should always be made to reach etiological diagnosis before instituting specific therapy.

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