A Hospital-Based Assessment of the Anemia Profile: An Observational Assessment

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Abstract

Aim: The aim of the present study was to determine the clinical and laboratory profile of anemia among patients admitted to the tertiary hospital in Bihar.

Methods: This study was a hospital based prospective observational study undertaken in the Department of Medicine, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India. Fifty patients with anemia were included in the study. Duration of the study was one year.

Results: Easy fatiguability and generalized weakness were the most common symptoms of anemia in our study. Incidentally detected patients constituted 12% of patients and were the second most common in occurrence. This was followed by breathlessness seen in 20% of patients. On systemic examination haemic murmurs on CVS examination were detected among 12 patients. Bibasilar crepts not attributable to other diseases were found among 3 patients. Isolated hepatomegaly was found in 8, splenomegaly in 2 and hepatosplenomegaly was found in 3 patients.

Conclusion: The most common aetiology of anemia in patients enrolled was iron deficiency, followed by anemia of chronic disease and malignancy, both hematological and non-hematological. The most commonly encountered complaints on presentation in general were subjective non-specific ones such as weakness, fatigue and lassitude whereas in females it was per vaginal bleeding.

Keywords: Anaemia, Clinical profile, Laboratory profile

Introduction

Anemia is considered the most prevalent nutritional deficiency inflammation, parasitic infections, and inherited disorders can globally, affecting about a quarter of the world population, especially children and women of reproductive age. [1,2]

According to WHO, iron deficiency is thought to be the most common cause of anaemia globally, although other conditions such as folate, vitamin B12 and vitamin A deficiencies, chronic

inflammation, parasitic infections, and inherited disorders can all cause anemia.

Anemia is generally defined as a reduction in red cell mass or blood hemoglobin concentration characterized by decreased oxygen carrying capacity of blood which results in tissue anoxia producing various signs and symptoms. Anemia is not a diagnosis in itself but merely an objective sign of presence of disease. Anemia in children differs from those of adults as they tend to be more pronounced and develop rapidly. As much as 51% children in 0-4 years and 46% children 5- 12 years are anemic in developing regions. [3-5]

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. [6] India is among the countries with highest prevalence of Anaemia in the world. It is estimated that about 20%-40% of maternal deaths in India are due to Anaemia; India contributes to about 50% of global maternal deaths due to Anaemia. [7] Anaemia is of different types. Iron deficient Anaemia is the most common type of anaemia. [3] Quite frequently faulty nutrition is the cause of Anaemia. There are many factors like inadequate diet, unsatisfactory method of preparation of food, faulty social habits, unhygienic practices, associated infections and infestations contributing to the causation of nutrional Anaemia. [8,9] India lies partly in the tropics and partly in subtropics with extreme variations of climate. In the region where hot and humid climate prevail throughout the best part of the year, the loss of iron through sweat is appreciable. Iron is lost through sweat to the extent of 15mg per month.

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. [10] It is assumed that 50% of cases of anaemia are due to iron deficiency. [11] The consequences of anaemia including increased maternal mortality, prematurity and decreased work productivity in adults are well documented. [11-13]

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

Methods

This study was a hospital based prospective observational study undertaken in the Department of Medicine, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India. Fifty patients with anemia were included in the study. Duration of the study was one year.

Inclusion criteria

- Patients more than or equal to 15 years of age of both sexes.
- Patients with anemia 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.

Result

Table 1: Symptomatology of anaemia patients

Symptoms	Number of patients (%)
Easy fatigability and generalised weakness	20 (40)
Breathlessness	10 (20)
Swelling of limbs, puffiness of face	2 (4)
Giddiness	3 (6)
Chest pain	2 (4)
Fever	5 (10)
Tinnitus	2 (4)
Asymptomatic (incidentally detected)	6 (12)

Easy fatiguability and generalised weakness were the most common symptoms of anemia in our study. Incidentally detected patients constituted 12% of patients and were the second most common in occurrence. This was followed by breathlessness seen in 20% of patients.

Table 2: Signs in patients with anemia

Signs	Number of patients (%)
Tachycardia	20 (40)
Tachypnea	8 (16)
Elevated JVP	7 (14)
Pallor	50 (100)
Icterus	3 (6)
Pedal oedema	8 (16)
Platonychia/koilonychia	15 (30)
Knuckle pigmentation	10 (20)

On systemic examination haemic murmurs on CVS examination were detected among 12 patients. Bibasilar crepts not attributable to other diseases were found among 3 patients. Isolated hepatomegaly was found in 8, splenomegaly in 2 and hepatosplenomegaly was found in 3 patients.

Table 3: Degree of anemia

Degree	Number of patients (%)
Mild anemia	0
Moderate anemia	10 (20)
Severe anemia	40 (80)

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 4: Peripheral smear study in patients with anemia

Peripheral smear	Number of patients (%)
Microcytic hypochromic anaemia	24 (48)
Macrocytic anaemia	2 (4)
Dimorphic anaemia	14 (28)
Normocytic normochromic anaemia	10 (20)

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

Nonspecific symptoms like weakness, fatigue, are one of the commonest modes of presentation of anemia which can also be seen in conditions other than anemia causing diagnostic difficulties to the clinicians.

Anaemia is functionally defined as insufficient Red Blood Cell (RBC) mass to adequately deliver oxygen to peripheral tissues. [14] 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. [15] 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. [16]

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. [17] 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. [18,19]

Easy fatiguability and generalised weakness was the most common presenting symptom seen in 40% of patients and asymptomatic anaemia was detected in 6 (12%) of patients. Easy fatiguability as the predominant symptom was also noted in studies conducted by Dashratham P et al, and Gayathri BN et al. [20,21] 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. Fever as a symptom of anaemia was also noted in study conducted by S. Selvamuthukumaran. [22] Anemia causing tinnitus after ruling out neuro-otologic and other secondary causes was seen in 2 patients.

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. [21,23]

This study noted that 80% 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. 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 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. [24,25] 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. [26]

Conclusion

The most common aetiology of anemia in patients enrolled was iron deficiency, followed by anemia of chronic disease and malignancy, both hematological and non-hematological. The most commonly encountered complaints on presentation in general were subjective non-specific ones such as weakness, fatigue and lassitude

whereas in females it was per vaginal bleeding. Most of the patients belonged to moderate anemia group. Severity of anemia was not related with total leukocyte counts and platelet counts. 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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