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MORPHOLOGIC AND CYTOMETRIC EVALUATION OF ANEMIA IN GERIATRIC PATIENTS

Pathology

Shruti S. Desale Senior Resident Dept of Pathology, MIMER Medical College, Talegaon Dabhade

Smita P.Bhide* Professor, Dept of Pathology, MIMER Medical College, Talegaon Dabhade *Corresponding Author

Sneha R. Joshi Professor & Head, Dept of Pathology, MIMER Medical College, Talegaon Dabhade

ABSTRACT

BACKGROUND: The UN agreed cut off to refer to older patients (i.e. geriatric age group) is 60+ years. Due to the rising tendency of the aging population in a modern society, the prevalence of anemia is also expected to rise in the future. Geriatric anemia is a unique anemia for several reasons. Its diagnosis poses a challenge. This is because there are several features of anemia which make it easy to overlook.

OBJECTIVE: To study types of anemia depending upon red cell morphology and red cell indices in geriatric patients.

MATERIALS AND METHODS: The present study was carried in department of pathology of the rural tertiary care hospital. All the geriatric patients coming to out patient as well as in patient department of the hospital with anemia satisfying the inclusion and exclusion criteria were included in the study. This study was conducted from October 2015 to August 2017.

RESULTS : Out of 690 total geriatric patients, 414 anemic patients fulfilling inclusion criteria were included in the study. Out of total 414 patients, 220 (67.4 %) were male and 194 (73.7%) were female patients. Majority of the patients were in 60-65 year age group, in both sexes. In present study, normocytic normochromic was the most common morphological pattern of anemia found on PBS and anemia of chronic disease was the most common cause of geriatric anemia, followed by nutritional deficiency.

CONCLUSION : Despite modern diagnostic methods, geriatric anemia still remains underreported and inadequately investigated. There is clearly a need for greater awareness of anemia in the elderly and of its significance in terms of poorer outcomes, prolonged hospital stay and increased mortality.

The present study underlines the importance of routine screening and individual assessment of the etiological factors of anemia in elderly allowing the timely initiation of optimal and appropriate therapy.

KEYWORDS

Anaemia, Geriatric, Morphological

INTRODUCTION

The UN agreed cut off to refer to older patients (i.e. geriatric age group) is 60+ years.[1] Due to the rising tendency of the aging population in a modern society, the prevalence of anemia is also expected to rise in the future. Anemia represents a sign of serious disease. Thus, if not treated properly, anemia can cause serious complications, especially among older population.[2] Geriatric anemia is a unique anemia for several reasons. Its diagnosis poses a challenge. This is because there are several features of anemia which make it easy to overlook.[3]

The onset of symptoms and signs is usually insidious and many elderly patients adjust their activities as their bodies make physiologic adaptations for the condition. Typical features of anemia are not specific and in elderly patients tend to be attributed to advancing age.[3] Anemia significantly increases the mortality and morbidity in the elderly. Thus, anemia needs thorough study of its pattern and profiles for proper evaluation and management.[4]

The present study is an attempt to study the pattern of anemia encountered in elderly and their association with clinical profile and possible etiological processes. Also it is undertaken to estimate the occurrence of anemia among elderly and to classify the anemia based on red cell morphology and indices.

MATERIALS AND METHODS

The present study was carried in department of pathology of the rural tertiary care hospital. All the geriatric patients coming to outpatient as well as in patient department of the hospital with anemia satisfying the inclusion and exclusion criteria were included in the study. This study was conducted from October 2015 to August 2017.

1) INCLUSION CRITERIA:

- Male patients aged 60 years and above with Hb % < 13 gm/dL.
- Female patients aged 60 years and above with Hb% < 12 gm/dL.

2) EXCLUSION CRITERIA:

- Patients below 60 years of age.
- Male patients aged 60 years and above with Hb% >13gm/dl.
- Female patients aged 60 years and above with Hb% >12gm/dl.

A detailed clinical history was taken and a through physical examination was carried out in each patient.The following investigations were done.

A) Hematological Investigations : Venous blood was collected in EDTA bulb and all routine hematological investigations were carried out. The parameters like Hb, HCT, RBC count, RBC indices (MCV, MCH, MCHC) , RDW, TLC & Platelet count were obtained from automated hematology analyzer. We have used 3 part Automated SYSMEX XP-100 blood cell counter & 5 part Automated XS 800i blood cell counter.

PBS Findings were broadly classified into Microcytic hypochromic, Macrocytic, Normocytic normochromic & Dimorphic. Bone marrow aspiration study were done wherever necessary.

B) Non Hematological Investigations: Complete physical and chemical Urine examination were done for every patient. Examination of stool was done in patients wherever indicated. C) Special investigations: Serum Vit. B12/ Folic acid,,Liver function test ,Renal function test,Thyroid profile,Radiological studies & Endoscopic examination were done wherever indicated.

RESULTS

The present study was carried out in a rural tertiary care hospital over a period of 1year 11 months. Out of 690 total geriatric patients, 414 anemic patients fulfilling inclusion criteria were included in the study. Out of total 414 patients, 220 (67.4 %) were male and 194 (73.7%) were female patients.

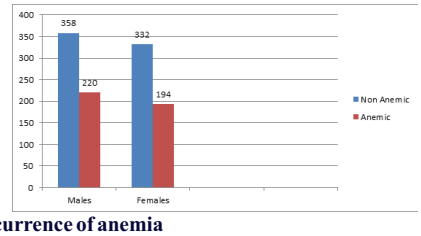

Fig 1: Occurrence of anemia

Out of total 358 male patients, 220 (61.45 %) were anemic. Out of total 332 female patients 194 (58.43 %) were having anemia.(Fig 1)

In the present study there were 220 (53.14 %) male patients and 194 (46.86%) were females.

Age range in present study was 60-92 years.Maximum patients belonged to age group of 60-65 years.(Table 1)

Table 1: Distribution of patients according to age

Age	Number	Percentage %
60-65	210	50.72 %
66-70	86	20.77 %
71-75	56	13.53 %
76-80	31	7.49 %
81-85	18	4.35 %
>85	13	3.14%
Total	414	100%

Table 2: Grading of anemia amongst study subjects

Grade	Number	Percentage
Mild	169	40.82 %
Moderate	195	47.10 %
Severe	50	12.08 %
Total	414	100%

The above table shows that moderate grade anemia was seen in maximum i.e. 47.1 % of patients, followed by mild (40.82%) and severe grade of anemia (12.08%). (Table 2)

Generalized weakness was the commonest presenting symptom (70%) in the study subjects, followed by fatigue (69.56%), breathlessness(41.78%) and palpitations(34.29%). Most common clinical sign in the present study was Pallor (90.01 %) followed by edema (35.99 %) and tachycardia (30.40 %).

In present study, normocytic normochromic (60%) was the most common morphological pattern of anemia found on PBS followed by Microcytic hypochromic (21%), Macrocytic (!)%) and Dimorphic pattern (9%). (Fig 2)

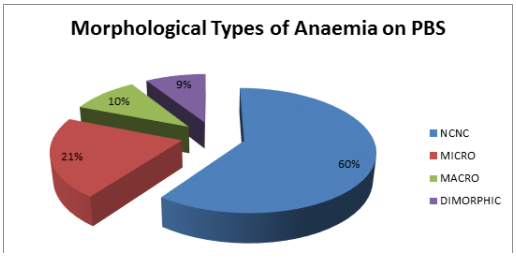

Fig 2: Morphological types of anaemia on PBS

Table 3: Distribution of underlying major etiology of anemia in present study

Cause of anemia	No. of cases	Percentage (%)
Anemia of chronic disease (ACD)	223	53.86%
Nutritional deficiency anemia	146	35.26 %
Bone marrow disorders	21	5.08%
Others	24	5.80 %
Total	414	100%

In the present study, anemia of chronic disease (53.86%) was the most common cause of geriatric anemia, followed by nutritional deficiency (35.26%).(Table3)

Out of total 223 cases of ACD, normocytic normochromic pattern was observed on PBS of 198 patients (88.78%) and in 25 (11.22%) cases PBS showed microcytic hypochromic pattern. In nutritional deficiency anemia, out of 146 patients, iron deficiency anemia was seen in 67 (45.90%) cases. Megaloblastic anemia was present in 4329.45%) cases, while 36 (24.65%) cases showed combined deficiency.

Table 4: Distribution of hematological and non-hematological malignancies

Type of malignancy	Number	Percentage
Hematological	17	26.15 %
Non-hematological	48	73.85 %
Total	65	100%

Out of total 414 patients, 65 cases were of malignancies. Out of these 65, 17 cases were of hematological malignancies and 48 were of Non-hematological malignancies.(Table 4)

In the present study, most common non-hematological malignancies found were related to female genital tract (33.34%). FGT was followed by carcinomas of oral cavity and GIT (29.17%)

CML was the commonest hematological malignancy found (35.29%), followed by CLL (29.41%) in the present study.

Bone marrow study was done in 66 (15.94%) cases. In nutritional deficiency anemia, bone marrow studies were done to confirm the diagnosis. In Chonic Lymphoid Leukemia, Chronic Myeloid eukemia, Multiple Myeloma, Aplasic Anaemia and Myelodysplastic Syndrome characteristic bone marrow findings of the disease were present.

DISCUSSION

In elderly patients, anemia is highly prevalent. Earlier, it was considered as a consequence of physiological process of aging. Currently; anemia is considered as a pathological condition. However, many a time's exact etiology of anemia is difficult to find out.

Our study was aimed at analysis of the pattern of anemia encountered in elderly, their association with clinical profile and possible etiological processes. Also it was undertaken to estimate the occurrence of anemia among elderly and to classify the anemia based on red cell morphology and indices.

In present study,occurrence of anemia in elderly patients attending our tertiary care hospital was 60 %.Similar findings were observed in the studies done by Bhasin et al[5](60%) , Shrivastav S et al[6] (68.5%) & Bisht N et al [7](61.85%).

In present study, maximum numbers of patients (50.72 %) were found in the age group of 60-65 years. The finding was similar to the studies done by Tilak et al[8], Prakash KG et al[9]& Aithal K et al[10].

In our study, slight male predominance was noted which was consistant with the studies done byTilak et al[8], Raina et al[11], Prakash KG et al[9] & Deshpande et al.[12]

In the present study, maximum number of patients had moderate grade anemia (47.10%). Similar findings were noted by Raina et al[11] (72.6%) and Mann et al[13](46.67%)

In our study, it was observed that generalized weakness was the most common presenting symptom in 70.04% anemic study patients. Tilak et al[8] and Raina et al[11], in their study have found weakness as a common symptom whereas studies done by Bhasin A et al[5] and Prakash KG et al[9], showed fatigue as the most common presenting symptom.

Pallor (90.1%) was seen as a commonest sign of anemia in the present study In a study done by Tilak et al[8], pallor was noted in 88.2 % patients whereas pallor was observed in all cases (100%) in a study by Raina et al.[11]

In the present study, normocytic normochromic picture (60.14 %) on peripheral blood smear was seen in majority of the patients.. This finding is in concordance with findings ofAlwar et al[14] & Amarneel et al[15]

In the present study, anemia of chronic disease (53.86%) was the leading cause of geriatric cases.Similar findings were noted by Shrivastav S et al [6] & Tilak et al[8] whereas studies done by, Bhasin et al[5], Alwar et al[14], Bisht N et al[7]and Raina et al[11] nutritional deficiency was the leading cause of geriatric anemia.

In the present study, we observed 17 cases of hematological malignancies accounting to 4.10% anemic cases. Percentage reported by VanStaden et al[16] study was 7.1%.

In present study, 0.96 % of the patients (4/414), cause of anemia could not be detected. Similar findings were noted by Tilak et al[8]. However, in studies done by DeAmicis et al[17] & Prakash KG et al[9]unexplained anemia was significantly high. This could be attributed to an incomplete diagnostic evaluation.

CONCLUSION

The incidence of anemia is quite high among elderly patients, more so when associated with chronic diseases and malignancies. Even mild anemia is associated with significant increase in morbidity irrespective of the underlying cause. Identifying and categorizing anemia is essential to direct the investigation towards the underlying etiology and to guide the clinicians for appropriate targeted treatment. Despite modem diagnostic advanced geriatric anemia still remains underreported and inadequately investigated. There is clearly a need for greater awareness of anemia in the elderly and of its significance in terms of poorer outcomes, prolonged hospital stay and increased mortality.

The present study underlines the importance of routine screening and individual assessment of the etiological factors of anemia in elderly allowing the timely initiation of optimal and appropriate therapy.

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