Morphological Patterns of Geriatric Anemia – A Study

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Abstract: *Anemia is a very common feature in older age group and also one of the most neglected. As anemia is a sign and not a diagnosis a thorough evaluation to identify the underlying cause is warranted. The purpose of this study was to find out the prevalence of anemia in the geriatric age group in the rural setting and to study the commonest morphological pattern in this age group. 300 patients of age 60 years and above were evaluated for morphological pattern of anemia based on red cell indices, peripheral smear, and leukocyte and platelet parameters over a period of one year. Anemia was defined according to WHO criteria as Hemoglobin concentration lower than 13g/dl in men and 12g/dl in women (6). Elderly was defined as a person 60 years and above according to WHO criteria.70% of the patients studied were found to be anaemic with 59 % of these in 60 -69 years age group. 54% of the total was men with predominantly mild anemia while in women moderate anemia was more common. 73% of the elderly evaluated had Normocytic Normochromic anemia while 16 % had Microcytic Hypochromic and 3% Macrocytic anemia.*

Keywords: *Anemia, Geriatrics, Morphological patterns*

I.   Introduction

The geriatric population in the world is on a rise. The number of elderly globally is projected to grow from about 524 million in 2010 to nearly 1500 million in 2050. (1). According to the United Nations Development Programme (UNDP) report 2011, India's elderly population will climb to 19% in 2050 (2). Anemia is a common concern in the geriatric age group. In this population it can have significantly more severe complications than in younger adults and can greatly hamper quality of life (3). The prevalence of anemia increases with advancing age. This ranges between 8-44% worldwide with highest prevalence in men 85 and older (4). In Indian population the prevalence varies between 6% and 30% among males and 10% and 20% among females (5).A hematological profile is the first and most common investigation undertaken for any patient in a hospital. Therefore this study was done to understand the quantum of geriatric anemia in our setting and study its morphological patterns.

Aim And Objectives:
Aim - To study the morphological pattern of geriatric anemia in a rural hospital setting.
Objectives;
 1. To study the prevalence of geriatric anemia.
2. To find out the commonest morphological pattern amongst the cases.

II.   Materials And Methods

A hospital based observational study was carried out at Anil Neerukonda Institute of Medical Science from March 2014 to February 2015. 300 patients of age 60 years and above were evaluated for morphological pattern of anemia based on red cell indices, peripheral smear, and leukocyte and platelet parameters.
Anemia was defined according to WHO criteria as Hemoglobin concentration lower than 13g/dl in men and 12g/dl in women (6). Elderly was defined as a person 60 years and above according to WHO criteria. Anemia was further graded into Mild, Moderate and Severe according to WHO criteria (7) as under:-

	Hb Concentration
Mild	11-12.9 g/dl (Men)
	11-11.9g/dl (women)
Moderate	8-10.9g/dl
Severe	< 8g/dl

According to standard criteria, Normocytic Normochromic anemia was defined as MCV between 80fl-100fl. Microcytic anemias was defined by an MCV below 80fl. Macrocytic anemia was defined by an MCV above 100 fl. Dimorphic anemia was defined with a normal MCV but a raised RDW (Normal – 11-15%). All were correlated with Peripheral smear examination.

III.   Results

300 Geriatric patients were assessed between March 2014 and February 2015 in our department.
Of these 210 patients were found to be anemic. This constituted about 70% of the total population.
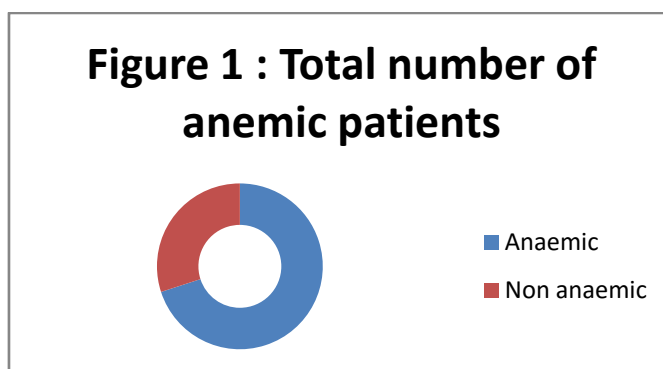

The age of the study group ranged from 60 years to 98 years with the maximum patients in the 60-69 years age range.

Table 1: Age distribution of geriatric anemia patients.

| AGE (Years)	NUMBER	PERCENTAGE (%)
60-69	124	59%
70-79	57	27%
80-89	23	11%
>90	6	3%

The maximum patients i.e. 124 (59%) were between 60-69 years and another 27% between 70-79 years. This has been tabulated in Table1.

Of the geriatric anemia 54% were men and the rest 46% were women. The actual numbers among them being 113 and 97 respectively. This is represented in Figure 1.
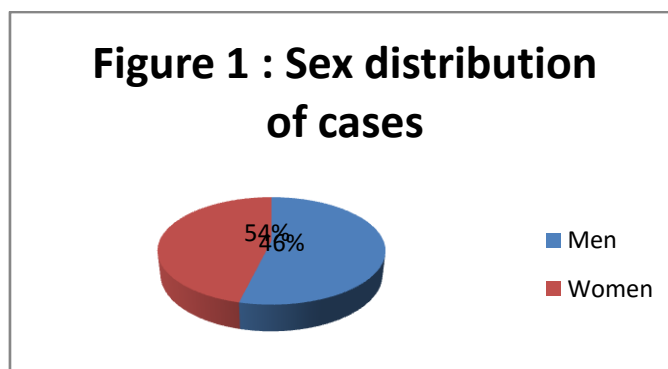

Of the 113 men 44 were found to have mild anemia which comprised about 40%. 36% had moderate and 25% had severe anemia.

Among the women, moderate anemia was more common at 58% (56). 22% (n=21) had severe anemia and the remaining 21% (n=20) were found to have mild degree of anemia.
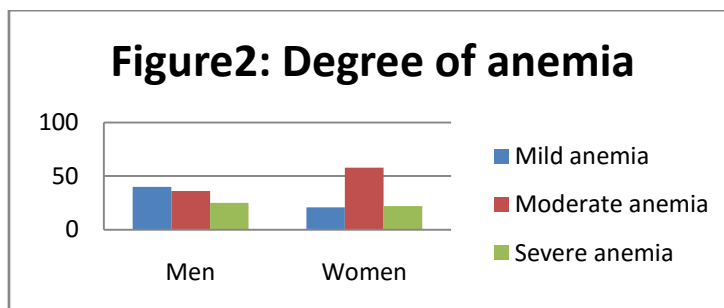
The most common morphological pattern of anemia in the geriatric age group was found to be Normocytic Normochromic anemia at 73% which comprised 153 cases. This was followed by Microcytic anemia at 16% with an absolute number of 34. The incidence of Macrocytic anemia was 3% (n=6) and Dimorphic anemia was found in 8% (n=17). This is depicted in Figure 3. The lowest MCV found in the study was 48fl and the highest was 122fl.

Figure 3: Morphological patterns of anemia
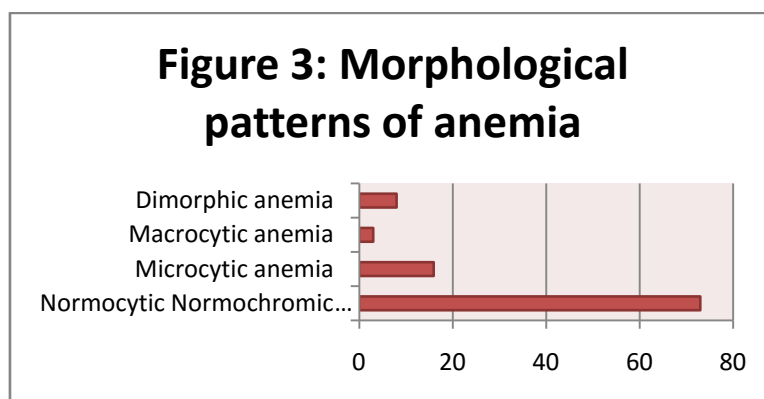
IV. Discussion

Ageing does not have an effect on blood production with reduced ratio of bone marrow to fat cells and reduced marrow response when stimulated with erythropoietin (8). Literature has shown that aging should not be considered as a 'cause' of anemia. A standard treatment with haematinics must be avoided and a thorough investigation to diagnose the etiology must be undertaken.

In our study elderly men with anemia comprised 54% and elderly women comprised 46%. This is in accordance with various studies. N R Humaney et al (9) reported a proportion of 61%men and 39% women. Challand G S et al (10), Jack M G (11) also reported higher overall incidence in men.

Moderate degrees of anemia were commonest among the elderly irrespective of sex in our study. This is in tandem with a study by N R Humaney et al where 43.97% showed moderate degree of anemia. The study further suggests that there is no association between severity and gender in different age groups.

59% patients in our study were between 60-69 years. Other studies also reveal this to be the most common age group between 60% to 70% of cases falling in this age group (9, 12, 13).

Similar to our study Normocytic Normochromic anemia was found to be the commonest morphological pattern of anemia in the elderly population followed Microcytic anemia in studies by Amit B et al (13), Julieta et al (14) and Ania et al (15).

Various studies suggest that the commonest etiology for Normocytic Normochromic pattern of anemia in this age group is Anemia of chronic diseases. Of this Chronic Kidney disease is exceedingly common since renal function declines with age (9, 13, 16). Iron deficiency is the most frequent cause of Microcytic Hypochromic anemia typically as a result of nutritional deficiency as well as chronic blood loss (9, 13). Vitamin B12 and Folic acid deficiency was responsible for most of the Macrocytic anemias (9, 13, 16). Raina et al mentions that nutritional anemia is largely seen in patients of low socioeconomic background (17) and rural areas as in our study.

V. Conclusion

Our study highlights the need for proper evaluation and diagnosis of anemia in the elderly population and not merely sidetrack it as a consequence of aging especially in a low socioeconomic rural setting as ours. A relatively easy investigation as morphological pattern if correctly interpreted can pave the way for further evaluation. Hence the importance of hematological profiling in the geriatric age group.

References

[1]   Global Health and Ageing : National Institute on Aging , National Institute of Health, U.S. Department of Health and Human services, WHO.
[2]   Census of India. Registrar General of India office, Government of India, India 2011.
[3]   Ania Lafuente B J , Fernandez – Burriel Tercero M, Suarez Almenara J L , Batancort Mastrangelo C C , Guerra Hernandez L (2001). Anaemia and functional capacity at admission in a geriatric home. An Med Interna 18(1): 9 – 12.
[4]   World Health Organization. Definition of an older or elderly person. Retrieved August 29, 2010. http://www.who.int/healthinfo/survey/ageingdefnolder/en/index.html.
[5]   Helda Khusun, Ray Yip, Werner Schultink and Drupadi HS Dillon. World
[6]   Health Organization Hemoglobin Cut-Off Points for the Detection of Anemia. Journal of Nutrition 1999; 129:1669-74.

[7]   Benoist B D, Mc Lean Erin, Egli Ines, Cogswell Mary. Worldwide prevalence of anemia. 1993 – 2005: WHO Global Database on Anaemia. Spain: WHO, 2008.

[8]   WHO. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Vitamin and mineral Nutrition Information system. Geneva World Health Organisation, 2011 (WHO/NMH/NHD/MNM/11-1)

[9]   Mehta BC (1999) Iron Deficiency Anaemia. In: Shah S, Anand M, edu. Association of Physicians of India, Mumbai.

[10]   N R Humaney, Dr Zeeshan Ahmed, Dr R P Mundle. Clinicohaematological Profile of Anemia in hospitalized elderly patients. Journal of Medical Science and Clinical Research 2014; 2(8):1873-80.

[11]   Challand G S , Michailoud A , Watfa R R. Distribution of haemoglobin in patient presenting to general practitioner and its correlation with Serum Ferritin. Ann Clin Biochem 1990 ; 27: 15-20.

[12]   Guranlik Jack M, Eisenstaedt R S , Luigi Ferrucci. Pevelance of anaemia in person 65 years and older adults. Blood (2004); 104: 2263-8.

[13]   Saurabh R Shrivastava, Surekha B Hippargi, Anand P Ambali, Balasaheb R Yelikar. Patterns of Anemia in geriatric age group. Journal of Krishna Institute of medical Sciences University (2013); 2(1): 77-81.

[14]   Amit Bhasin , Medha Y. Rao. Characteristics of of Anemia in elderly: A hospital based study in South India. Indian J Haematol Blood Transfus (2011); 27 (1) : 26 – 32.

[15]   Julita Z Dungca, Aileen C Patron, Ma cristina S J Liwanag , Charito M Bermido et al. Haematological Indices , Nutrient intake and health status of older adults in selected suburban Filipino community.Phillippine Journal of Science (2012) ; 141 (2) : 197 – 205.

[16]   Ania BJ, Suman V J , Fairbanks V F. Incidence of anemia in older people : an epidemiologic study in a well defined population. J Am Geriatr Soc (1997); 45: 825 – 831.

[17]   M Rama Devi, C Jaya Bhaskar , M S Sridhar , Shankar Reddy Dudala. Anaemia in the Elderly – An emerging health problem (A neglected problem) IOSR Journal of Dental and Medical Sciences (2015); 14 (2): 51-58.

[18]   Anil Raina , Ajay Kumar , Aneeta Singh et al. A clinicohaematological profile of elderly patients being investigated for anaemia in a tertiary care centre in North West India. Egyptian Journal of Haematology (2014) ; 39 (4): 190-94.