

Original Research Article

Study of anaemia profile in a tertiary care hospital in Karnataka, India

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ABSTRACT

Background: Anaemia is a major public health problem worldwide especially in developing countries like India. Nutritional cause of anaemia continues to predominate as the most common cause of anaemia. Objective of this study is to determine the clinical and laboratory profile of anaemia among patients admitted to our hospital.

Methods: Our study was a prospective study in which thirty nine patients of anemia admitted to Medicine ward in SNMC and HSK hospital were studied for their clinical and laboratory characteristics. Duration of the study was 7 months from July 2019 to January 2020.

Results: Anaemia was more common among females (65.1% of total patients). Patients aged less than 60 years contributed to 85% of patients. Pallor was the universal finding present in 100% of patients. On systemic examination haemic murmurs on auscultation was the most common finding present in 28.2% followed by hepatomegaly (17.94%). Microcytic and dimorphic anaemia constitute the bulk of anaemia.

Conclusions: Nutritional anaemia particularly iron deficiency anaemia is the most common cause of anaemia. It tends to affect the working age group and females predominantly. Patients continue to present with severe anaemia to the hospital.

Keywords: Anaemia, Clinical profile, Laboratory profile

INTRODUCTION

Anaemia is functionally defined as insufficient Red Blood Cell (RBC) mass to adequately deliver oxygen to peripheral tissues.¹ Many references consider haemoglobin (Hb) concentrations of lower than 14g/dl in men and 12g/dl in women as lower limits of normal at sea level in industrialised world.² However World Health Organisation (WHO) defines the lower limit of normal for Hb concentration to be 13 g/dl and 12 g/dl in men and women respectively at sea level.³

Anaemia is classified into mild when Hb concentrations are between 11-12.9 g/dl in men and 11-11.9 in women. Moderate anaemia is defined as Hb of 8-10.9 in both men and women. Similarly, a patient with Hb of less than 8 is said to have severe anaemia irrespective of gender.⁴

Anaemia is an indicator of poor nutrition and poor health. It is a global public health problem affecting both developed and developing nations. In 2002 iron deficiency anaemia was considered amongst the most important contributing factor to the global burden of disease.⁵ It is assumed that 50% of cases of anaemia are due to iron deficiency.⁶

The consequences of anaemia including increased maternal mortality, prematurity and decreased work productivity in adults are well documented.⁶⁻⁹

Being a global health problem especially in developing countries incurring a high health expenditure, our study aimed to provide clinical and laboratory profile of anaemia patients at a tertiary care hospital in Karnataka.

METHODS

This study was a Hospital based prospective observational non comparative, non randomised analytical study undertaken in department of General Medicine, SNMC and HSK Hospital, Bagalkot. Thirty nine patients with anaemia were included in the study. Duration of the study was 7 months from July 2019 to January 2020.

Inclusion criteria

- Patients more than or equal to 15 years of age of both sexes.
- Patients with anaemia as per WHO definition.

Exclusion criteria

Patients not willing to give informed consent.

In all the above patients thorough history was taken, general physical examination and systemic examination were done. Patients were subjected to routine blood investigations including complete blood count, peripheral smear study and serology for viral markers. Required radiological investigations were done and further studies like bone marrow examination, iron profile, vitamin B12 and folate levels were done in selected patients who did not respond to therapy started based on peripheral smear report. Stool for occult blood was done among elderly patient presenting with iron deficiency anaemia.

RESULTS

Among 39 patients studied 14 (35.89%) were males and 25 (65.10%) were females. Age distribution is as shown Figure 1.

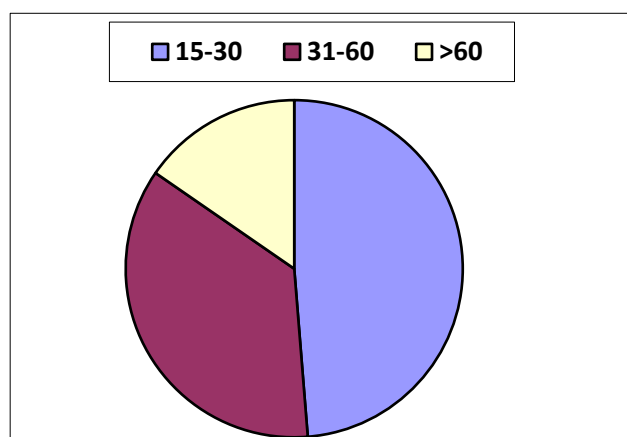


Figure 1: Age distribution.

In our study it was found that anaemia had its highest occurrence in the age group of 15-30 years (19, 49%) followed by 31 to 60 year age group (14, 36%). It was least among individuals aged 60 or more years (6, 15%). (Figure 1).

Easy fatigability and generalised weakness were the most common symptoms of anemia in our study. Incidentally detected patients constituted 33.33% of patients and were the second most common in occurrence. This was followed by breathlessness seen in 20.51% of patients (Table 1).

Table 1: Symptomatology of anaemia patients.

Symptoms	Number of patients
Easy fatigability and generalised weakness	19 (48.71%)
Breathlessness	8 (20.51%)
Swelling of limbs, puffiness of face	3 (7.69%)
Giddiness	4 (10.25%)
Chest pain	1 (2.56%)
Fever	6 (15.38%)
Tinnitus	2 (5.12%)
Asymptomatic (incidentally detected)	13 (33.33%)

Pallor was noted in all patients. Platonychia/koilonychia suggesting iron deficiency anemia was seen in 30.76% of patients, whereas knuckle pigmentation suggestive of megaloblastic anemia was observed in 20.51% of patients (Table 2).

On systemic examination haemic murmurs on CVS examination were detected among 11 patients. Bibasilar crepts not attributable to other diseases were found among 2 patients. Isolated hepatomegaly was found in 7, splenomegaly in 3 and hepatosplenomegaly was found in 3 patients (Table 2).

Table 2: Signs in patients with anemia.

Signs	Number of patients
Tachycardia	19 (48.71%)
Tachypnea	7 (17.94%)
Elevated JVP	6 (15.38%)
Pallor	39 (100%)
Icterus	3 (7.69%)
Pedal oedema	6 (15.38%)
Platonychia/koilonychia	12 (30.76%)
Knuckle pigmentation	8 (20.51%)

Table 3: Degree of anemia.

Degree	Number of patients
Mild anaemia	0 (0%)
Moderate anaemia	5 (12.82%)
Severe anaemia	34 (87.17%)

On laboratory examination degree of anaemia (as defined by WHO) was distributed as shown in Table 3. None of the patients admitted in the hospital had mild anaemia (defined as Hb between 11-11.9 g/dl in women and 11-12.9 g/dl in men aged 15 years or more). Moderate

anaemia (defined as Hb between 8 to 10.9 g/dl in both males and females) was seen in 12.82% of patients. Whereas severe anaemia (defined as Hb less than 8 g/dl in both males and females) showed highest occurrence (Table 3).

Microcytic hypochromic anaemia attributed to iron deficiency unless proved otherwise was the most common form of anemia in our study. Dimorphic anaemia was the second most common suggesting that nutritional anaemia continues to predominate in our part of world (Table 4).

Table 4: Peripheral smear study in patients with anemia.

Peripheral smear	Number of patients
Microcytic hypochromic anaemia	18 (46.15%)
Macrocytic anaemia	1 (2.56%)
Dimorphic anaemia	11 (28.20%)
Normocytic normochromic anaemia	9 (23.07%)

DISCUSSION

This was a prospective study carried out in SNMC Bagalkot. In this study anaemia was more common among younger and middle aged persons (Figure 1) predominantly affecting the working class of the population. Similar observations were made in a study conducted by Azad KL et al.¹⁰ Statistically 65.1% of patients were females and rest were males depicting a female preponderance. Such female dominance was also shown in studies conducted by Alvarez-Uria G et al, and Talwelkar SR et al.^{11,12} WHO statistics noted that the prevalence of iron deficiency anaemia, most common cause of anaemia in females in the age group of 15-49 years is 52%.¹³ This study upholds this fact as well.

Easy fatigability and generalised weakness was the most common presenting symptom seen in 48.71% of patients and asymptomatic anaemia was detected in 13 (33.33%) of patients. Easy fatigability as the predominant symptom was also noted in studies conducted by Dashratham P et al, and Gayathri BN et al.^{14,15} Incidentally detected anemia constituted the second most common class. This may be explained by the fact of lack of knowledge or presence of chronic anaemia. 8 patients (20.51%) presented with breathlessness whereas puffiness of face and swelling of limbs was seen in 3(7.69%) of patients. Fever secondary to anemia and not attributable to any other cause was seen in 6 patients. Fever as a symptom of anaemia was also noted in study conducted by S. Selvamuthukumar.¹⁶ Anemia causing tinnitus after ruling out neuro-otologic and other secondary causes was seen in 2 patients (Table1).

As far as signs on general physical examinations were concerned pallor was the universal finding present in

100% of patients (Table 2). Such predominance of pallor as a sign on examination was noted in studies conducted by Gayathri BN et al, and Vineetha et al.^{15,17} This was followed by tachycardia seen in 19 (48.71%) patients. Six patients presented with anaemia in failure as evidenced by elevated jugular venous pulse and pedal oedema. None of the patients in this study was due to hemolysis. Hence icterus seen in 3 (7.69%) patients was due to ineffective erythropoiesis seen in patients with megaloblastic anaemia. Signs depicting the etiology i.e platonychia/koilonychia suggesting iron deficiency anaemia and knuckle pigmentation suggesting megaloblastic anaemia were seen in 12 and 8 patients respectively. On systemic examination haemic murmurs were detected among 11 patients (28.20%). Dashratham P et al, in their study found that 76% of patients had cardiac murmurs.¹⁴ Hepatomegaly was the predominant finding on abdominal examination seen in 7 (17.94%) patients whereas palpable splenomegaly was seen in 3 patients. Both liver and spleen were palpable in 3 patients.

This study noted that 87.17% of cases (Table 3) presented as severe anaemia. This may be because of the reason that mild anaemia is neglected by people and they do not approach a doctor. Another reason may be illiteracy and lack of knowledge which makes them present to the hospital as severe anaemia cases. None of mild anaemia cases were noted in our study as they are often treated on outpatient basis and our study targeted inpatients.

On peripheral smear examination microcytic hypochromic anaemia attributable to iron deficiency (18 patients) based on examination and observation of response to therapy was the most common cause of anaemia (Table 4).

Similar findings were noted by Kouli R et al, and Milman N et al.^{18,19} This was followed by dimorphic anaemia as the second most common cause of anaemia. Hence nutritional anaemia continues to predominate as the most common cause of anaemia in our part of world. Pure megaloblastic anaemia was seen in only one patient (Table 4), 9 patients (23.07%) presented with normocytic normochromic anaemia (Table 4). These patients with normocytic normochromic anaemia had other associated medical conditions or chronic infections/ inflammatory diseases.

CONCLUSION

Nutritional anaemia and amongst them iron deficiency anaemia continues to be the most common cause of anaemia. Female gender is the most commonly affected gender. In spite of extensive steps taken by WHO and Government bodies in educating and treating people about the disease and the consequences of not getting treated, severe anaemia with or without failure continues as the most common mode of presentation of anaemia in medicine department of the hospital.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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