



CLINICO- HEMATOLOGICAL PROFILE OF ANEMIA IN GERIATRIC PATIENTS IN RURAL HARYANA.

Pathology

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ABSTRACT

Geriatric anemia is a very common problem and if untreated in that age group, anemia can lead to impairment of functional capacities, poorer health related quality of life, increased morbidity and mortality. To study the clinical and anemia profile of geriatric patients and to classify it based on morphology and etiology was the aim of this study. **Material & Method:** The study was carried over for a period of one year in MMIMSR on 360 Geriatric patients. Iron studies Serum B12 levels and Folic acid level was estimated as per the protocol of our laboratory. **Observation & Result:** In the study, male to female ratio came out to be 1:2. The age of our cases ranged from 60- 87 years with mean age of patient being 64.2 years. Clinically majority of our patients presented with generalized weakness and fatigue (66.6%), followed by dyspnea (36.6%) and fever (33.3%). Majority of our patients presented with moderate anemia (65%) followed by severe anemia (18.33%) and mild anemia (16.67%). Morphologically normocytic anemia (75%) was most common type, followed by microcytic anemia (21.7%) and macrocytic anemia (3.3%). Etiologically, Anemia of chronic disease was the most common type. **Conclusion:** As increasing age predisposes the people towards many grave illnesses so early diagnosis of anemia may act as a signal for triaging and amelioration of forthcoming pathologies.

KEYWORDS

Anemia, CBC, Geriatric, Serum B12, Iron, Folic acid

INTRODUCTION:

Occult anemia in elderly age group is often associated with impairment of functional capacities, poorer health related quality of life, increased morbidity and mortality(1,2). Although ageing may have subtle effect on blood production with increased ratio of fat cells in marrow which leads to decrease in the volume of hematopoietic cells, Folic acid, vitamin B12 and iron levels, however anemia in geriatric age group is always associated with disease process and not because of physiological process of ageing.(3) As described by the World Health Organization, anemia is present when Hemoglobin level is less than 12gm% in females and less than 13gm% in males. (4) The prevalence of anemia ranges from 8% to 44% in different sections of geriatric population. (5) According to Third National Health and Nutritional Examination study (NHANES-III) of USA, anemia is seen in around three million peoples in age group of 65 years and above with prevalence of anemia ranges from 10.2% of females to 11% of males in this age group. (3,6) Furthermore the prevalence of anemia increases to 40-50% in hospitalized geriatric patients. (7) Etiologically, nutritional deficiency anemia and anemia of chronic disease is responsible for around two third cases of anemia in geriatric age group with anemia of unknown etiology or unexplained anemia is responsible for rest one third of the cases. (8,9) Although many studies are available regarding the prevalence of anemia in high-risk groups like children, pregnant and lactating women. Very few studies regarding hematological profile and types of anemia in geriatric age group is available from different parts of India and no reliable data on anemia in geriatric patient is available for rural Haryana. The aim of this study was to evaluate the clinical and hematological findings in geriatric patients with objectives of studying the clinical presentation of geriatric patients and to classify anemia in this age group according to morphology and etiology of erythrocytes.

MATERIALS AND METHOD:

All patients aged 60 years and above who attended outdoor patient (OPD) and admitted in various wards over a period of 1 year were enrolled in this prospective cross-sectional study. Proper consent was obtained and Self-designed structured Proforma was used as a study tool wherein patients over 60 years were kept under exclusion criteria. Proper ethical clearance was taken from the concerned committee and relevant analysis was performed on automated 6 part hematology analyzer XN-1000i. PBS was stained by Leishman stain and subsequently studied under microscope. Iron studies include Serum iron, Serum ferritin level and Total iron binding capacity (TIBC). The supporting biochemical parameters like Serum B12 levels and Folic acid level was estimated as per the protocol of our laboratory and classification was based on latest WHO guidelines. (4)

OBSERVATION AND RESULTS:

During a period of 1 year, 360 patients aged 60 years and above admitted in MMIMSR were evaluated for anemia. Out of 360 geriatric patients, 240 patients were female (67%) and 120 patients were male (33%) with male to female ratio of 1:2. Majority of our patients (75%) belonged to age group of 60-65 years, followed by 48 cases (13.33%) in the age group of more than 70 years and 42 cases (11.67%) in the age group between 66-70 years. The age range of our cases varied over 60-87 years with mean age of patients being 64.2 years. The mean age of male patients was 62.8, while the mean age of female patients was 64.8 years.

Clinically majority of our patients presented with generalised weakness and fatigue (66.6%), followed by dyspnoea (36.6%), fever (33.3%), nausea and vomiting (35%), palpitation (26.6%) and pain abdomen (26.6%). The rare clinical presentation were loss of appetite (11.6%), cough (8.3%), chest pain (6.6%), yellowness of eyes (5%) and vertigo (3.3%) (**Table-1**). However most of our patients had overlapping symptoms, wherein 96 of our cases were known hypertensive, while 90 cases were diabetic, which were on medication and 24 had Tuberculosis. Majority of our patients (65%) presented with moderate anemia followed by (18.33%) severe anemia and (16.67%) with mild anemia respectively.

Morphologically, most of our cases were diagnosed as (75%) normocytic anemia followed by (21.7%) microcytic anemia and (3.3%) macrocytic anemia. The peripheral blood smears of microcytic anemia revealed presence of hypochromic RBCs along with microcytes and presence of pencil cells in some cases. The blood smear of macrocytic anemia showed presence of macrocytes, macro-ovalocytes and hypersegmented neutrophils. Gender wise analysis showed that out of 270 cases of normocytic anemia, 150 patients were female while 120 patients were male. Out of 78 cases of microcytic anemia, 72 patients were females and only 6 were male, whereas all 12 cases of macrocytic anemia were seen in females.

Etiologically iron deficiency was seen in all the 78 cases of microcytic anemia with serum ferritin level of less than 15ng/ml. Anemia of chronic disease (ACD) came out to be the cause of all 270 cases of normocytic anemia with serum ferritin level of more than 100ng/ml in all the cases. Out of 270 cases, 90 cases had diabetes, deranged renal function test with increased serum and creatinine level was noted in 84 patients, while 24 patients had tuberculosis. In rest 72 cases of normocytic anemia no underlying cause could be documented. All 12 cases of macrocytic anemia turned out to be due to vitamin B₁₂ deficiency.

Table-1: Clinical presentation of patients with anemia

Symptoms	No. of patients (%)
Generalised Weakness and Fatigue	240 (66.6%)
Dyspnoea	132 (36.6%)
Nausea & vomiting	126 (35%)
Fever	120 (33.3%)
Palpitations	96 (26.6%)
Pain abdomen	96 (26.6%)
Polyuria	60 (16.6%)
Body ache	54 (15%)
Constipation	48 (13.3%)
Diarrhoea	42 (11.6%)
Loss of appetite	42 (11.6%)
Cough	30 (8.3%)
Chest pain	24 (6.6%)
Yellowness of eyes	18 (5%)
Giddiness	12 (3.3%)

DISCUSSION:

As per 2011 population census of India, there are nearly 104 million elderly persons aged 60 years or above in our country, which constitute 8.6% of total population of India. The population of elderly males are 8.2% of total population (51 million), while the population of elderly females are 9% of total population (53 million), which is slightly more than the elderly male population. (10) In Haryana the geriatric population is about 6.8% of total population of Haryana. (10) Both communicable and non-communicable disease are common in geriatric population. Anemia in geriatric population is a very common problem and it is associated with more severe complication in these patients when compared to younger adults. If untreated anemia in elderly age group is associated with impairment of functional capacities, poorer health related quality of life, increased morbidity and mortality. (1,2)

In this study out of 360 cases, most were females (66.7%) with male to female ratio of 1:2. Our findings are in contrast to majority of studies conducted from various regions of India. In study done by Prakash et al, the male patients were 64%, while 52% males were there in the study of Bhasin et al. (1,6) Tilak et al reported male predominance with M:F ratio of 2.1:1, while Shrivastava et al found 58.7% males in their

study (11,9). However Agarwalla et al in their study reported female predominance (57.9%). (12) Majority of our patients fall in the age group of 60-65 years (75%) with mean age of 64.2 years. Our findings were similar to those reported by Prakash et al (54%) and Tilak et al (70.5%). (1,11) Bhasin et al and Shrivastava et al found majority of their patients in the age group 60-69 years. (6,9) Clinically most of our patients presented with symptoms of generalised weakness and fatigue (66.6%), followed by dyspnoea, nausea and vomiting, fever and palpitation, which is in concordance with the study of Prakash et al and Bhasin et al, who also reported fatigue as the presenting symptoms in their patients. (1,6)

In our study majority of the patients presented with moderate anemia (65%) followed by severe anemia (18.33%) and mild anemia (16.67%). Our study is in concordance with the study conducted by Raina et al who reported moderate anemia in 72.6% of their cases. (3) While Prakash et al and Tilak et al reported severe anemia in majority of their patients. (1,11) Morphological classification of anemia revealed that majority of our patients had normocytic anemia (75%) followed by microcytic anemia (21.7%) and macrocytic anemia (3.3%) which correlated with studies done by Prakash et al, Bhasin et al, Tilak et al and Shrivastava et al. (1,6,11,9) Macrocytic anemia was the least common type of anemia morphologically in our study, in concordance with the study of Prakash et al, Bhasin et al and Shrivastava et al, however our study is in discordance with the study of Tilak et al who reported microcytic anemia as the least common type of anemia morphologically. (1,6,9,11) (Table-2)

Etiologically anemia of chronic disease (ACD) was the most common cause of anemia in our study seen in 75% of cases. Prakash et al, Bhasin et al, Tilak et al and Shrivastava et al also reported ACD as most common cause of anemia in their study. (1,6,11,9) However Raina et al reported iron deficiency anemia (IDA) as the most common cause of anemia in their study. (3) In our study IDA was seen in 21.7% of cases. Prakash et al reported IDA in 24% of their cases, while Raina et al reported IDA in 21% of their cases which is in concordance with our study, while Tilak et al reported IDA in only 12.3% of their cases which is much lesser than our finding. (1,3,11) Vitamin B₁₂ deficiency was seen in only 12 of our cases (3.3%). Bhasin et al also reported Vitamin B₁₂ deficiency in only 3% of their cases. (6)

Table-2: Comparative study from different region of India

Authors	Place	No. of cases	Male	Female	Grading of anemia			Morphological classification of anemia		
					mild	Moderate	severe	Micro cytic	Normo Cytic	Macro Cytic
Bhasin et al (2011) ⁶	Bangalore, South India	100	52%	48%	Not mentioned			30%	62%	6%
Tilak et al (2013) ¹¹	Varanasi, North India	139	67.6%	32.3%	9.4%	25.9%	64.7%	10.8%	52.5%	14.4%
Shrivastava et al (2013) ⁹	Bijapur, South India	654	59.9%	40.1%	Not mentioned			11.6%	78.05%	6.02%
Raina et al (2014) ³	Jammu, North India	168	54.8%	45.2%	6%	72.6%	21.4%	21.4%	57.2%	21.4%
Prakash et al (2015) ¹	Bangalore, South India	50	64%	36%	18%	40%	42%	32%	52%	16%
Singh et al (2016) ¹³	Bhopal, Central India	200	62%	38%	67.39%	15.22%	17.39%	31.88%	55.07%	4.35%
Agarwalla et al (2016) ¹²	Assam, North-East India	330	42.1%	57.9%	61.3%	23.27%	15.33%	Not mentioned		
Current study	Haryana	360	33%	67%	16.7	65%	18.3%	21.7%	75%	3.3%

CONCLUSION:

Anemia in geriatric population is a quite common problem. When compared to young adults, anemia in elderly is associated with more severe complication and if anemia in these patients is not treated on time it will lead to poorer health related quality of life, impairment of functional capacities, increased morbidity and mortality. (14) Keeping in mind the progressively increasing number of geriatric population, an extensive evaluation of anemia in these population is essential so as to make an early diagnosis of potentially treatable cause of anemia, so that geriatric population remain considered as a blessing in our society and they should not be treated as burden by the society. (15) As per this study, ACD was the most common cause of normocytic anemia in these patients, thus prevention as well as early diagnosis of these chronic disease helps us in eliminating increased incidence of anemia in geriatric population.

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