

**Research Article****Clinical Profile of Anemia in Elderly: A Cross Sectional Study from a Tertiary Care Centre****K. G. Prakash<sup>\*</sup>, Devendrappa. K. R., Madhukumar. M. H., Priyashree. R., Avinash B H**

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**Abstract:** It is easy to overlook anemia in the elderly, since such symptoms as fatigue, weakness, or shortness of breath may be attributed to the aging process itself. Although the prevalence of anemia does increase with age, healthy aging is not usually associated with anemia. So, anemia should not be accepted as an inevitable consequence of aging, as a cause (often multifactorial) is identified in about 80% of the elderly patients. The purpose of this cross sectional study was to assess the clinical profile of elderly patients with anemia and to study characteristic hematological types of anemia and also to arrive at an appropriate etiological diagnosis. 50 patients aged 60 years and above with Hb% <13gms% in males, and < 12 gms% in females were enrolled into the study. 64% patients were male and the mean age of patients was 66.65 years. The most common presentation was easy fatigability in 44(88%) patients, followed by dyspnoea in 35(70%) and giddiness in 30 (60%) patients. Etiologically, the most common cause of anemia in our study was anemia of chronic inflammation (26%), followed by iron deficiency anemia (24%) and hematological malignancies (18%), while B12 and Folate deficiency were responsible for 10% of anemias in the elderly. Morphologically, normocytic anemia (contributed mainly by diseases of chronic inflammation and hematological malignancies), was the most common type present in 26 (52%) patients, while 16 (32%) had microcytic anemia and 8 (16%) had macrocytic anemia with a p-value of 0.001, which was statistically significant. Anemia in elderly is not due to inevitable consequence of aging. They should be thoroughly investigated to define etiology and then appropriately treated.

**Keywords:** Anemia, Elderly patients, Easy fatigability.

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**INTRODUCTION**

Anemia in the elderly is an extremely common problem that is associated with increased mortality and poorer health-related quality of life, regardless of the underlying cause of the low hemoglobin [1, 2]. A study of anemia in elderly patients found a wide variation in prevalence, ranging from 2.9% to 61% in men and 3.3% to 41% in women. Higher rates were found in hospitalized patients than in community dwellers [3].

It is easy to overlook anemia in the elderly, since such symptoms as fatigue, weakness, or shortness of breath may be attributed to the aging process itself [4]. Although the prevalence of anemia does increase with age, healthy aging is not usually associated with anemia. So, anemia should not be accepted as an inevitable consequence of aging, as a cause (often multifactorial) is identified in about 80% of the elderly patients. Therefore, failure to evaluate anemia in the elderly could lead to delayed diagnosis of potentially treatable conditions.

More than two-thirds of anemia in the elderly can be attributed to two major causes, nutritional

deficiencies, and anemia of chronic disease. As many as 33% of geriatric anemias remain unexplained, and their pathogenesis remains speculative [5]. Untreated geriatric anemia has found to be associated with increased mortality, increased prevalence of various comorbid conditions, and decreased function [6]. In elderly patients the potential negative impact of a low hemoglobin level on performance status, physiology, and functional independence has appeared to be highest. Among those older than 65 years, anemia has been found to be associated with increased frailty, poorer exercise performance, risk of developing dementia, diminished cognitive function, increased risk of recurrent falls, decreased mobility, lower bone density and skeletal muscle mass, and an increased major depression [7].

Since, anemia in elderly has multifactorial etiology in a majority of patients and since it has a substantial negative impact on both function and quality of life in the elderly. This study was undertaken to evaluate the profile of anemia in the elderly population to address these issues.

## MATERIALS AND METHODS

Patients aged 60 years and above, who were admitted to Victoria hospital, Bowring and Lady Curzon hospital attached to Bangalore Medical college and Research Institute, with signs and symptoms suggestive of anemia and an Hb% < 13gms% in males, and < 12 gms% in females [8, 9] were enrolled into the study. Elderly patients who were admitted for other medical illnesses and who were found to be anemic during subsequent investigations, were also enrolled into the study.

A total of 50 patients who met the inclusion criteria were the source material for this study. After obtaining an informed consent, each patient's particulars with details of complaints, history of present illness, past illness, any surgical procedures done and associated illnesses were recorded in a performa. A detailed and meticulous physical examination was done in each patient and relevant basic and special laboratory investigations including upper GI endoscopy, colonoscopy and bone marrow examination were done accordingly, as indicated by the overall clinical picture of the patient.

The following investigations were done in all patients during their hospital stay. Serum urea, creatinine, Blood sugar, liver function test, Complete blood count, including red cell indices, ESR, peripheral smear study, Reticulocyte production index (RPI), Urine albumin, serum T4, TSH, Chest X-ray, ECG, USG – Abdomen, Stools for ova & cyst, occult blood in stools, Serum iron, TIBC, % transferrin saturation, ferritin, During subsequent visit, In patients with macrocytosis, serum vitamin B12, homocysteine and serum folate was done.

### Statistical analysis

Data analysis was done with use of SPSS, version 13. Descriptive statistics was used to calculate the frequency, mean, and standard deviation. To examine the linear trend of the proportions, trend chi-square was used and to find the test of association chi-square was computed.

## RESULTS

Among 50 patients in our study, 32 (64%) patients were male, and 18(36%) patients were female. The mean age of the patients was 66.65 mean years, with S.D. of 6.43years, with mean age of males being

60.93years and females were 73.33 years. Majority of patients (53.57%) belonged to 61 - 65 yrs age group which was statistically significant with a p-value of < 0.001 (Fig.1).

The most common presentation was easy fatigability 44 (88%), followed by dyspnoea 35 (70%) and giddiness 30 (60%). The rare presentations were bleeding per rectum 3 (6%), difficulty in walking 2 (4%) and Hematemesis 1(2%). (Fig. 2).

The most common cause of anemia in our study was Anemia of Chronic Inflammation (26%), followed by iron deficiency anemia (24%) and hematological malignancies (18%), while B12 and folate deficiency was responsible for 10% of anemias in the elderly. Aplastic anemia, hypothyroidism were rare causes of anemia. Even after extensive investigations, we could not find out the cause of anemia (AUE) in 8% of patients (Table 1, Fig. 3)

Almost 42% (n=21) of our patients had severe degree of anemia i.e., Hb<6gms%, while 40 % (n= 20) of patients had moderate anemia (Hb 6-9 gms%), and remaining 18% (n=9) of patients had mild anemia (Hb > 9gms%).

This observation was statistically significant with a p-value of 0.001 (Fig. 4).

Of the total 50 patients, 26 (52%) had normocytic anemia, while 16 (32%) had microcytic anemia and 8(16%) had macrocytic anemia with a p-value of 0.001, which was statistically significant (Fig. 5).

Anemia of Chronic Inflammation contributed to 42.30% of anemia with normocytosis, and was the most common etiology followed by anemia of hematological malignancy30.8%. This observation was statistically significant with p-value of 0.001.

Of those 16 patients with microcytosis, 12(75%) had Iron Deficiency Anemia, and other 4 (25%) patients were diagnosed to have anemia of chronic inflammation. The most common cause of macrocytic anemia was vitamin B12 & folate deficiency.

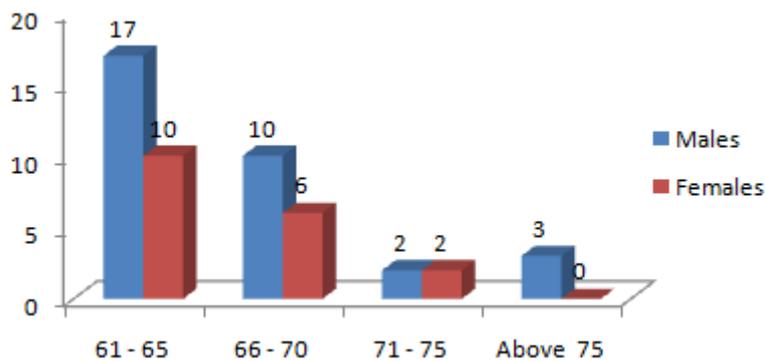


Fig. 1: Depicting Age and Sex distribution of patients

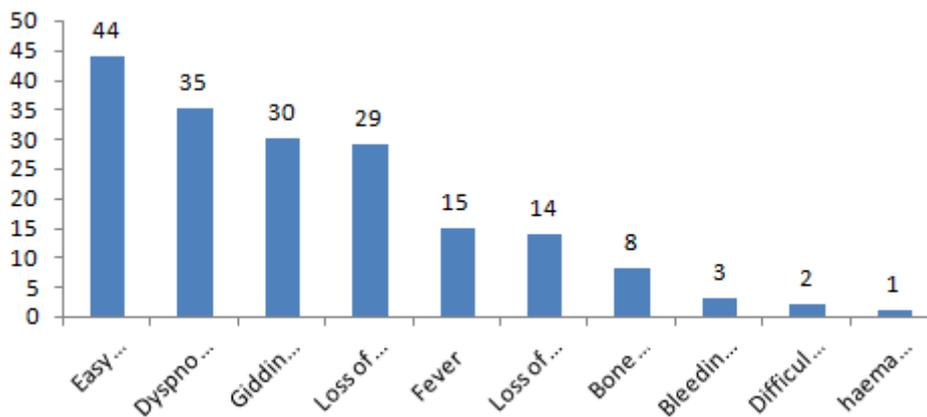


Fig. 2: Depicting modes of clinical presentation of anemia

Table 1: Showing distribution of patients according to etiology of anemia

Etiology	Number of patients (n)	Percentage (%)
Anemia of chronic inflammation	13	26
Iron deficiency anemia	12	24
Hematological malignancy	9	18
B12 deficiency	4	8
Anemia of unknown etiology	4	8
Chronic kidney disease	3	6
Aplastic anemia	2	4
Folate deficiency	1	2
Hypothyroidism	1	2
Upper GI bleed	1	2
Total	50	100

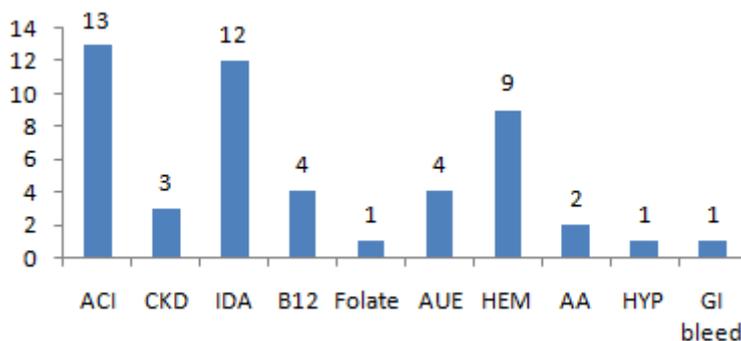


Fig. 3: Depicting distribution of patients according to etiology of anemia

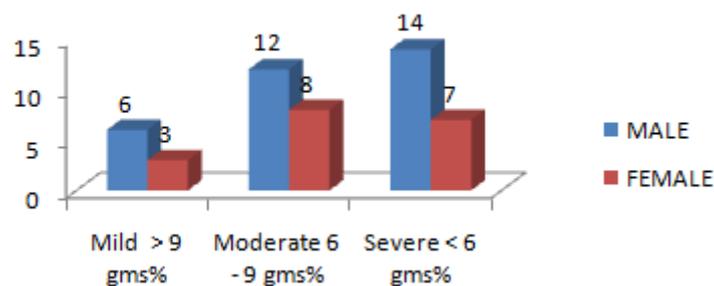


Fig. 4: Depicting distribution of hemoglobin concentration

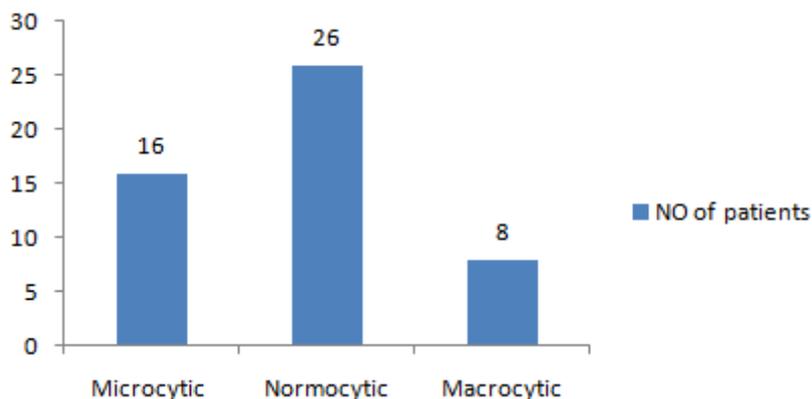


Fig. 5: Depicting distribution of anemia based on RBC morphology

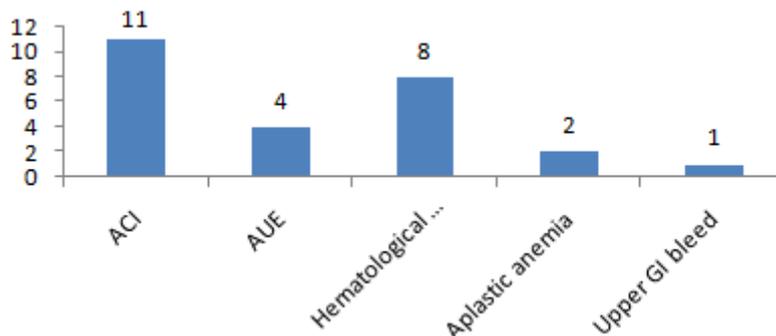


Fig. 6: Depicting etiology of normocytic anemia in elderly patients

**DISCUSSION**

In our study majority of patients were male (64%), and most of them (54%) were in the age group of 60-65 years. Easy fatigability was the most common symptom present in 88% of patients. Of the total 50 patients, 26 (52%) had normocytic anemia, while 16(32%) had microcytic anemia and 8(16%) had macrocytic anemia with a p-value of 0.001, which was statistically significant (Fig. 5). These results are comparable to the study of Amit Bhasin *et al.* [8].

Anemia of chronic Inflammation was the most common cause of anemia in the elderly patients n=16 (32%), followed by Iron Deficiency anemia n=12 (24%) and the third cause being hematological malignancies n=9 (18%). Whereas vitamin B12 and folate deficiency were responsible for 10% of anemias in the present study. The less frequent causes were aplastic anemia n=2(4%) and hypothyroidism n=1(2%). Even after

extensive investigations, the Cause of anemia could not be established in 4(8%) of patients, where it was assigned as Anemia of Unknown Etiology (AUE).

Similar results were observed in a study done by Ferrucci *et al.* [10], where anemia of chronic inflammation contributed to 33% of cases, iron deficiency in 22% of cases, B12 &folate deficiency in 8%, AUE in 23% of cases.

Anemia of Chronic Inflammation was also the most common cause of normocytic anemia. 68.75% of patients with Anemia of Chronic Inflammation had normocytosis while 31.25% had microcytosis. Similar results were observed by Weiss *et al.* [11] where 66% of patients with Anemia of Chronic Inflammation had normocytic anemia, and the remaining 34% had microcytic anemia.

Gastrointestinal bleeding was the most common cause in 9 out of 12 (75%) patients with iron deficiency anemia in the present study. Gordon *et al.* [12] in their series on endoscopic evaluation of iron deficiency anemia in elderly reported similar results.

Hematological malignancies contributed to 18% which was very high compared to other studies, probably as this study was done in a tertiary care centre, where patients with more severe disease are often referred than with mild disease. Two patients were found to have Acute Myeloid Leukemia, Two patients with Chronic Lymphoid Leukemia, one had Non Hodgkin's Lymphoma and four patients had Multiple Myeloma.

### CONCLUSION

The nonspecific symptoms of easy fatigability, weakness and the decline of hemoglobin and concomitant anemia with old age should not be presumed to be a result of "normal ageing" [9]. They should be thoroughly investigated as an underlying etiology for anemia could be established in about 90% of patients. In our study the cause of anemia could not be established in only 4(8%) out of 50 elderly patients. Normocytic anemia was the most common morphological type with anemia of chronic inflammation and hematological malignancies being major etiologies. Microcytic anemia was the second common morphological type with iron deficiency secondary to chronic gastrointestinal tract bleeding as major etiology. Macrocytic anemia was the least common type with vitamin B12 deficiency as an etiological factor.

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