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ANEMIA IN GERIATRIC POPULATION: A STUDY AT A TERTIARY CARE HOSPITAL

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Abstract

Background: One-fourth of the global population is estimated to be anemic. In 2021, the global prevalence of anemia across all ages was 24.3%. The years 2021 – 2030 have been declared by the United Nations as the "Decade of Healthy Ageing" with a goal to improve the lives of older people. Anemia is common in the elderly and its prevalence increases with advancing age; with the highest prevalence in men 85 years and older. Anemia is associated with increased morbidity and mortality. Anemia can greatly hamper the quality of life. It increases the healthcare requirements and also expenditures. Anemia should not be accepted as an inevitable consequence of ageing. **Aim:** To study the prevalence of anemia as well as its severity and morphological types in the elderly population. **Material and Methods:** A retrospective observational study was conducted on OPD patients aged 60 years and above visiting the hematology section of the Central Clinical Laboratory at Dr VPMCH&RC, Nashik, Maharashtra from January 2023 to March 2023. **Results:** A total of 414 patients were included in the present study. Among these 414 patients, 41.78% (173/414) were anemic. Mild anemia was the most common (Degree or Severity) comprising 76.87% (133/173). Normocytic normochromic was the most common morphologic type of anemia comprising 61.84% (107/173). **Conclusion:** Assessment of morphologic type of anemia is important so that underlying cause can be determined to facilitate treatment process.

INTRODUCTION

Anemia is one of the most common haematological conditions found among the geriatric population.[1] According to WHO, anemia is defined as a haemoglobin concentration lower than 13.0 gm/dl in males and 12.0 gm/dl in non-pregnant females. According to WHO, 'Elderly' is defined as a person above the age of 60 years.[2] United Nations Population Fund's India Ageing Report 2023 says that the population above 60 years will double from 10.5% (approximately 14.9 crore) as of July 2022 to 20.8% (approximately 34.7 crore) by 2050. The onset of anemia is usually insidious. The typical symptoms of anemia such as fatigue, weakness and dyspnea are not specific only to anemia and tend to be attributed to advancing age. Finding out anemia in the elderly may lead to early diagnosis of a potentially treatable etiological condition. Haemoglobin estimation is the first and the most common investigation done on any patient who comes to a hospital. It is necessary to categorised

the anemia according to morphology to identify the underlying etiology. Even in the absence of an underlying disease, anemia has been associated with conditions such as cognitive decline, dementia, increased risk of falls, decreased functional ability, depression, longer hospital stays and early mortality.[3] Worldwide the prevalence of anemia in the elderly ranges between 8 to 44%. While in India, it ranges between 6 to 30 % in males and 10 to 20 % in females.[4]

Aim of the study

To study the prevalence, severity and morphological types of anemia in the elderly population; highlighting the problem of anemia in the geriatric age group

MATERIALS AND METHODS

The permission of the Institutional Ethical Committee is sought before the initiation of the study. A hospital-based, retrospective, observational study with a universal sampling technique was

conducted; which included all the OPD patients (n=414) in the Central Clinical Laboratory, Department of Pathology from January 2023 to March 2023 at Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, according to the inclusion and exclusion criteria.

Inclusion Criteria:
1. Patients who were elderly (more than 60 years of age) whose CBC is asked with or without other investigations.

Exclusion Criteria
1. Patients who were less than 60 years of age.
2. Patients above 60 years whose CBC were not done.

For all the selected patients, the Complete Blood Count (CBC) was performed on a fully automated Sysmex XN550 six-part cell counter. The Peripheral Blood Smear (PBS) stained by Fields stain was examined to confirm the readings of the cell counter. Findings of Peripheral Blood Smear, Red Cell Indices Mean Corpuscular Volume (MCV), Mean Corpuscular Haemoglobin (MCH), Mean Corpuscular Haemoglobin Concentration (MCHC) and Red Cell Distribution Width (RDW) were studied in every case to diagnose and categorise the morphological type as well as the severity of anemia. The parameters considered for the data analysis are – age, gender, the severity of anemia and morphological type of anaemia.

Depending on the haemoglobin concentration, the patients were divided into four different categories:
1. Mild (haemoglobin 10 to 12.9 gm/dl in males and 11.9 gm/dl in females)
2. Moderate (8.0 to 9.9 gm/dl),
3. Severe (6.5 to 7.9 gm/dl)
4. Very severe (less than 6.5 gm/dl)

Morphological classification was done based on RBC indices which were correlated with peripheral smear findings and these were categorised as
1. Normocytic normochromic anaemia (Which is defined as MCV between 80 to 100 femtoliter and MCH between 27 to 32 picograms)
2. Microcytic hypochromic (Which is defined as MCV less than 80 femtoliter and MCH below 27 picograms)
3. Macrocytic (Which is defined as MCV more than 100 femtoliter).

RESULTS

A total of 414 patients were included in the present study. Most of the patients were males [61.3% (254/414)] as compared to females [38.7%(160/414)]. Anemia was found in 41.78% (173/414) patients. Overall 36.22% (92/254) males and 50.62% (81/160) females were anaemic. Most of the patients, were in the age group 60-69 years [57.24 % (237/414)]. [Table 1]

With the advancing age, the prevalence of anemia is increasing. Age-wise observations were summarized in Table 2. Both gender and age-wise observations are summarized in Table 3. We found that with increasing age, the prevalence of anemia increases in males and decreases in females.

We found that mild anemia was the most common, comprising of 76.87% (133/173) of patients. Moderate, severe and very severe anemia were 19.65% (34/173), 01.15 % (02/173) and 02.31% (04/173) patients respectively as shown in Table 4.

Regarding the morphologic type, normocytic normochromic was the most common type with 61.84% (107/173); followed by microcytic hypochromic at 30.05% (107/173) and macrocytic anemia at z08.09 % (14/173) as shown in Table 5 and chart 1.
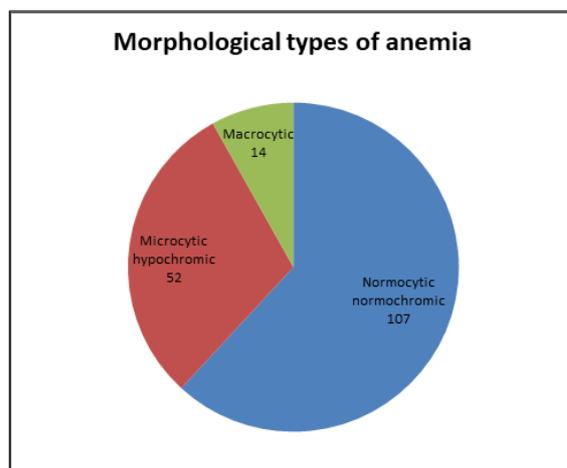

Figure 1: Morphological types of anemia

Table 1: Age-wise distribution of all the patients

Age (Years)	Male	Female	Total Patients
60 to 69	131	106	237 (57.34%)
70 to 79	95	50	145(35.02%)
80 to 89	25	04	29 (07.00%)
90 to 99	03	00	03 (00.72%)
Total Patients	254	160	414 (100%)

Table 2: Age-wise prevalence of anemia

Age (in Years)	60 to 69	70 to 79	80 to 89	90 to 99
Anemia	94 (39.66%)	63(43.44%)	14(48.27%)	02(66.66%)
Normal Hb	143(60.33%)	82(56.55%)	15(51.72%)	01(33.33%)
Total (%)	237(100%)	145(100%)	29(100%)	03(100%)

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Table 3: Age and gender-wise prevalence of anemia

Age (in Years)	Male	Female	Total
60 to 69	43(45.75%)	51(54.25%)	94(100%)
70 to 79	34(53.96%)	29(46.03%)	63(100%)
80 to 89	13(92.85%)	01 (07.14%)	14(100%)
90 to 99	02(100%)	00 (00%)	02 (100%)
Total	92	81	173

Table 4: Degree (severity) of anemia

Severity (Degree)	Haemoglobin Level	Number of Patients	Percentage
Mild	10.0 to 12.9 gm/dl (M) 10.0 to 11.9 gm/dl (F)	133	76.87 %
Moderate	8.0 to 9.9 gm/dl	34	19.65%
Severe	6.5 to 7.9 gm/dl	02	01.15 %
Very severe	Less than 6.5 gm/dl	04	02.31 %
Total		173	100 %

Table 5: Morphologic Type of anemia

Morphologic Type	Number of patients	Percentage
Normocytic normochromic	107	61.84%
Microcytic hypochromic	52	30.05%
Macrocytic	14	08.09%
Total	173	100%

DISCUSSION

Anaemia is common in the elderly and its prevalence increases with age with the highest prevalence in men 85 years and older.[5,6,7] Haemoglobin level is inversely associated with age which is more pronounced in men than in women.8 The difference in prevalence rates of anemia for men and women can be explained by the fact that levels of testosterone(stimulator of erythropoiesis) decrease with advancing age in men and levels of estrogen(inhibitor of erythropoiesis) decline as women age.[9] In our study similar findings were observed. Anemia is common in the geriatric age group and it should not be accepted as a consequence of the aging process. Anemia in the elderly is associated with increased morbidity and mortality.[10]

Many studies on the prevalence of anemia in the geriatric age group have been published.[9,11-13] They vary in study design and sample population; as well as their prevalence range. In our study, the overall prevalence of anemia is 41.78% (173/414). It is comparable with the prevalence reported by Tay MRJ et al., (57.1%) and Sahin S et al., (54.9%).[11,14] Though our findings are discordant with that of Nakashima ATA et al., (29 %), Sgnaolin V et al., (12.8%) and Bang S M et al.[12,15,16] The present study found that anemia is more prevalent as age advances which are shown in Table 2. Similar results were shown by Ferruci L et al.[17]

As shown in Table 3, it is observed that, as age advances the prevalence of anemia in males increases and it decreases in females. Regarding the severity of anemia, mild anemia is the most common followed by moderate in very severe and severe, and these findings were comparable with the results recorded by Melku M et al., and Paul SS et al.[9,18] In our study as per Table No. 4, normocytic normochromic anemia was the most common morphologic type followed by microcytic hypochromic and macrocytic. These findings were comparable with Thotakura M et al., Das I et al., Shrivastava S et al., Mann A et al.[4,5,19,20]

CONCLUSION

Geriatric anemia should not be ignored as a normal ageing process. It is important to know the morphologic type of anemia; so that we can determine the underlying cause to treat the condition early in the elderly population. Thereby we can reduce mortality and morbidity associated with anemia in the geriatric age group.

Conflict of interest

The authors declare no conflict of interest. No financial support was received for preparing this manuscript.

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