ORIGINAL ARTICLE

A Clinico-Pathological Study of Anemias in Geriatric Age Group

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KEY WORDS : Normocytic Normochromic Anemia; Anemia of chronic disease, Elderly

ABSTRACT

INTRODUCTION : Anemia in the elderly is a major health problem in India and many parts of the world, since it signifies an underlying disease and is associated with poor clinical outcome like increased morbidity and poor health related quality of life. Since symptoms like fatigue or shortness of breath associated with anemia may be attributed to aging process, anemia can be easily overlooked in the elderly.

AIMS AND OBJECTIVES: Clinico-hematological patterns and morphological types of anemia in elderly are manifold, hence, this study was undertaken to determine them and to know associated disorders

MATERIALS AND METHODOLOGY : The present study was conducted on a sample size of 200 patients (A one year study) who were60 years and above and clinically diagnosed as anemic. Routine haematological investigations including Peripheral Blood smear examination and Completehemogram were done. Special investigations like Bone-marrow examination, Iron studies etc. were done whenever required.

RESULTS : Males were more affected than females and patients in the age group of 60-69 years were affected the most. The most common presenting symptom was generalized weakness. Normocytic Norm chromic anemia was the most common morphological type and chronic diseases were the commonest etiological factors.

CONCLUSION : Despite modern diagnostic advances, geriatric anemias still remain under-reported and inadequately investigated, necessitating evaluation of even mild anemias. Prompt diagnosis and definite categorization helps in appropriate management of anemias.

INTRODUCTION

Anemia in the elderly is an extremely common problem that is associated with increased morbidity and poor health related quality of life.[1] It is easy to overlook anemia in the elderly since symptoms like fatigue, weakness or shortness of breath may be attributed to aging process itself and should never be accepted as an inevitable consequence of aging. A progressive statistical increase in the number of elderly persons has been observed as a universal phenomenon.[2] Thus, anemia in the elderly patients is an emerging global health problem for the 21st Century which negatively impacts the quality of life.[2] Aging by itself is unlikely to cause anemia. Hemoglobin levels in the healthy older individuals do not change significantly from 60 to 98 years of age. Changes that occur commonly during aging, increase the risk of anemia, thus explaining the association of anemia with old age. These include reduced ability to absorb essential nutrients, decreased hematopoietic reserve and reduced sensitivity to erythropoietin.[3]

OBJECTIVES

- To study the clinico-hematological patterns of anemia in the elderly patients 60 years and above.
- To detect the morphological types of anemia prevalent amongst them.
- To know common etiology for anemia.
- To know various associated disorders.

MATERIALS AND METHOD

The present study is a descriptional cross sectional study which was conducted in the Department of Pathology,P.D.U.Government Medical College,Rajkot over period of one year i.e. 1st August 2016 to 31st September 2017. All the indoor patients who were60 years and above and clinically diagnosed as anaemic were included.Routine haematological investigations. Peripheral Blood smear examination using Field stain and Leishman stain,Completehemogram.Special investigations like Iron studies, Reticulocyte count, Perl's

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Stain and bone-marrow examination etc. were done whenever required.

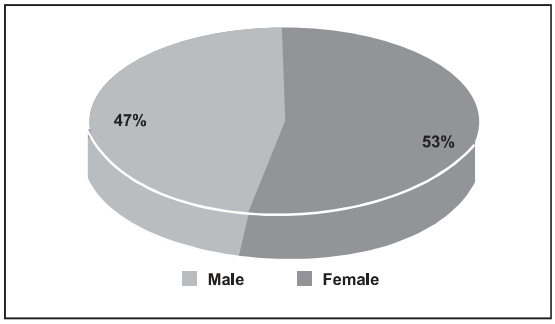
OBSERVATIONS AND ANALYSIS

Table 1 : Age wise distribution of Cases

Age group (years)	Total Number (n=200)	Percentage (100%)
60-65	120	60 %
66-70	34	17 %
71-75	20	10 %
76-80	13	6.5 %
81-85	9	4.5 %
85-90	4	2 %
Total	200	100 %

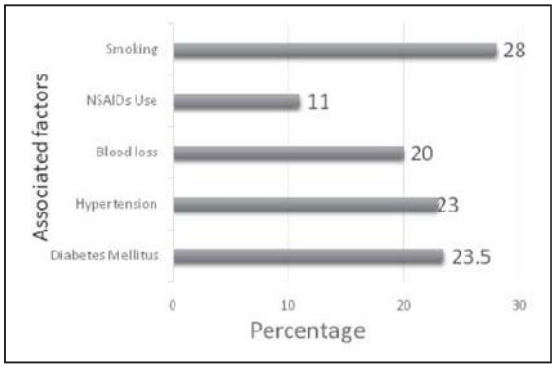
The above table indicates that, maximum number of subjects 154 were in the age group of 60-70years, 33 subjects in the age group of 71-70 years and 13 were subjects in the age group of 80 years and above.

Figure 1 : Pie diagram representing Gender wise distribution of Cases



The above figure show that, 53% subjects were males and 47 % werefemales in the present study.

Figure 2: Correlation with Associated Factors



In present study 28 % patient were smoker, 23% were with hypertension, 23.5 % were having Diabetes mellitus, 20 % with blood loss and 11 % were using NSAIDS

Table 2 : Relation with Symptoms and Sign

As factor	Total number n=200	Percentage (100%)
Respiratory	36	18 %
Gestrointestinal	30	15 %
Carcinomas	27	13.5 %
Nutritional disorders	26	13 %
Liver	14	7 %
Renal	13	6.5 %
Non specific	54	27 %
Total	200	100 %

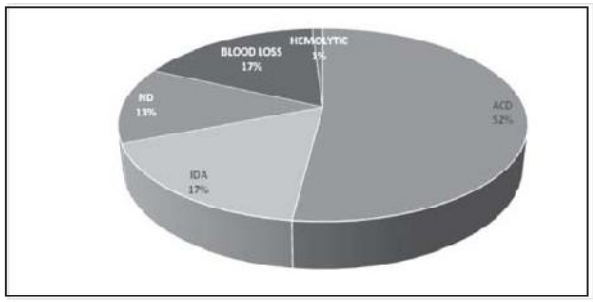
In this study, non-specific symptoms were most commonly associated with anemia, followed by symptoms and signs of Respiratory disease, gastro-intestinal diseases, carcinoma, nutritional disorders, liver and renal diseases.

Table 3 : Peripheral Blood Smear Patterns

Peripheral Blood Smear Findings	Total Numbern=200	Percentage 100%
Normocytic Normo-chroimc Anemia	**90**	**45 %**
Hypochroic Microcytic Anemia	60	30 %
Dimorphic Anemia	32	16 %
Normocytic		
Hypochromimc Anemia	10	5 %
Macrocytic Anemia	8	4 %
Total	200	100 %

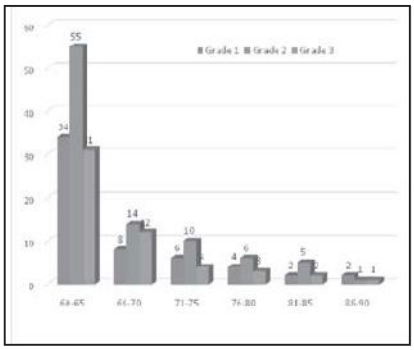
In the present study, we observed that, the most common morphological type of anemia was Normocytic normochromic (45%) followed by Hypochromic microcytic (30%), Dimorphic (16%), Normocytic hypochromic anemia (5%) and Macrocytic (4%) which was the least common.

Figure 3: Pie diagram representing causes of Anemia



We observed in the present study that, anemia due to chronic disease (52.%) was the most common type followed by Iron deficiency anemia (17%), anemia due to other nutritional deficiencies (13%), anemia due to blood loss and the least common was anemia due to hemolysis.(1%)

Figure 4: Age group wise Grading of Anemias



Above graph is showing that out of 200 patients 91 were having Grade 2

(moderate Anemia).

DISCUSSION

Table 4 : Comparative Study of Gender wise distribution of Geriatric Anemias

Gender	Present study (Rajkot) [2017] n=200	S.amarneel et al (Bhavnagar Gujarat) [2015] n=42	Wasim Khatib et al (karad, Maharashtra [2016] n=256	Ramya et al, (Puduchhery) [2016] n=675	Joosten et al (Belgium) [1992] n=178	Mathew Rongjie Tay et al. (Singapore) [2011] n=424
Male	53 %	28.6 %	**53.9 %**	**51 %**	38.8 %	48.6 %
Female	47 %	**71.4 %**	46 %	49 %	**61.2 %**	**51.4 %**

In the present study, more males were found to be anemic as compared to females. A similar gender wise distribution was noted in the study by Wasimkhatib et al [5], Ramya et al[6]. Study conducted by Bird et al in which 51 % were male 41 % females. Our result is differs from study done by S.Amarneel et al [4], Joosten et al [7], Mathew RongJie Tay et al [8] in which Females were more anemic.

Table 5: Comparative Study of Maximally Affected Age Group

Age group (Years	Present study (Rajkot, Gujarat) 2017 n=200	S.Amarneelet al. (Bhavnagar, Gujarat) 2015 n=42	Nisha TR et al (Kozhikode, Kerala) [2017] n=826	KiranAithal et al (Dharwad Karnataka) [2017] n=100	Tabea Geisel et al. (Germany) [2017] n=388
50-59	-	-	18.3 %	-	-
60-70	77 %	61.25 %	44 %	70 %	13.9 %
71-80	17 %	27.5 %	26.8 %	23 %	40.2 %
81-90	6 %	11.25 %	10.8 %	7 %	46 %

In the present study, patients in the age group of 60-70 years were maximally affected which is in concurrence with the study by S. Amarneel et al.

Nisha TR et al [9], and Kiranaithal et al [10] whereas, in a study done by Tabea Geisel et al [11], patients in the age group of 80-90 years were maximally affect.

Table 6 : Comparative Study of contributory causes resulting in Anemia

Cause of Anemia	Present study (Rajkot, Gujarat) [2017] n=200	Nisha TR et al (Kozhikode Kerala) [2017] n=500	Guyatt et al. (Ontario, Canada) [1990] n=259	Joostenet al (Belgium) [1992] n=178	Mathew RongjieTay et al. (Singapore) [2011] n=424
Iron deficiency Anemia	17 %	12.2 %	36.3 %	15 %	13 %
Anemia of Chronic disease	52 %	48.9%	43.6 %	41.5 %	29.3 %
Nutritional anemia	13 %	6.9 %	8.10 %	5.5 %	13 %
Blood loss	17 %	8.5 %	-	7.0 %	-
Hematological malignancy	1 %	18.5 %	2.70 %	11 %	0. 7 %
Others	1 %	5 %	9.3 %	20 %	44 %

In the present study, most common underlying cause of anemia is anemia of chronic disease, This finding is in concurrence with the study by Guyatt et al[12], Nisha TR et al and Joosten et al in which, chronic disease was maximally responsible for anemia followed by iron deficiency anemia.. In hematological malignancy Chronic myeloid leukemia was present in 4(0.8 %) subjects in present study, correlates with KiranAithal et al in which 1% was noted. Chronic leukemia and lympho-proliferative disorder was noted in 0.4 % which is differs from the study conducted by Nish TR et al having 9.7 % and Vijay Tailak et al 70having 2.2 % of Chronic leukemia and lympho-proliferative disorder. In present study Myelodysplastic syndrome is present in 2 (0.4%) subjects concurrent with study done by Vijay Tailak et al[13] having 1.4% of subjects with Myelodysplastic syndrome.

Table 7 : Comparative Study of Grading of Anemia

Grade of Anemia	Present study (Rajkot, Gujarat) [2017] n=200	Nisha TR et al (Kozhikode, Kerala) [2017] n=826	Suma J.K. et al (Mysore) [2013] n=114	Ramya et al, (Puducherry) [2016] n=675	Joosten et al (Belgium) [1992] n=178
Mild (10-12gm/dl)	28 %	68.8 %	19.29 %	80.9 %	29.2 %
Moderate(7-10 gm/dl)	46 %	26.3 %	16.7 %	16.7 %	57.9 %
Severe (<7 gm/dl)	26 %	4.9 %	2.4 %	2.4 %	12.9 %

In the present study, highest number of the subjects are with moderate degree (Grade II) of anemia. This finding is in concurrence with the study by Suma J.K. et al andJoosten et al.

Our result differs from the study conducted by Nish TR et al, Ramya et al, in which majority of elderly were having mild anemia(Grade I).

Table 8: Comparative Study of Associated Co-morbidities

Associated Comorbidities	Present study (Rajkot Gujarat) [2017] n=130	Suma J.K. et al (Maysore) [2013] n=33	KiranAithal et al (Dharwad Karnataka) [2017] n =100	Mathew RongjieTay et al. (Singapore) [2011] n=23	Tabea Geisel et al (Germany) [2017] n=83
GI Disorder	23 %	18.2 %	-	8.69 %	15.66
Liver	11 %	6.0 %	20 %	21.73 %	-
Renal	10 %	12 %	50 %	-	56.6 %
Respiratory	28 %	36.4 %	17.5 %	34. 8 %	-
Carcinoma	20 %	15.2 %	-	34.8 %	12.04
Arthritis	8 %	12.1 %	12.5	-	15.7

In present study Respiratory Disease is associated in most of the subjects (28.13 %)which correlates with study conducted by Suma J.K. et al(36.4%) and Mathew RongjieTay (34.8 %),next common condition associated was Gestro intestinal disorder .In hematological malignancy Chronic myeloid leukemia was present in 4(0.8 %) subjects in present study, correlates with KiranAithal et al 68 in which 1% was noted. Chronic leukemia and lympho-proliferative disorder was noted in0.4 % which is differs from the study conducted by Nish TR et al having9.7 % and Vijay Tailak et al 70 having 2.2 % of Chronic leukemia and lympho-proliferative disorder. studyMyelodysplastic syndrome is present in 2(0.4%) subjects concurrent with study done by Vijay Tailak et al et al having 1.4% of subjects with Myelodysplastic syndrome

CONCLUSION

Despite the modern diagnostic advances, geriatric anemia still remain under-reported and inadequately investigated, especially when mild, thereby necessitating evaluation of even mild anemias in this vulnerable population. Non specific symptoms like fatigue and weakness should not be ignored attributing it to normal aging process as it can be important signal to presence of anemia. Improved definitions of anemia and more detailed investigations like bone marrow aspiration and biopsy also help to define the subtypes of anemia, thereby facilitating prompt and accurate diagnosis to ensure appropriate patient management.

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