STUDY OF PREVALENCE AND MORPHOLOGICAL PATTERNS OF ANAEMIA IN ADULT AND GERIATRIC POPULATION: A HOSPITAL-BASED STUDY

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ABSTRACT

BACKGROUND

Literature reviews suggest that elderly are susceptible to severe complication due to anaemia compared to the younger ones. WHO defines that male <13 g/dL and female <12 g/dL should be termed as anaemic. Nearly 23.9% of the global population was anaemic. The prevalence of anaemia increases with age and that too females under 75 years were commonly affected compared to males. However, data regarding patterns of anaemia in Pondicherry is very less. This prompted us to study the morphological patterns and prevalence of anaemia for adults and geriatric population in a tertiary care hospital at Pondicherry.

AIMS

1. To study the prevalence of anaemia >45 years in a tertiary care hospital for a period of three months; 2. To study the morphological patterns of anaemia >45 years in a tertiary care hospital for a period of three months.

METHODS AND MATERIAL

This was a hospital-based observational study of patients >45 years who have attended clinical pathology lab for a period of one month. Patients having haemoglobin concentration below the normal value, that is <13 g/dL for male and <12 g/dL for female were selected. Complete blood count and peripheral smear were collected from these selected patients records. All the data were entered in Epi Info version 3.5.1 and analysed. Data were expressed as percentage.

RESULTS

Out of 1583 anaemic patients, 675 were found to be above 45 years old. In this present study, most common pattern of anaemia is normocytic normochromic anaemia (68.9%) followed by microcytic hypochromic anaemia (27.7%), then macrocytic anaemia amounting to (1.5%) and (1.9%) were dimorphic anaemia.

CONCLUSION

Anaemia act as a base for many diseases. It is necessary to evaluate the anaemic status in adult and elderly patients, because most of the time the patterns of anaemia will lead the diagnosis and it is a treatable one as well as treatment for anaemia is simple and also available in all primary care hospitals.

KEYWORDS

Anaemia, Geriatric Patients, Hospital Based Study.

INTRODUCTION

Anaemia is considered as a national level health burden in the elderly population and those who are clinically asymptomatic. Emerging evidence suggests that adults and elderly are susceptible to severe complication due to anaemia compared to the younger ones.[1] WHO defines that male <13 g/dL and female <12 g/dL should be termed as anaemic.[2] Anaemia is a sign which acts as an indicator for an underlying serious and various medical conditions. Reduction in the level of haemoglobin is the most powerful prognostic and diagnostic marker for the various pathological outcomes. Moreover, it affects quality of life as well as the morbidity and mortality due to anaemia, it is considerably increased in recent times.[3,4,5,6] Fortunately, anaemia can be easily treated with drugs if identified earlier. Many at times that will be an incidental findings after a laboratory evaluation. The various causes for anaemia in adult population and its influences, justify the complete approach and evaluation of anaemia associated with its treatable underlying pathogenesis. Nearly, 23.9% of the global population was anaemic.[4,5]

Literature review reveals that prevalence of anaemia increases with age and that too females under 75 years were commonly affected compared to males.[6] In India, the

prevalence rate is 17.7% to 89% in different states.[4] It is high (71%) in North India.[6] compared to South India (17.7%).[7] A study from Pondicherry suggested prevalence rate as 24.8%.

Anaemia in elderly people are more often associated with cardiovascular complications with increased morbidity and mortality. Even a mild anaemia can give rise to major health problem in adults, that too in geriatric population and its diagnosis poses a challenge because it is a unique anaemia. Hence, the treatment of the anaemic patients is solely based on the morphological patterns which gives a clue to the diagnosis with underlying pathology even for the unexplained anaemia. Data regarding patterns of anaemia in Pondicherry is very less. Determining the patterns of anaemia with its changes in the RBC parameters could have important diagnostic and therapeutic implications for addressing this common problem in the adult and geriatric population.[8,9,10,11] Despite the high prevalence, very less database regarding anaemia >45 years is available in South India.[3] This prompted us to study the morphological pattern and prevalence of anaemia in a tertiary care hospital at Pondicherry.[5]

The Objectives of the Present Study are
1. To study the prevalence of anaemia >45 years in a tertiary care hospital for a period of three months.
2. To study the morphological patterns of anaemia >45 years in a tertiary care hospital for a period of three months.

METHODS
This was a hospital-based observational study of patients >45 years who have attended clinical pathology lab for a period of three months from June to August 2015 at a tertiary care hospital in Puducherry. Only the requisition forms having following parameters namely haemoglobin, complete blood count and peripheral smear were identified and collected. Records of those patients having haemoglobin concentration below the normal value that is <13 g/dL for male and <12 g/dL for female were selected for the study as defined by WHO.[2] Complete blood count and peripheral smear were noted down from these selected records. All the data were entered in Epi Info software version 3.5.1 and analysed. Data were expressed as percentage.

RESULTS
In the current study total number of patients attended the clinical pathology lab were 12,382 including both outpatient and inpatient. Out of 1583 anaemic patients, 675 were found to be above 45 years old and the age was ranged from 45 to 75 and the mean age was 65. In that 51% were males, 49% were females [Fig. 1]. Patients between 45 to 55 years were more prone to anaemia (39.1%) [Fig. 2]; 80.9% were mild anaemic based on haemoglobin concentration [Fig. 3] and MCV values were normal in 68.4% of the patients [Fig. 4]. The types of anaemia mainly based on peripheral smear and the common morphological patterns seen among the study group was normocytic normochromic anaemia (68.9%) followed by microcytic, hypochromic (27.7%), macrocytic anaemia (1.5%) and dimorphic (1.9%) [Fig. 5]. In this study, the percentage of anaemia is lowest among the age group of

above 75 years followed by 65-75 years and highest among 45-55 years [Fig. 2].

Sl. No.	Sex	Percent
1	Male	51.0%
2	Female	49.0%
	Total	**100.0%**

Table 1: Gender Distribution of Anaemia in Adult and Geriatric Population
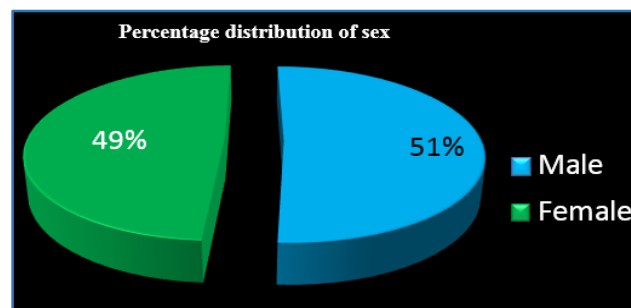
Values are expressed as percentage

Fig. 1: Gender Distribution of Anaemia in Adult and Geriatric Population

Sl. No.	Age	Percent
1	45-55	39.1%
2	56-65	32.7%
3	66-75	16.4%
4	>75	11.7%
	Total	**100.0%**

Table 2: Percentage Distribution of Age in Adult and Geriatric Population
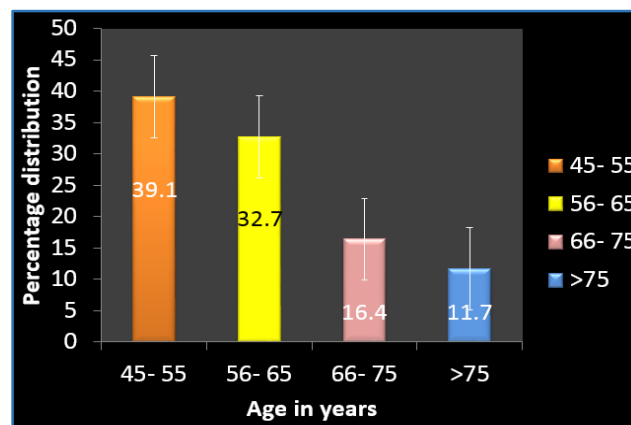
Fig. 2: Percentage Distribution of Age in Adult and Geriatric Population

Sl. No.	Haemoglobin	Percent
1	11-12	80.9%
2	8-10	16.7%
3	<8	2.4%
	Total	**100.0%**

Table 3: Percentage Distribution of Haemoglobin in Adult and Geriatric Population
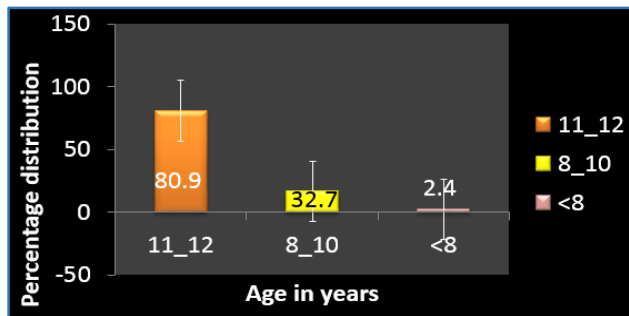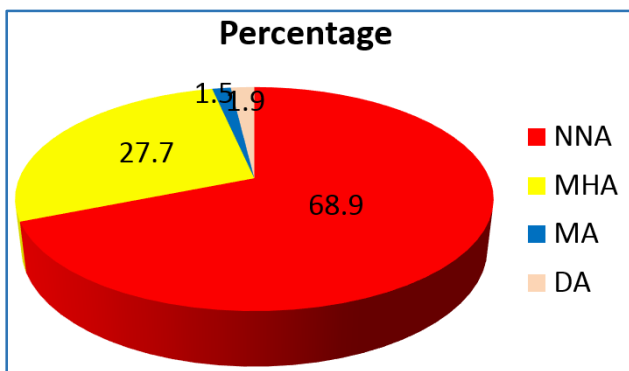
Values are expressed as percentage

Fig. 3: Percentage Distribution of Haemoglobin in Adult and Geriatric Population

Sl. No.	Type of Anaemia	Percent
1	Normocytic Normochromic Anaemia [NNA]	68.9%
2	Microcytic Hypochromic Anaemia [MHA]	27.7%
3	Macrocytic Anaemia [MA]	1.5%
4	Dimorphic Anaemia [DA]	1.9%
	Total	**100.0%**

Table 4: Percentage Distribution of Morphological Patterns of Anaemia in Adult and Geriatric Population

Values are expressed as percentage

Fig. 4: Percentage Distribution of Morphological Patterns of Anaemia in Adult and Geriatric Population
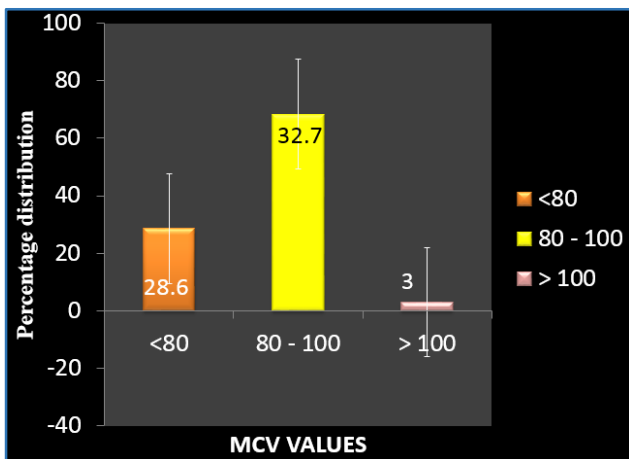
MCV–Mean Corpuscular Volume. Values are expressed as percentage.

Fig. 5: Percentage Distribution of MCV Values in Adult and Geriatric Population

DISCUSSION

Anaemia is a very common problem in adult and geriatric age group and complications are often common in this age group. Choi CW et al observed in his study that 171 elderly patients were found to be anaemic. High prevalence of anaemia seen in the age group of 60-79 years and 80 and above. The common pattern of anaemia in their study was found to be normocytic anaemia 93.5%, microcytic 3.5% and macrocytic 3%. In the present study population, anaemia were commonly seen in males (51%) than females (49%), which correlates with the study done by Amit Bhasin et al and Saurabh R Shrivastava et al[1,9] Most common pattern in this current study has been normocytic and normochromic anaemia, which is concurrent with the studies done by Choi CW et al and Heeseon Kim et al.[12,13,14]

In this study, 80.9% have haemoglobin concentration of about 9-10 g/dL which suggest that mild anaemia is common among adult and geriatric group. Study done by Mauro Tettamanti et al opines that mild anaemia is common in elderly age group, which is concurrent with our study.[10] In this present study, most common pattern of anaemia is normocytic normochromic anaemia (68.9%) followed by microcytic hypochromic anaemia (27.7%), then macrocytic anaemia amounting to (1.5%) and (1.9%) were dimorphic anaemia. Saurabh R et al study correlates with present study.[1] 68.4% have normal MCV value (80-100%). Another study done by Guralnik JM et al also revealed that anaemia is more common in male population and it correlates with our study.

CONCLUSION

Anaemia act as a base for many diseases. It is necessary to evaluate the anaemic status in elderly patients, because most of the time the patterns of anaemia will lead the diagnosis and it is a treatable one as well as Treatment for anaemia is simple and also available in all primary care hospitals. So treating anaemia in the early stage reduce the morbidity and mortality rate in patients above 45 years and improve their quality of life. That too the morphological patterns of anaemia in adult and elderly population plays a critical role to direct the underlying pathology and its treatment and outcome to improve the quality of life. Investigating anaemia is a milestone for potentially treatable conditions. Recently modified iron substitutes are available, especially microcytic-hypochromic anaemia.

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