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A prospective study of anemia profile in geriatric population

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Abstract

Background: Globally the number of elderly is projected to grow from about 524 million in 2010 to nearly 1500 million in 2050. The distribution of social and biological risk factors makes the epidemiology of anemia a real challenge in elderly patients.

Aims and Objective: Study of anemia profile in geriatric patients.

Materials and Methods: Two hundred geriatric patients were studied after dividing them into Group A (n=100; subjects with age >60 years and hemoglobin <10 g/dl) and Group B (n=100; subjects with age >60 years and hemoglobin greater ≥10 g/dl) at the Department of Medicine, GRMC, Gwalior from January 2016 to September 2017. Detailed history and laboratory test for hemoglobin and hematological indices including mean corpuscular hemoglobin (MCH), mean corpuscular volume (MCV), mean corpuscular hemoglobin concentration (MCHC) and reticulocyte count was done to identify type of anemia.

Results: Majority of the subjects in Group A (80%) and Group B (69%) were in age range of 60-70 years. Anemia in elderly was dependent of age (p=0.001) but independent of sex (p>0.05) and socioeconomic class (p>0.05) of subjects. Among Group A majority were taking mixed diet (n=40, p=0.021) whereas among Group B maximum were vegetarian (n=31; p>0.05). Subjects with retic count <2.5 were having more anemia mainly normocytic normochromic (p=0.038). Stool for occult blood (35%) in group A and (25%) in Group B was high in anemic patients.

Conclusion: Anemiais a serious problem in elderly population. An early detection can prevent the associated complication in elderly population.

Keywords: Geriatric population, anemia, normocytic normochromic, reticulocyte count, hemoglobin

1. Introduction

Debates still exist whether anemia is marker or mediator of disease but it is usually a signal of pathology and is associated with increased morbidity and mortality. Anemia is common in elderly age group and is overlooked as the symptoms such as fatigue, weakness, shortness of breath may be attributed to the ageing process itself but decline in the haematological parameter with age is not necessarily as a result of normal aging [1, 2]. The number of elderly globally is projected to grow from about 524 million in 2010 to nearly 1500 million in 2050 [3, 4].

Many studies indicate that as the age advances prevalence of anemia also increases and it is more common in elderly female [5]. The prevalence of anemia increases with advancing age [6]. This ranges between 8-44% worldwide with highest prevalence in men 85 years and older [5]. In Indian population the prevalence varies between 6% and 30% among males and 10% and 20% among females [7]. Despite of high prevalence of anemia in elderly only a few studies have focused on effect of anemia on the overall outcome of elderly patient.

In general, hemoglobin levels are lower in older than in younger people. The reasons for this are not completely understood. It is unclear whether hemoglobin falls in older people because this is a feature of normal ageing, or whether it is always pathological, even if underlying conditionscannot be identified. In an individual patient it may be that some decline in hemoglobin occurs as part of normal ageing, but that disease may also contribute to the development of anemia.Anemia in the elderly can generally be categorized into four major types: anemia related to nutrient deficiencies (iron, cobalamin and folic acid), anemia related to chronic inflammation, anemia due to renal insufficiency, and unexplained anemia [8].

In the Indian context, where the health services are still inadequate for a major chunk of the population, a systematic study is required to understand the pattern and prevalence of anemia in the elderly age group. This study was conducted to evaluate the prevalence of geriatric anemia, morphological pattern of geriatric anemia and to find its commonest morphological pattern amongst the geriatrics in hospitalized patients. Study of various morphological pattern of anemia helps in guiding etiology of anemia and thus directing towards the further required investigations.

Materials and Methods

A prospective hospital based study was done on 200 geriatric patients in Department of Medicine, GRMC, Gwalior from January 2016 to September 2017. Study cohort was divided into Group A (n=100; subjects with age >60 years and hemoglobin <10 g/dl) and Group B (n=100; subjects with age >60 years and hemoglobin greater ≥10 g/dl)

Patients with known history of any traumatic bleeding manifestation, history of any blood transfusion within 3 months, chronic kidney disease patients and malignancies

were excluded from the present study.
Detailed history and laboratory test for hemoglobin, peripheral smear examination of blood, hematological indices MCH, MCV, MCHC and reticulocyte count was done to identify type of anemia.

Statistical Analysis
All the data was analyzed using IBM SPSS ver. 20 software. Data is analyzed using frequency distribution and cross tabulation methods. Data is expressed and number and percentage. Chi square test was used to compare the categorical variables. P value of <0.05 is considered as significant.

Results
Most common age group in Group A (80%) and Group B (69%) was 60-70 years. Genders were equally distributed among Group A and Group B (P=1.00). The socioeconomic class among Group A and Group B, in Upper, Upper middle, Lower middle, Upper lower and Lower class, there were 0% vs 2%, 10% vs 20%, 16% vs 20%, 31% vs 21% and 43% and 37% patients respectively. Among Group A majority were taking mixed diet (p=0.012) whereas among Group B maximum were vegetarian (p=0.003).

Table 1: Comparing different parameters between groups

Parameters		Group A				Group B				P value*
		NN	MH	MaH	D	NN	MH	MaH	D	
Age (years)	60-70	46	25	8	1	39	8	8	4	0.001, NS
	71-80	11	4	1	1	16	6	1	0	
	>80	0	0	2	1	5	2	1	0	
Gender	Male	30	13	6	1	33	11	4	2	NS, NS
	Female	27	15	5	2	27	15	6	2	
SES	L	22	14	6	1	22	1	3	1	NS, NS
	LM	8	7	1	0	13	4	2	1	
	U	0	0	0	0	0	0	2	0	
	UL	20	6	4	1	12	6	2	1	
	UM	7	2	0	1	13	5	1	1	
Diet	Mixed	40	23	4	3	31	12	3	1	0.021, NS
	Vegetarian	17	6	7	0	29	14	7	3	
Rectic Count	<2.5	45	14	7	2	44	19	4	2	0.038,NS
	>2.5	12	15	4	1	16	7	6	2	
SFOB	Present	9	7	3	2	3	5	5	2	<0.001,NS
	Absent	48	22	8	1	46	21	5	2	

Data is expressed as no of patients, normocytic normochromic; NN, microcytic hypochromic; MH, macrocytic hypochromic; MaH, dimorphic; D, stool for occult blood; SFOB, socio economic status; SES, L; lower, LM; lower middle, U; upper, UL; upper lower, UM; upper middle, NS; not significant, P value <0.05 is considered as significant, * first p value in row is between Group A and second p value is between Group B.

Most of the Group A patients had hemoglobin between 7-10 (79%) whereas in Group B patients had hemoglobin between10-12 (88%).Among Group A, 68% had rectic count <2.5 and 32% had >2.5 whereas among Group B group, 69% had rectic count <2.5 and 31% had >2.5. Most of the Group A patients had MCV between 70-90 (59%) whereas in Group B most of the patients had MCV between 70-90 (51%).Most of the Group A patients had MCHC <33 (80%) whereas in Group B most of the patients had MCHC <33 (65%). Most of the Group A patients had MCH <27 (46%) whereas in Group B most of the patients had MCH <27 (46%).Among Group A and Group B stool for occult blood was present in 35% and 25% patients respectively.

Discussion
Anemia has become the global heath challenge. Large number of studies has quantified the prevalence of anemia in almost all the patients groups; however there is lack of community-based studies among elderly population in India. Studies have shown that increasing age have an effect on blood production. With aging reduction has been reported in the ratio of bone marrow to fat cells and marrow response when stimulated with erythropoietin [9, 10].

In present study, maximum subjects in Group a (80%) and Group B (69%) belong to age group of 60-70 years, may be due to presence of larger number of individuals of this age group in our country. In agreement to present study Alok *et al*. did a cross-sectional study at Surat and reported the common age to be 61-70 years in elderly patients with anemia [11]. Study from Dehradun also reported that most common age group as 65-69 years which is in agreement to the present study [12].
Studies have shown increase in anemia with age mainly after 60. This can be explained by increased incidence of chronic illness such as diabetes and hypertension and poor nutritional status in older people [13]. In present study normocytic normochromic anemia was the commonest type in elderly patients. There was a significant difference between Group A (p=0.001) with regard to anemia type but anemia distribution among Group B (p=0.776) was comparable, which means anemia can occur in geriatric population regardless of their age. Similar results were reported by Choi *et al*. [4]
In present study, anemia pattern was similar in both the genders (p>0.05), which means anemia is independent of gender difference in elderly subjects. Similar reports were revealed by Mohamed *et al*. [14] Ania *et al*. reported that

normocytic anemia was majorly seen in males (83%) and female (80%) [15]. Our study findings are similar to them.

In both the group all anemia types were equally distributed across the SES class, similar observation was made by Deb *et al*., who did not found any significant difference in anemia type among various socioeconomic classes [16].

Nutritional status is a significant predictor of hemoglobin status. From present study it is clear that in Group a diet was having significant role in the type of anemia but not in Group B. Contrary to present study, Malhotra *et al*. showed that type of diet (vegetarian/ non-vegetarian) was not associated with anemia [17].

Mann *et al*. [12] reported that mean value of MCV, MCH, MCHC and serum ferritin was less in Iron deficiency anemia whereas mean value of hemoglobin was less in megaloblastic anemia, similar findings were found in present study. In agreement to present study Mehta *et al.* also reported significantly lower value's of anemia indices in geriatric population [18].

In both the groups of present study, maximum subjects had normocytic normochromic (57 and 60) followed by microcytic hypochromic (28 and 26), macrocytic hypochromic (11 and 10) and dimorphic anemia (3 and 4). A study from Dehradun also reported that maximum numbers of elderly (50%) were having normocytic normochromic anemia followed by microcytic hypochromic (40.40%) and macrocytic anemia (10%). [12] Alwar *et al*. also found the most common type of anemia to be normocytic, followed by microcytic, macrocytic and dimorphic blood pictures [19].

Results of Bhasin *et al*. [20] are in agreement with the present study findings, they reported that stool analysis in the anemic patients revealed that 77.3% had positive stool occult blood test. The present study had few limitations of being small in sample size; a large clinical trial is needed to strengthen the results.

Conclusion

Present study has revealed that anemia in elderly is very common among study area. Anemia in elderly was dependent of age but independent of sex and socioeconomic class of subjects but nature of diet plays an important role in anemia. Subjects with rectic count <2.5 were having more anemia. Stool for occult blood was high in anemic patients.

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