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Original Research Article

A Hospital-Based Prospective Assessment of the Clinical and Laboratory Profile of Anaemia Patients

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Abstract

Aim: The aim of the present study was to determine the clinical and laboratory profile of anaemia among patients admitted to our hospital.

Methods: This was a hospital based prospective observational study undertaken at Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India. Fifty patients with anaemia were included in the study. Duration of the study was 7 months from August 2019 to February 2020.

Results: In our study it was found that anaemia had its highest occurrence in the age group of 15-30 years (25, 50%) followed by 31-to-60-year age group (17, 34%). It was least among individuals aged 60 or more years (8, 16%). Among 50 patients studied 18 (36%) were males and 32 (64%) were females. Easy fatiguability and generalized weakness were the most common symptoms of anemia in our study. Asymptomatic patients constituted 32% of patients and were the second most common in occurrence. This was Breathlessness followed by seen in 20% of patients. Pallor was noted in all patients. Platonychia/koilonychias suggesting iron deficiency anemia was seen in 30% of patients, whereas knuckle pigmentation suggestive of megaloblastic anemia was observed in 20% of patients.

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.

Keywords: Anaemia, Clinical profile, Laboratory profile

Introduction

According to WHO, hemoglobin concentration of 12.0 g/dl in women and 13.0 g/dl in men at sea level is considered as lower limit. By definition anemia is a disorder in which there is qualitative and or quantitative diminution of haemoglobin or RBC or both in respect to the age and sex of the individual. [1] Overall One third population of the world suffers from anemia and India is having very high prevalence rates for it. NFHS-3(National Family Health Survey) reveals that prevalence of anemia is 70% in pregnant women, 70-80% in children, and 24% in men of adult age. [2]

The highest prevalence of anemia exists in the developing world, where its causes are multifactorial. [3] Most of the anemias are

due to nutritional deficiency like inadequate uptake of iron, folic acid and vitamin B12, proteins, amino acids, vitamins A, C, niacin and pantothenic acid. [4] It is estimated by WHO that prevalence of anemia in developed and developing countries in pregnant women is 14 percent and 51 percent respectively and for India this number has increased up to 65-75 percent. [3] Anemia is wide spread in all states of India. Poor diet, lack of sense of hygiene, lack of health consciousness social taboos and poor economic status all contributes to major barrier for eradication of anemia in our country. [5]

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. [6] 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. [7] It is assumed that 50% of cases of anaemia are due to iron deficiency. [8] The consequences of anaemia including increased maternal mortality, prematurity and decreased work productivity in adults are well documented. [8-11]

Anemia is preventable health care problem and even primordial prevention can arrest a sizable number of anemia before development. Despite of various programs taken by our government, still anemia is major health problem for us. The prevalence is on the rise especially in vulnerable groups like pregnant women, women in reproductive age group and in children.

The aim of the present study was to determine the clinical and laboratory profile of anaemia among patients admitted to our hospital.

Materials and METHODS

This study was a hospital based prospective observational non comparative, non-randomized analytical study undertaken at Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India. Fifty patients with anaemia were included in the study. Duration of the study was 7 months from August 2019 to February 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
- Patient having leukemaiod reaction, leukemia, and platelet disorders were excluded from study

Methodology

In all the recruited patient's 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

Table 1: Demographic details

Age in years	**N%**
15-30	25 (50%)
31-60	17 (34%)
More than 60	8 (16%)
Gender	
Male	18 (36%)
Females	32 (64%)

In our study it was found that anaemia had its highest occurrence in the age group of 15-30 years (25, 50%) followed by 31 to 60 year age group (17, 34%). It was least among individuals aged 60 or more years (8, 16%). Among 50 patients studied 18 (36%) were males and 32 (64%) were females.

Table 2: Symptomatology of anaemia patients

Symptoms	**N%**
Easy fatigability and generalized weakness	23 (46%)
Breathlessness	10 (20%)
Swelling of limbs, puffiness of face	2 (4%)
Giddiness	4 (8%)
Chest pain	1 (2%)
Fever	5 (10%)
Tinnitus	2 (4%)
Asymptomatic (incidentally detected)	16 (32%)

Easy fatiguability and generalised weakness were the most common symptoms of anemia in our study. Asymptomatic patients constituted 32% of patients and were the second most common in occurrence. This was Breathlessness followed by seen in 20% of patients.

Table 3: Signs in patients with anemia

Signs	**N%**
Tachycardia	24 (48%)
Tachypnea	9 (18%)
Elevated JVP	8 (16%)
Pallor	50 (100%)
Icterus	4 (8%)
Pedal oedema	7 (14%)
Platonychia/koilonychia	15 (30%)
Knuckle pigmentation	10 (20%)

Pallor was noted in all patients. Platonychia/koilonychias suggesting iron deficiency anemia was seen in 30% of patients, whereas knuckle pigmentation suggestive of megaloblastic anemia was observed in 20% of patients.

Table 4: Degree of anemia

Degree of anemia	**N%**
Mild	0
Moderate	7 (14%)
Severe	43 (86%)

On laboratory examination degree of anaemia (as defined by WHO) was distributed. 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). Moderateanaemia (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 5: Peripheral smear study in patients with anemia

Peripheral smear	N%
Microcytic hypochromic anaemia	23 (46%)
Macrocytic anaemia	2 (4%)
Dimorphic anaemia	14 (28%)
Normocytic normochromic anaemia	11 (22%)

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.

Discussion

Anemia is a significant public health problem that occurs worldwide 1 in both developed and developing countries. [12] In absolute numbers anemia affects 293 million children, out of which 89 million live in India. India is one of the countries with very high prevalence of nutritional anemia in the world. [13] According to NFHS-3 data, 79% of infants in the age group between 6-35 months of age are anemic in India. [14] Causes of anemia vary by age. During infancy it is due to increased iron requirements related to rapid growth and development but other factors such as preterm delivery, low birth weight, faulty feeding techniques, not starting right type of complementary food at the right time and failure of exclusive breast feeding are also involved. In India weaning food is predominantly cereal based which is a poor resource of iron and not including pulses/vegetables/fruits for a prolonged period can lead to iron deficiency.

In this study anaemia was more common among younger and middle aged persons predominantly affecting the working class of the population. Similar observations were made in a study conducted by Azad KL et al. [15] 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. [16,17] 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%. [18] This study upholds this fact as well.

Easy fatiguability and generalised weakness was the most common presenting symptom seen in 46% of patients and asymptomatic anaemia was detected in 16 (32%) of patients. Easy fatiguability as the predominant symptom was also noted in studies conducted by Dashratham P et al, and Gayathri BN et al. [19,20] 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. 10 patients (20%) presented with breathlessness whereas puffiness of face and swelling of limbs was seen in 2 (4%) 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. Selvamuthukumaran. [21]

As far as signs on general physical examinations were concerned pallor was the universal finding present in 100% of patients. Such predominance of pallor as a sign on examination was noted in studies conducted by Gayathri BN et al, and Vineetha et al. [20,22] This was followed by tachycardia seen in 9 (18%) patients. Eight 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 4 (8%) 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%). Dashratam P et al, in their study found that 76% of patients had cardiac murmurs.19

This study noted that 86% of cases 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. On peripheral smear examination microcytic hypochromic anaemia attributable to iron deficiency (23 patients) based on examination and observation of response to therapy was the most common cause of anaemia. Similar findings were noted by Kouli R et al, and Milman N et al. [23,24] This was followed by dimorphic anaemia as the second most common cause of anaemia. [25] 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, 11 patients (22%) presented with normocytic normochromic anaemia. 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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