

A Hospital Based Observational Prospective Study to Determine the Prevalence of Morphological Patterns of Anemia in Geriatric Population

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Abstract

Aim: The aim of the present study was to assess the prevalence of anemia and various morphological patterns in geriatric population.

Methods: A hospital based observational prospective study was undertaken in hematology section of pathology at Government Medical College, Bettiah, Bihar, India. Both males and females, age group 60 years and above were included in the study. The study was conducted after institutional ethical committee approval. Informed consent obtained from patients who are willing to participate in the study.

Results: In the present study geriatric age group above 60 years were taken. Present study age of patients ranged from 60-90 years. Maximum number of patients was males, they constitute 270/500 (54%), whereas females constitute 230/500 (46%). The maximum number of cases was in the age group of 60-69 years i.e 260/500 (52%) which includes both male and female. All morphological types of anemia based on peripheral smear examination. Normocytic normochromic being the commonest among all morphological types of anemia which constitutes 30.2% (151/500) followed by normocytic hypochromic 22.8% (114/500), microcytic hypochromic anemia 23.4% (117/500), dimorphic anemia 12.4% (62/500), and macrocytic anemia 11.2% (56/500).

Conclusion: Diagnosis of anemia and study of various morphological patterns, helps in directing towards the further investigations required to diagnosis the underlying etiology. It ultimately helps in the treatment.

Keywords: anemia, diabetes, hypertension, geriatric patients, normochromic, haemoglobin.

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Introduction

The geriatric population in the world is on a rise. The number of elderly globally is projected to grow from about 524 million in 2010 to nearly 1500 million in 2050. [1] According to the United Nations Development Programme (UNDP) report 2011, India's elderly population will climb to 19% in 2050. [2] Anemia is a common

concern in the geriatric age group. In this population it can have significantly more severe complications than in younger adults and can greatly hamper quality of life. [3] The prevalence of anemia increases with advancing age. This ranges between 8-44% worldwide with highest prevalence in men 85 and older. [4] In

Indian population the prevalence varies between 6% and 30% among males and 10% and 20% among females. [5]

Elderly patients with anemia are heterogeneous in terms of clinical history, coexisting medical conditions, and concomitant medication use than young adults. In elderly, anemia is associated with poor performance status, increased frailty, dementia, depression, reduced mobility, increased risk of falls, and poor quality of life. [6-10] Anemia portends worse prognosis in elderly patients with cardiovascular and other chronic illnesses. Studies have reported a survival benefit with the treatment of geriatric anemia. [11,12] An intensive effort should always be made to reach an etiological diagnosis for better management of these patients.

The worldwide, number of elderly individuals is expected to reach nearly triple i.e 1800 millions in 2050 from 600 millions in 2000. In India the size of the elderly population, i.e. persons above the age of 60 years constitutes 7.4% of total population. [13] Studies states that the prevalence of anemia is increased with advanced age. Worldwide ranges between 8-44%. In India prevalence of anemia in elderly ranges between 6-30% among males and 10-20% among females. [13-15]

Failure to evaluate anemia in the elderly may lead to delayed diagnosis of potentially treatable condition. Estimation of haemoglobin (Hb%) is the 1st and most common investigation to any patient who comes to the hospital. Morphological types of anemia is necessary to identify the

underlying cause. Only a few studies have focused on evaluation of anemia based on morphological types.

The aim of the present study was to study the prevalence of anemia and various morphological patterns in geriatric population.

Materials and Methods

A hospital based observational prospective study was undertaken in hematology section of pathology at Government Medical College, Bettiah, Bihar, India for one year. Both males and females, age group 60 years and above were included in the study. The study was conducted after institutional ethical committee approval. Informed consent obtained from patients who are willing to participate in the study. According to the WHO criteria persons above 60 years are considered as elderly and hemoglobin level < 13 g/dl in males whereas <12 g/dl in females are considered as anemic. [16,17] After blood sample aspiration done in hematology analyzer at haematology lab, peripheral smear was prepared to compare RBC indices with peripheral smear examination, morphological types were classified as microcytic anemia when MCV <80 fl, Macrocytic anemia when MCV >100 fl and Normocytic when MCV between 80-100 fl. When MCV was normal RDW between 11%-15% dimorphic anemia was suspected and the same was confirmed with peripheral smear examination the morphological types of anemia.

Results

Table 1: Demographic variable in anemic patients

Age group (years)	Total	Male	Female
60-69	60 (12%)	30 (50%)	30 (50%)
70-79	180(36%)	100(55.5%)	80 (44.5%)
80-89	260 (52%)	140(53.85%)	120 (46.15%)
Total	500 (100%)	270 (54%)	230 (46%)

In the present study geriatric age group above 60 years were taken. Present study age of patients ranged from 60-90 years. Maximum number of patients was males, they constitute

270/500 (54%), whereas females constitute 230/500 (46%). The maximum number of cases was in the age group of 60-69 years i.e 260/500 (52%) which includes both male and female.

Table 2: Percentage of distribution of morphological anemia

Peripheral blood smear findings	Number (Percentage)	Male	Female
Normocytic Normochromic Anemia	151(30.2%)	83(55.0%)	68(45.0%)
Normocytic Hypochromic Anemia	114(22.8%)	72(63.1%)	42(36.9%)
Dimorphic Anemia	62(12.4%)	50(80.65%)	12(19.35%)
Microcytic Hypochromic Anemia	117(23.4%)	29(24.7%)	88(75.3%)
Macrocytic Anemia	56(11.2%)	36(64.29%)	20(35.71%)
Total	500 (100%)	270(54%)	230(46%)

All morphological types of anemia based on peripheral smear examination. Normocytic normochromic being the commonest among all morphological types of anemia which constitutes 30.2% (151/500) followed by normocytic hypochromic 22.8% (114/500), microcytic hypochromic anemia 23.4% (117/500), dimorphic anemia 12.4% (62/500), and macrocytic anemia 11.2% (56/500).

Discussion

Anemia is a global health problem in the older adult population because of the high prevalence and associated significant morbidity and mortality. [18,19] It is easy to overlook anemia in the elderly since symptoms like fatigue, weakness, or shortness of breath could also be attributed to the aging process itself and will never be accepted as an inevitable consequence of aging.

In the present study the prevalence of anemia in elderly was 52.8%. It is comparable with the prevalence reported by sahin et al. (54.9%) [20] and Tay and Ong (57.1%). [21] However our results are discordance with results reported by Nakashima et al. (29%) [22] and Sgnaolin et al. (12.8%). [23] The disparity might be due to the difference in population of area studied, where environmental and nutritional factors influence. The prevalence of anemia is more common among 80 years and above age when compared to 70-79 years and 60-69 years. The present study showed 12% among the

total geriatric population are the age group in between 60-69 years, whereas as age group between 70-79 and above 80 are 36% and 52%. The Present study showed a significant difference in the prevalence of anemia among older individuals, anemia is more prevalent as age advances. Similar results noted by Ferrucci L et al. [14] According to WHO the prevalence of anemia among male above 85 years are high.

The present study found that, the prevalence of anemia in males were 54% (270/500) and in females were 46% (230/500). Present study showed the prevalence of anemia was higher in men when compared women. Similar results were reported by different scholars. The difference in the prevalence can be explained by the fact that there is decline in hormone levels i.e estrogen in postmenopausal women and testosterone in elderly men. [24-29]

The most common morphological types of anemia in the present study found to be normocytic normochromic 151(30.2%), followed by normocytic hypochromic 114(22.8%), dimorphic anemia 62(12.4%), microcytic hypochromic 117(23.4%) and macrocytic anemia 56(11.2%). Present study showed normocytic normochromic anemia is commonest anemia among all morphological types and macrocytic anemia the least common type. Microcytic hypochromic was more common morphological type of anemias found in

women in contrast to other anemia, which are common in men. Similar results were noted by Surabh R. Strivastava et al. normocytic normochromic anemia was the most common morphological anemia followed by microcytic hypochromic anemia. [30,31]

Conclusion

Anemia should not be ignored as normal aging process. It is important to know the various morphological type of anemia. So that we can estimate the extent of problem and identify the underlying cause to treat the condition early, thereby we can reduce mortality and morbidity due to anemia.

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