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STUDY OF ANEMIA IN GERIATRIC PATIENTS ATTENDING A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Anemia is a global health problem in older adult population because of the high prevalence and associated significant morbidity and mortality. The reported prevalence of anemia in the elderly is 2.9%–51% and correlates with advanced age and multiple related conditions, including iron deficiency, inflammatory conditions, malignancy and low serum erythropoietin. The simultaneous occurrence of multiple causes of anemia is common in elderly. Elderly patients with anemia are heterogeneous in terms of clinical history, co-existing medical conditions and concomitant medication use than young adults. In elderly anemia is associated with poor performance status, increased dementia, depression, reduced mobility, increased risk of falls and poor quality of life.

Materials and methods: Geriatric patients of age group more than 60 years attending OPD of Medicine Department and Pathology were enrolled over a period of 1 year. The study was approved by CMR Institute of Medical Sciences institutional ethics committee. Total number of subjects taken for study was 90. A written informed consent from all subjects was taken after explaining the need for study. Relevant details were recorded in case record form. Patient data obtained was kept confidential, only the study parameter data which does not identify the patient was used for analysis of the study. Thorough clinical and hematological examination was carried out on patient. WHO criteria was used to define anemia.

Result: A total of 90 cases of anaemia were studied in elderly patients. Males 71.1% were dominant in numbers compared to females i.e. 28.9%. The age group of patients ranged from 60 to 91 years and above. The mean age of elderly patients was found to be 67 years, with maximum patients in 60-70 age groups i.e. 53.3%, followed by 22.2% in the age group of 71-80 years, 18.9% in 81-90 years and 5.6% in 91 and above age group. Distribution based on type of anaemia as per characteristics of peripheral smear, the maximum patients shows normocytic normochromic anemia constituted 48.9%, followed by microcytic hypochromic anemia constituted 18.9%, macrocytic anemia constituted 14.4%, dimorphic anemia constituted 12.2% and normocytic hypochromic anemia constituted 5.6%. Distribution of geriatric patients based on clinical presentation, the most common presentation was generalised weakness i.e. 37.8%, followed by breathlessness which constituted to 25.6%, giddiness which constituted to 12.2%, abdomen pain which constituted to 8.9%, loss of weight which constituted to 7.8%, loss of

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appetite which constituted to 4.4%, headache which constituted to 2.2% and diabetes which constituted to 1.1%.

Conclusion: In most of the cases, anemia in the elderly had a treatable cause. Thus, a thorough investigation including gastrointestinal endoscopy is warranted. Unexplained progressive or unresponsive anemia requires bone marrow examination.

Keywords: Anemia, Elderly, Geriatrics

INTRODUCTION

Anemia is a global health problem in older adult population because of the high prevalence and associated significant morbidity and mortality. [1] The reported prevalence of anemia in the elderly is 2.9%–51% and correlates with advanced age and multiple related conditions, including iron deficiency, inflammatory conditions, malignancy, and low serum erythropoietin. The simultaneous occurrence of multiple causes of anemia is common in elderly. [2]

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. [3] 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. An intensive effort should always be made to reach an etiological diagnosis for better management of these patients. [4]

Anemia in the elderly (defined as people aged > 65 years) is common and increasing as the population ages. In older patients, anemia of any degree contributes significantly to morbidity and mortality and has a significant effect on the quality of life. Despite its clinical importance, anemia in the elderly is under-recognized and evidence-based guidelines on its management are lacking. [5]

The WHO definition of anemia is hemoglobin (Hb) less than 13 gm% in men, Hb less than 12 gm% in non-pregnant women, and less than 11 gm% in pregnant women. Hemoglobin levels decline with age, and there has been a debate as to whether these values are applicable to older people, although there is no accepted alternative definition of anemia in this age group. [6] Most clinicians however, accept this definition and are of the opinion that the normal hemoglobin range should not be lowered for older people because of its association with morbidity, mortality and hospitalization. The challenge of defining a normal hemoglobin range lies in part in finding a cohort of ‘healthy’ elderly subjects confounded by the high prevalence of comorbidities and impairments in parallel with advancing age. [7]

In the present study, we aimed to prospectively investigate the pattern of anemia in the elderly Indian patients and the underlying etiology of anemia.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

MATERIALS AND METHODS

Geriatric patients of age group more than 60 years attending OPD of medicine department and Pathology were enrolled over a period of 1 year. The study was approved by CMR Institute of Medical Sciences institutional ethics committee. Total number of subjects taken for study was 90. A written informed consent from all subjects was taken after explaining the need for study. Relevant details were recorded in case record form. Patient data obtained was kept confidential, only the study parameter data which does not identify the patient was used for analysis of the study. Thorough clinical and hematological examination was carried out on patient. WHO criteria was used to define anemia. Hematological examination and peripheral smear was done in those found anemic.Source Documents were case record forms of OPD patients and Laboratory investigation reports. The documents were used to enter the data required as per study objectives and parameters. Data collected was tabulated and analysed accordingly. Statistical analysis was done using Graph Pad Prism Software Version 8.4.

RESULTS

A total of 90 cases of anaemia were studied in elderly patients. Males 71.1% were dominant in numbers compared to females i.e. 28.9%. The age group of patients ranged from 60 to 91 years and above. The mean age of elderly patients was found to be 67 years, with maximum patients in 60-70 age groups i.e. 53.3%, followed by 22.2% in the age group of 71-80 years, 18.9% in 81-90 years and 5.6% in 91 and above age group. [Table 1].

Table 1: Age and sex wise distribution of geriatric patients

Age in years	**No. of patients**	**Percentage**
60-70	48	53.3%
71-80	20	22.2%
81-90	17	18.9%
91 & above	5	5.6%
Total	90	100%
Gender		
Males	64	71.1%
Females	26	28.9%
Total	90	100%

Table 2: Distribution based on type of anaemia as per characteristics of peripheral smear

Type of anaemia	**No of cases**	**Percentage**
Normocytic normochromic	44	48.9%
Microcytic	17	18.9%

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

hypochromic		
Normocytic hypochromic	5	5.6%
Macrocytic	13	14.4%
Dimorphic	11	12.2%
Total	90	100%

Distribution based on type of anaemia as per characteristics of peripheral smear, the maximum patients shows normocytic normochromic anaemia constituted 48.9%, followed by microcytic hypochromic anaemia constituted 18.9%, macrocytic constituted 14.4%, dimorphic anaemia constituted 12.2% and normocytic hypochromic anaemia constituted 5.6%.[Table 2].

Table 3: Distribution of geriatric patients based on clinical presentation

Clinical Presentation	No of cases	Percentage
Generalised Weakness	34	37.8%
Breathlessness	23	25.6%
Giddiness	11	12.2%
Abdomen pain	8	8.9%
Loss of weight	7	7.8%
Loss of appetite	4	4.4%
Headache	2	2.2%
Diabetes	1	1.1%
Total	90	100%

Distribution of geriatric patients based on clinical presentation, the most common presentation was generalised weakness i.e. 37.8%, followed by breathlessness which constituted to 25.6%, giddiness which constituted to 12.2%, abdomen pain which constituted to 8.9%, loss of weight which constituted to 7.8%, loss of appetite which constituted to 4.4%, headache which constituted to 2.2% and diabetes which constituted to 1.1%. [Table 3].

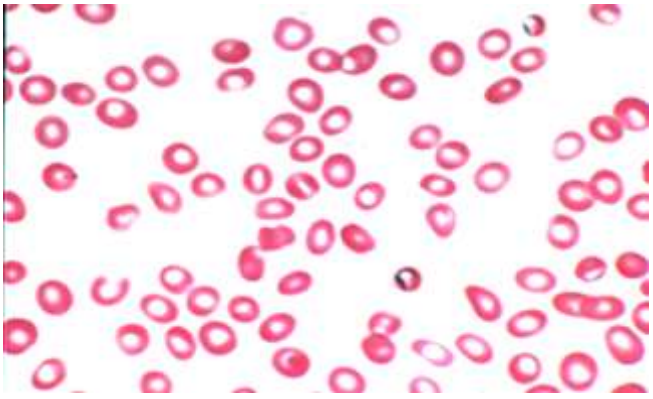

Figure 1: Hypochromic microcytic anemia

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

DISCUSSION

Using WHO criteria for anemia, 105 patients of age 60 years and above were included, and underwent complete clinical evaluation and laboratory investigations. Anemia was evaluated in a manner similar to that in younger adults. MCV was used to classify anemia into microcytic, normocytic, and macrocytic anemia. Normocytic anemia was the most common type in our study, seen in more than half of cases, similar to previous studies. [8]

Further evaluation for underlying etiology showed that IDA was the most prevalent anemia, just outnumbered the Anaemia of Chronic Disease (ACD) (24.8% vs 22.9%). [9]

Upper GI endoscopy performed in patients with IDA with no obvious cause showed that chronic upper GI blood loss, including occult blood from chronic gastritis; peptic ulcer disease, esophagitis, and carcinoma esophagus constitute 53.8% of IDA cases. Insufficient dietary intake is still a common cause of iron deficiency in developing countries like India, and was seen in 19.2% of our IDA cases. [10]

In older adults, inflammatory conditions are frequently linked with anemia. A recent study found inflammatory disorders in 70% cases of anemia in 191 hospitalized elderly patients, of which 60% had concomitant CKD. [11] Our study found ACD in 22.9% cases and CKD in another 12.4% cases of anemia. In ACD, pro‐inflammatory cytokines suppress erythropoiesis and shorten RBC survival. [12] In older age, subtle pro‐inflammatory changes may lead to clinically significant anemia. [13]

Benign hematological causes of anemia like hemolytic anemia, thalassemia, aplastic anemia, etc. are seen more frequently in younger age group. Conversely, malignant hematological disorders like MDS, myeloma, chronic lymphoproliferative disorder, chronic myeloproliferative disorder, and lymphoma are common in older age. Our sample included 15.2% of elderly patients with malignant hematological disorders and anemia, a higher prevalence than previous studies. MDS should be a diagnostic consideration when other cell lineages are involved. Multiple myeloma is also an important cause of anemia in the elderly. A high index of suspicion is required for this possibility when anemia is associated with back pain, hypercalcemia, or renal failure. [14]

In our study, 7.6% of elderly patients had more than one cause for their anemia. Multi‐factorial etiology is common among elderly, and some studies found more than one cause of anemia in more than half of the cases.[15] Alcohol consumption and medications are important contributors to anemia in this age group. In our study, 37.1% of patients were found to be chronic alcohol consumers.

The cause of anemia remained unexplained only in 8.6% of cases. Previous studies found no cause of anemia in at least one‐fourth of elderly patients. [16] Postulated underlying mechanisms

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for unexplained anemia in older adults are early myelodysplasia, malnutrition, hypogonadism, low glomerular filtration rate and relative erythropoietin deficiency. [17]

Anemia in elderly population have a great incidence and is related to increased mortality risk. The incidence of nutrition in anemia is about one third of the total. Caloric and protein restriction, iron, vitamin B_{12}, folic deficiency are the causes of nutritional anemia. Protein and energy malnutrition stimulate an increased cytokines production with induction of inflammation, immunodeficiency and anemia. [18] Anorexia and obesity can be associated with anemia due to increased cytokines and hepdicin serum level. Macrophages activity is inhibited and a decrease in red blood cells (RBC), hemoglobin (Hb) concentration due to ineffective erythropoiesis is observed. An adequate energy and protein diet is necessary to reduce inflammation and increase iron absorption. [19] A minimum of 1700 kcal/day and 1.7 gr/kg/day of protein intake are necessary to maintain anabolism in chronic patients to prevent and treat anemia. Iron supplementation by intravenous injection is safe and effective to correct severe iron deficiency. The supplementation of vitamins and oligomineral are useful to reduce oxidative stress and improve RBC longevity. Anemia in elderly could be prevented by an adequate nutrition, a simple and not expensive intervention, and associated to physical exercise reduce the incidence of mortality rate. [20]

The limitation of our study was a hospital‐based enrolment of cases. Asymptomatic patients or patients with mild anemia may not have reported to the health center. Further population‐based studies are needed to ascertain the prevalence and etiology of anemia in the older population of India and to elucidate the impact of disease on this age group.

CONCLUSION

Given the rising numbers of older adults in India, family physicians require greater attention to evaluate and manage common treatable conditions such as anemia, which may lead to increased morbidity and mortality in this particular population. This prospective study shows that in most of the cases, anemia in the elderly has a treatable cause. Thus, a thorough investigation including GI endoscopy is warranted. Unexplained progressive or unresponsive anemia requires bone marrow examination.

REFERENCES

1. Halawi R, Moukhadder H, Taher A. Anemia in the elderly: A consequence of aging? Expert Rev Hematol 2017;10:327‐35.
2. Guralnik JM, Eisenstaedt RS, Ferrucci L, Klein HG, Woodman RC. Prevalence of anemia in persons 65 years and older in the United States: Evidence for a high rate of unexplained anemia. Blood 2004;104:2263‐8.
3. BeghéC, Wilson A, Ershler WB. Prevalence and outcomes of anemia in geriatrics: A systematic review of the literature. Am J Med 2004;116(Suppl 7A):3S‐10S.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

4. Penninx BW, Guralnik JM, Onder G, Ferrucci L, Wallace RB, Pahor M. Anemia and decline in physical performance among older persons. Am J Med 2003;115:104‐10.
5. Chaves PH, Semba RD, Leng SX, Woodman RC, Ferrucci L, Guralnik JM, et al. Impact of anemia and cardiovascular disease on frailty status of community‐dwelling older women: The women's health and aging studies I and II. J Gerontol A Biol Sci Med Sci 2005;60:729‐35.
6. Atti AR, Palmer K, Volpato S, Zuliani G, Winblad B, Fratiglioni L. Anaemia increases the risk of dementia in cognitively intact elderly. Neurobiol Aging 2006;27:278‐84.
7. Onder G, Penninx BW, Cesari M, Bandinelli S, Lauretani F, Bartali B, et al. Anemia is associated with depression in older adults: Results from the InCHIANTI study. J Gerontol A Biol Sci Med Sci 2005;60:1168‐72.
8. Chaves PH, Ashar B, Guralnik JM, Fried LP. Looking at the relationship between hemoglobin concentration and prevalent mobility difficulty in older women: Should the criteria currently used to define anemia in older people be reevaluated? J Am Geriatr Soc 2002;50:1257‐64.
9. Dharmarajan TS, Norkus EP. Mild anemia and the risk of falls in older adults from nursing homes and the community. J Am Med Dir Assoc 2004;5:395‐400.
10. Chaves PH, Carlson MC, Ferrucci L, Guralnik JM, Semba R, Fried LP. Association between mild anemia and executive function impairment in community‐dwelling older women: The women's health and aging study II. J Am Geriatr Soc 2006;54:1429‐35.
11. Kubavat KB, Bharadva NA, Mehta SR. Clinicopathological correlation of severe anemia in children below 5 years of age in the region of Kutch district, Gujarat. Int. J Med Sci. Public Health. 2016; 5:2279-2282.
12. Lee R, Herbert V. Clinical Hematology: Nutritional Factors in the Production and Function of Erythrocytes, 10th edn. Philadelphia: Williams and Wilkins, 1999, 228-66.
13. Osazuwa F, Ehigie F. Prevalence of anaemia in preschool and school aged children in Nigeria. New York Sci. J. 2010; 2(20):212-213.
14. Tanne D, Molshatzki N, Merzeliak O, Tsabari R, Toshi M, Schwammenthal Y. Anaemia status, haemoglobin concentration and outcome after acute stroke: a cohort study. BMC Neurol. 2010; 10:22.
15. Johnson M. Is 65+old? Social Policy. 1976; 9:12.
16. Chernetsky A, Sofer O, Rafael C, Ben-Israel J. Prevalence and etiology of anaemia in an institutionalized geriatric population; Harefuah. 2002; 141:591-4, 667.
17. Ania BJ, Suman VJ, Fairbanks VF. Incidence of anaemia in older people: an epidemiologic study in a well-defined population. J Am Geriatr Soc. 1997; 45:825-831.
18. Sander M, Oxlund B, Jespersen A, Krasnik A, Mortensen EL, Westendorp RG, Rasmussen LJ. The challenges of human population ageing. Age Ageing. 2015;44(2):185–7.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 12, 2023

19. Mutter S, Casey AE, Zhen S, Shi Z, Mäkinen VP. Multivariable Analysis of Nutritional and Socio-Economic Profiles Shows Differences in Incident Anemia for Northern and Southern Jiangsu in China. Nutrients. 2017;9(10):1153.
20. Shikany JM, Barrett-Connor E, Ensrud KE, Cawthon PM, Lewis CE, Dam TT, Shannon J, Redden DT. Macronutrients, diet quality, and frailty in older men. J Gerontol A Biol Sci Med Sci. 2014;69(6):695–701.