IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 22, Issue 3 Ser.16 (March. 2023), PP 07-09
www.iosrjournals.org

Study of Clinical and Laboratory Profile of Anaemia in a Tertiary Care Hospital

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ABSTRACT:
Aims: To study the clinical and laboratory profile of anaemia in a tertiary care hospital.
Materials and Methods: This was a prospective observational study conducted in the Department of General Medicine. In all 100 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.
Results: 42(42%) were easy fatiguability and generalised weakness the most common symptoms of anaemia in our study. Incidentally detected patients constituted 34% of patients and were the second most common in occurrence. This was followed by breathlessness seen in 22% of patients. Pallor was noted in all patients. Platonychia/koilonychia suggesting iron deficiency anaemia was seen in 22(22%) of patients, whereas knuckle pigmentation suggestive of megaloblastic anaemia was observed in 14(14%) of patients. 10(10%) patients presented with anaemia in failure as evidenced by elevated jugular venous pulse and pedal oedema. On systemic examination haemic murmurs on CVS examination were detected among 26(26%) patients. Severe anaemia showed 70(70%) highest occurrence. Microcytic hypochromic anaemia 56(56%) attributed to iron deficiency unless proved otherwise was the most common form of anaemia in our study. Dimorphic anaemia 22(22%) was the second most common suggesting that nutritional anaemia continues to predominate in our part of world.
Conclusion: 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, Platonychia, Koilonychia, Haemic mumurs, Microcytic Hypochromic, Dimorphic, Jugular venous pressure, Pedal oedema.

Date of Submission: 11-03-2023 Date of Acceptance: 25-03-2023

I. INTRODUCTION

Anaemia is considered the most prevalent nutritional deficiency globally, affecting about a quarter of the world population especially children and women of reproductive age.[1] Anaemia is generally defined as a reduction in red cell mass or blood haemoglobin concentration characterized by decreased oxygen carrying capacity of blood which results in tissue anoxia producing various signs and symptoms. Anaemia is not a diagnosis in itself but merely an objective sign of presence of disease. Anaemia 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 anaemic in developing regions.[2,3] 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.[4] 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.[5] Anaemia are of different types. Iron deficient Anaemia is the most common type of anaemia. 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 nutritional anaemia.[6,7] 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. This suggests dermal loss of iron should be one of the possible contributing factors in the genesis of iron deficiency Anaemia in the tropics.[6,7] Our study aimed to provide clinical and laboratory profile of anaemia patients at a tertiary care hospital.

II. MATERIAL AND METHODS

This was a prospective observational study conducted in the Department of General Medicine, after taking the approval of the protocol review committee and institutional ethics committee. 100 patients with more than or equal to 18 years of age of both sexes and Patients with anaemia as per WHO definition were included in this study. Patients not willing to give should be one of the possible contributing factors in the genesis of iron deficiency Anaemia in the tropics.[6,7] Our study aimed to provide clinical and laboratory profile of anaemia patients at a tertiary care hospital.

Patients not willing to give informed consent were excluded from the study. In all 100 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

III. RESULTS

Among 100 patients studied 32(32%)were males and 68(68%)were females. In our study it was found that anaemia had its highest occurrence in the age group of 20-30 years 52(52%) followed by below 20 year age group 19(19%). It was least among individuals aged above 50 years 4(4%)

Table 1. Demographic profile of the patients

Gender	**N=100(100%)**
Female	68(68%)
Male	32(32%)
Age(years)	
Below 20 years	19(19%)
20-30 years	52(52%)
30-40 years	14(14%)
40-50 years	11(11%)
Above 50 years	4(4%)

42(42%) were easy fatiguability and generalised weakness the most common symptoms of anaemia in our study. Incidentally detected patients constituted 34% of patients and were the second most common in occurrence. This was followed by breathlessness seen in 28% of patients

Patients with easy fatigability and generalised weakness 42(42%) Breathlessness 22 (22%) Swelling of limbs, puffiness of face 10 (10%) Giddiness 12(12%) Chest pain 4(4%), Palpitations 14(14%) Asymptomatic (incidentally detected) 34 (34%)

Table 2: Symptoms of anaemia patients

Symptoms	**Number of patients**
Easy fatigability and generalise weakness	42(42%)
Breathlessness	22(22%)
Swelling of limbs and puffiness of face	10(10%)
Giddiness	12(12%)
Chest pain	4(4%)
Palpitations	14(14%)
Asymptomatic(Incidentally detected)	34(34%)

Pallor was noted in all patients. Platonychia/koilonychia suggesting iron deficiency anaemia was seen in 22(22%) of patients, whereas knuckle pigmentation suggestive of megaloblastic anaemia was observed in 14(14%) of patients. 10(10%) 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 haemolysis. Hence icterus seen in 9(9%) patients was due to ineffective erythropoiesis seen in patients with megaloblastic anaemia. On systemic examination haemic murmurs on CVS examination were detected among 26(26%) patients. Bibasilar crepts not attributable to other diseases were found among 8 patients. Isolated hepatomegaly was found in 12(12%), splenomegaly in 8(8%) and hepatosplenomegaly was found in 9 patients

Table 3: Signs in patients with anaemia

Signs	Number of patients
Tachycardia	44(44%)
Tachypnoea	12(12%)
Elevated JVP	10(10%)
Haemic murmur	26(26%)
Pallor	100(100%)
Icterus	9(9%)
Pedal oedema	16(16%)
Platonychia/Koilonychia	22(22%)
Knuckle pigmentation	14(14%)

On laboratory examination degree of anaemia (as defined by WHO) was distributed as shown in Table 4. About 8% 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 22% of patients. Whereas severe anaemia (defined as Hb less than 8 g/dl in both males and females) showed 70(70%) highest occurrence (Table 4). Microcytic hypochromic anaemia 56(56%) attributed to iron deficiency unless proved otherwise was the most common form of anaemia in our study. Dimorphic anaemia 22(22%) was the second most common suggesting that nutritional anaemia continues to predominate in our part of world (Table 5)

Table 4: Degree of anaemia

Degree of anaemia	Number of patients
Mild anaemia	8(8%)
Moderate anaemia	22(22%)
Severe anaemia	70(70%)

Table 5: Peripheral smear study in patients with anaemia

Peripheral smear	Number of patients
Microcytic hypochromic anaemia	56(56%)
Macrocytic anaemia	4(4%)
Dimorphic anaemia	22(22%)
Normocytic normochromic anaemia	18(18%)

IV. DISCUSSION

In our study it was found that anaemia had its highest occurrence in the age group of 20-30 years 52(52%) followed by below 20 year age group 19(19%). It was least among individuals aged above 50 years 4(4%). predominantly affecting the working class of the population. Similar observations were made in a study conducted by Azad KL et al.8 Statistically 70% 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.[9,10] 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%.[11] This study upholds this fact as well. In our study 42 (42%) were easy fatiguability and generalised weakness the most common symptoms of anaemia in our study. Incidentally detected patients constituted 34% of patients and were the second most common in occurrence. Easy fatiguability as the predominant symptom was also noted in studies conducted by Dashratham P et al, and Gayathri BN et al.[12,13] Incidentally detected anaemia constituted the second most common class. This may be explained by the fact of lack of knowledge or presence of chronic anaemia. 22(22%) presented with breathlessness whereas puffiness of face and swelling of limbs was seen in 10 (10%) of patients. Palpitations were seen in 14% of 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[13] . This was followed by tachycardia seen in 44(44%) patients. 10(10%) 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 haemolysis. Hence icterus seen in 9(9%) 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 22(22%) and 14(14%) patients respectively. On systemic examination haemic murmurs were detected among 26 patients (26%). Dashratam P et al, in their study found that 76% of patients had cardiac murmurs [12] ·Hepatomegaly was the predominant finding on abdominal examination seen in 12 (12%) patients whereas palpable splenomegaly was seen in 8(8%) patients. Both liver and spleen were palpable in 9 patients. This study noted that 70% 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. 8% of mild anaemia cases were noted in our study. On peripheral smear examination microcytic hypochromic anaemia attributable to iron deficiency 56(56%) 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 [15] This was followed by dimorphic anaemia was found in 22(22%) patients 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 4 patients, 18 patients (18%)presented with normocytic normochromic anaemia

V. CONCLUSION

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.

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