

## Hematological Patterns of Anemia in Geriatric Patients

Choukimath SM<sup>1</sup>, Adithyan P<sup>2\*</sup> and Sujata S Giriyan<sup>3</sup>

<sup>1</sup>Assistant Professor, Department Of Pathology, Karnataka Institute Of Medical Sciences, Hubli

<sup>2</sup>Assistant Professor, Department Of Pathology, Akash Institute Of Medical Sciences And Research Centre, Devanahalli

<sup>3</sup>Professor & HOD, Department Of Pathology, Karnataka Institute Of Medical Sciences, Hubli

### ABSTRACT

**Background:** Anemia in the elderly is a significant health problem in India and many parts of the World, since it signifies an underlying disease and is associated with poor clinical outcomes. In elderly patients, in whom anemia has a higher prevalence; neither the hemoglobin threshold for concern nor the identity of the anemia causing disease is easily established. Hematological patterns of anemia in elderly are manifold, hence, this study was undertaken to determine them

**Methods:** The present study was conducted on a sample size of 350 patients who were 60 years and above and clinically diagnosed as anaemic. Routine haematological investigations including Peripheral blood smear examination and complete haemogram were done. Special investigations like Bone-marrow examination, Iron studies, Stool and Urine examination were done wherever possible.

**Result:** In the present study Males were more affected than females and patients in the age group of 60-69 years were affected the most. Normocytic normochromic anemia was the most common morphological type of anemia and chronic diseases were the commonest etiological factors.

**Conclusion:** Despite modern diagnostic advances, geriatric anemias still remain under-reported and inadequately investigated; necessitating evaluation of even mild anemias. Prompt diagnosis and definite categorization helps in appropriate management of anemias.

**Keywords:** Anemia, Normocytic Normochromic, Microcytic Hypochromic Anemia, Geriatric Anemia

### Introduction

Anemia is a condition in which the number of red blood cells or their oxygen carrying capacity is insufficient to meet the physiologic needs which vary by age, sex, altitude, smoking and pregnancy status.<sup>1</sup>

Anemia in the elderly is a global health problem which can negatively impact the quality of life.<sup>2</sup> Globally anemia affects 1.62 billion people, which corresponds to 24.8% of the population. The prevalence of anemia in the elderly (60+years) has been found to be 23.9% (164 million).<sup>3</sup>

Anemia in the elderly has often been considered as a normal consequence of aging and it is most often overlooked owing to the more pressing and attention demanding diseases in the elderly. This is an important shortfall because even mild anemia can compromise a patients well being and survival regardless of the underlying cause.<sup>4</sup> Failure to diagnose and evaluate anemia in elderly may lead to delayed diagnosis of potentially treatable conditions

In view of high prevalence of anemia and considerable size of geriatric population the present study was undertaken to determine the hematological patterns of anemia in geriatric patients.

### Materials and Methods

This was a prospective study conducted in KIMS hospital, Hubli for a period of 6 months. The study was conducted on geriatric patients aged 60 years and above with HB% <13gms/dl in male patients and HB % < 12gms/dl in female patients. A brief clinical history followed by physical examination was done and the findings were noted. Collection of 2ml EDTA anticoagulated blood was done. The collected blood was processed through automated hematology analyzer and various hematological parameters were obtained which include HB, HCT, RBC, WBC, Plateletcount, MCV, MCH, MCHC, RDW. Peripheral smear examination (after Leishman's stain) and reticulocyte count(after supravital stain) was done.

### Result

A total of 350 complete hemograms were of elderly patients (60 years and above) with anemia. Majority of cases, 157 (44.86%) were in the age group of 60-69 years followed by 148 cases (42.28%) in the age group of 70-79 years and 45 (12.86%) cases in the age group of 80 years and above (Table No.1). 192 (54.86%) cases were males and 158 (45.14%) cases were females (Table No.2). Male to female ratio was 1.2:1. In the present study among 157 cases who

were in the age group of 60-69 years, 90 were males and 67 females. Among the 148 cases who were in the age group of 70-79 years, 76 were males and 72 females. Among 45 cases who were in the age group of 80 years and above, 26 were males and 19 were females (Table No.3). 163 out of 350 cases had mild degree of anemia amongst whom 79 were in the age group of 60-69 years, 65 in the age group of 70-79 years and 19 cases in the age group of 80 years and above. 133 cases were found to have moderate degree of anemia, amongst whom 58 cases were in the age group of 60-69 years, 58 in the age group of 70-79 years and 17 in the age group of 80 years and above. Severe degree of anemia was found in 54 cases amongst whom 20 were in the age group of 60-69 years, 25 in the age group of 70-79

years and 9 in the age group of 80 years and above (Table No.4). The most common morphological type of anemia was Normocytic normochromic (38.86%) followed by Normocytic hypochromic (17.14%), Dimorphic (16%), Microcytic hypochromic (13.43%), Macrocytic (10.86%) and Pancytopenia (3.71%) (Table No.5) Non specific symptoms (27.71%) were most commonly associated with anemia, followed by symptoms and signs of Respiratory disorders (16.29%), Orthopaedic conditions (11.14%), Neurological disorders (8.29%), Tumours (7.71%), Diabetes and Hypertension (6.86%), Gastrointestinal disorders (6.57%), Renal and Genito urinary disorders (6.0%), Surgical conditions (4.57%), Cardiovascular disorders (2.86%), Hepatobiliary disorders (2%) (Table No.6).

**Table 1: Showing age distribution of cases in the present study.**

Age group(years)	Number	Percentage
60-69	157	44.86
70-79	148	42.28
80-89	45	12.86
Total	350	100

**Table 2: Showing Sex distribution of cases in the present study.**

Gender	Number	Percentage
Male	192	54.86
Female	158	45.14
Total	350	100

**Table 3: Showing age and sex distribution of cases in the present study.**

Age group (years)	Male	Female	Total
60-69	90	67	157
70-79	76	72	148
>80	26	19	45
Total	192	158	350

**Table 4: Showing age distribution of grading of anemias in the present study**

Age group(years)	Grade 1 (10g/dl-cut off level)	Grade 2 (7-10g/dl)	Grade 3 (<7g/dl)	Total
60-69	79	58	20	157
70-79	65	58	25	148
>80	19	17	09	45
Total	163	133	54	350

**Table 5: Showing Peripheral blood smear pattern in the present study.**

PBS findings	Number	Percentage
NCNC anemia	136	38.86
NCHC anemia	60	17.14
Dimorphic anemia	56	16
MCHC anemia	47	13.43
Macrocytic anemia	38	10.86
Pancytopenia	13	3.71
Total	350	100

**Table 6: Showing System wise symptoms and signs in the present study**

Symptoms	Number	Percentage
Nonspecific conditions	97	27.71
Respiratory disorders	57	16.29
Orthopaedic disorders	39	11.14
Neurological disorders	29	8.29
Tumours	27	7.71
DM & HTN	24	6.86
Gastro-intestinal disorders	23	6.57
Renal GU disorders	21	6.0
Surgical conditions	16	4.57
Cardio vascular disorders	10	2.86
Hepatobiliary disorders	07	2

## Discussion

In the present study majority of patients (44.86%) were in the age group of 60-69 years which is in concurrence with the study by Shrivastava et al, Bhasin et al<sup>5,6</sup>.

More males were found to anemic as compared to females in our study. A similar observation was made by Bhasin et al Guralnik et al<sup>6,7</sup>.

In the present study mild degree of anemia was most commonly seen in 163 cases. Geisel et al in their study also observed mild anemia as the most common grade of anemia<sup>8</sup>.

The most common morphological pattern of anemia observed was normocytic normochromic which corroborates with the studies done by Shrivastava et al, Mann et al, and Tilak et al<sup>5,9,10</sup>.

In the present study normocytic normochromic anemia was followed by normocytic hypochromic anemia (17.14%), dimorphic anemia (16%), microcytic hypochromic anemia (13.43%), macrocytic anemia (10.86%) and pancytopenia (3.71%). In the study done by Shrivastava et al Normocytic normochromic anemia was followed by microcytic hypochromic anemia (11.6%), normocytic hypochromic anemia (8.25%), macrocytic anemia (6.02%), dimorphic anemia (4.24%)<sup>5</sup>.

The most common cause of hospitalization in the present study was Non specific conditions which was seen in 97 (27.71%) cases followed by respiratory disorders (16.29%), orthopaedic disorders (11.14%), neurological disorders (8.29%), tumours (7.71%), DM & HTN (6.86%). Gastro intestinal disorders (6.57%), renal disorders (6.0%),

surgical conditions (4.57%), cardiovascular disorders (2.86%), hepato-biliary disorders (2.0%).

Anemia of chronic disease is the most common form of anemia in the elderly which may be the cause for highest prevalence of normocytic anemia. Associated diseases found in present study were mainly chronic diseases, for e.g. renal diseases, liver diseases, infectious diseases, diabetes, hypertension etc

## Conclusion

In spite of the recent advances in the diagnostic field, anemia in the elderly patients remains neglected and inadequately investigated, especially when mild, thereby necessitating evaluation of even mild anemias in this vulnerable population. Determining the Morphological patterns of Anemia can help in evaluating the etiology of anemia thereby facilitating prompt and accurate diagnosis to ensure appropriate patient management

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**\*Corresponding author:**

**Dr Adithyan P**, (Assistant Professor) # 1995 1st B main road ,20th cross,C Block Sahakaranagar , Bangalore-560092 India

**Email:** adithya2988@gmail.com

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