A Clinical Study of Severity of Anaemia in Adults Attending Outpatient Department with Regard to Signs and Symptoms in Rural South Indian Medical College

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ABSTRACT

Introduction: Anaemia is a common disorder in India. Although it may be due to various causes, iron deficiency is most commonly found cause. Numerous studies conducted in India, found that poor dietary habits of not eating enough fruits, legumes, and lack of access to health care being reasons for the prevalence of high percentage of anaemia, especially in women. Study aimed to record the prominent signs and symptoms of anaemia and its correlation with the severity of anaemia in patients

Material and methods: The study was conducted at Rajah Muthiah Medical College and Hospital in which 100 patients attending the Outpatient Department of General Medicine were enrolled in the study. The data were collected with written consent for history, clinical examination, needed investigations for the study.

Results: Majority of the cases were in the age group of 30 – 60 years. Females in the menstruating and perimenopausal age group were found to have moderate anaemia. Vegetarians were found to have more severe anaemia with Hb < 6 gm/dl. Dimorphic anaemia was the most commonly seen type of anaemia. The most common presenting symptom was fatigue. The most common finding on general physical examination was pallor.

Conclusion: Dimorphic anaemia was the most commonly seen type of anaemia. The most common presenting symptom was fatigue. The most common finding on general physical examination was pallor.

Keywords: Anaemia, Severity, Hb – Hemoglobin, Dimorphic Anaemia, Signs, Symptoms, Pallor, Fatigue, Palpitation, Pulse, BP – Blood Pressure

INTRODUCTION

Anaemia is a common global health problem. It is estimated to affect at least 20% of the world's population.[1] The global data of epidemiologists estimates that India has the highest total prevalence of anaemia at 39.86% (nearly 40%). This percentage is highest among the developing and developed countries.[2] In India, 30% of adult males and 45% of adult females, 80% of pregnant females, 60% of children are affected with Iron deficiency.[3] Nearly ¾th of Indian population live in rural areas. The majority of these cases are due to Iron deficiency. Numerous studies conducted in India found that poor dietary habits of not eating enough fruits, legumes, and lack of access to health care being reasons for the prevalence of high percentage of anaemia especially in women.[4] Iron supplementation programs have not been successful in decreasing anaemia. One proposed reason for its high prevalence has been attributed to non-specific symptoms in the mild early stages of anaemia. Studies suggest that more than 50% of people with anaemia are not aware that they have the condition.[5] It is also important to know that conditions like chronic kidney disease which can arise out of conditions like systemic hypertension and diabetes mellitus can also give rise to anaemia. Hence, it becomes imperative to identify the individuals early and clinical suspicion of anaemia whereupon, they may be subjected for baseline investigations and further analysis and treatment as needed.

Study aimed to record the prominent signs and symptoms of anaemia and its correlation with the severity of anaemia in patients.

MATERIAL AND METHODS

The study was conducted at Rajah Muthiah Medical College and Hospital in which 100 patients attending the Outpatient Department of General Medicine were enrolled in the study. The data was collected with consent approved proforma and with written consent for history, clinical examination and investigations approved by the Hospital Ethics Committee.

Inclusion criteria

100 cases with clinical signs and symptoms of anaemia in the age group of 20 – 70 were taken for study.

Exclusion criteria

The following patients were excluded from the study:
1. Patients in peadiatric age group
2. Patients with malnutrition
3. Patients with BMI less than 19
4. Known patients of Diabetes Mellitus, Hypertension
5. Known patients of chronic infectious diseases
6. Known cases of the Cardiovascular disease, Coronary artery disease
7. Patients in conditions which could precipitate blood loss

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like trauma/hemorrhoids
8. Known patients with drug intake like steroids and oral contraceptives
9. Pregnant patients
10. Patients with a history of intake of alcohol.

All patients included in the study after getting consent, were taken with a detailed history regarding age, sex, occupation, time of occurrence of the event, comorbid factors like pre-existing hypertension, diabetes, drug intake including alcohol. The patients were clinically assessed for vital parameters and detailed systemic examination were conducted. The definition of anemia was based on serum hemoglobin (Hb) threshold (g/dL) in as recommended by the World Health Organization (WHO). There are three levels of anemia categorized by the WHO: mild, moderate, and severe.

RESULTS

All the cases were between 20 to 70 years of age. Majority of the cases were in the age group of 30 – 60 years (table-1). 53 cases in women had anaemia when compared to 47 cases in men (table-2). Dimorphic anaemia was the most commonly seen type in this study 40 cases (40%) out of which 21 cases had moderate anaemia with Hb 6-9 gm/

dl. Microcytic hypochromic anaemia was the second most common, followed by the other types. In our study, out of the seven other cases grouped, 3 cases had megaloblastic anaemia, 4 cases of severe anaemia had pancytopenia (2 cases) and chronic myeloid leukemia (2 cases) (table-3). The most common presenting symptom was fatigue, which was present in 51 cases. The next common symptoms were dyspnoea (29 cases), palpitation (27 cases) and giddiness (24 cases). Other symptoms were the loss of appetite (9 cases), fever (7 cases), weight loss (5 cases). Other symptoms like pica, abdominal pain, melaena, hematuria were not seen in any cases (table-4). On analyzing the personal history, it was found that 19 cases were vegetarians. The most common finding on general physical examination was pallor which was present in 67 cases. Also seen were glossitis (20 cases), angular stomatitis (9 cases), knuckle pigmentation and koilonychias in 7 cases. Pedal oedema was found in 7 cases, and facial puffiness was found in one case. Cases with more severe anaemia were found to be more likely to have more findings on general physical examination (table-5). The mean pulse rate was 85.4 / minute. The mean pulse rate was significantly high (89.3 / min) in cases with severe anaemia with Hb < 6 gm/dl. There was no significant difference in

Age in years	Haemoglobin levels (IN gm/dl)						
	Severe < 6 (n = 23)	%	Moderate 6 – 9 (n = 40)	%	Mild >9 (n = 37)	%	Total
<= 20	3	13	3	7.5	2	5.4	8
21 – 30	6	26.1	10	25	3	8.1	19
31-40	4	17.4	11	27.5	7	18.9	22
41 - 50	4	7.4	6	15	3	8.1	13
51 - 60	2	8.7	4	10	17	45.9	23
61 - 70	3	13	5	12.5	3	8.1	11
>70	1	4.3	1	2.5	2	5.4	4
Total	23	100	40	100	37	100	100
Table-1: Age distribution and severity of anaemia in cases							

Sex	Haemoglobin levels (IN gm / dl)						
	Severe < 6 (n = 23)	%	Moderate 6 -9 (n = 40)	%	Mild >9 (n = 37)	%	Total (n = 100)
Male	10	43.5	19	47.5	18	48.6	47
Female	13	56.5	21	52.5	19	51.4	53
Total	23	100	40	100	37	100	100
Table-2: Sex distribution of cases and severity of Anaemia							

Hb (in gm/ dl)	Type of Anaemia					
	Dimorphic anaemia. DM	Microcytic hypochromic anaemia. MH	Normocytic hypochromic anaemia NH	Normocytic normochromic anaemia. NN	Others	Total
< 6	14	5	0	0	4	23
6 -9	21	15	2	0	2	40
>9	5	5	16	10	1	37
Total	40	25	18	10	7	100
Table-3: Types and severity of anaemia in patients						

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Presenting illness	Haemoglobin levels in patients						
	Hb < 6 (n=23)	%	Hb 6 -9 (n=40)	%	Hb > 9 (n = 37)	%	Total
Fatigue	23	100	23	57.5	5	13.5	51
Dyspnoea	19	82.6	10	25	0	0	29
Giddiness	10	43.5	11	27.5	3	8.1	24
Palpitation	14	60.9	9	22.5	4	10.8	27
Angina	3	13.0	0	0	0	0	3
Pica	0	0	0	0	0	0	0
Dysphagia	3	13.0	0	0	0	0	3
Abdominal pain	0	0	0	0	0	0	0
Body pain	1	2.7	0	0	0	0	1
Fever	1	4.3	2	5.0	4	10.8	7
Loss of appetite	4	17.4	2	5.0	3	8.1	9
Weight loss	4	17.4	1	2.5	0	0	5
Jaundice	2	8.7	1	2.5	0	0	3
Bleeding	0	0	0	0	1	2.5	1
Malaena	0	0	0	0	0	0	0
Haematuria	0	0	0	0	0	0	0
Menorrhagia	2	8.7	1	2.5	0	0	1
Post menopausal bleed	0	0	0	0	0	0	0
Table-4: Symptoms and severity of anaemia in our study							

Symptoms	Types of anaemia									
	DM		MH		NH		NN		Others	
Presenting illness	n=40	%	n=25	%	n=18	%	n=10	%	n=7	%
Fatigue	31	77.5	14	56.0	1	5.6	0	0	5	71.4
Dyspnoea	15	37.5	9	36.0	1	5.6	0	0	4	57.1
Giddiness	13	32.5	6	24.0	2	11.1	1	10.0	2	28.6
Palpitation	14	35.0	8	32.0	3	16.7	0	0	2	28.6
Angina	2	5.0	1	4.0	0	0	0	0	0	0
Pica	0	0	0	0	0	0	0	0	0	0
Dysphagia	1	2.5	2	8	0	0	0	0	0	0
Abd pain	0	0	0	0	0	0	0	0	0	0
Body pain	0	0	0	0	0	0	0	0	0	0
Fever	1	2.5	2	8.0	2	11.1	1	10.0	1	14.3
Loss of appetite	3	7.5	2	8.0	2	11.1	0	0	2	28.6
Weight loss	1	2.5	3	12.0	0	0	0	0	1	14.3
Jaundice	1	2.5	1	4.0	0	0	0	0	1	14.3
Bleeding	0	0	0	0	0	0	0	0	1	14.3
Melaena	0	0	0	0	0	0	0	0	0	0
Haematuria	0	0	0	0	0	0	0	0	0	0
Menorrhagia	2	5.0	1	4.0	0	0	0	0	0	0
Post menopausal bleed	0	0	0	0	0	0	0	0	0	0
Table-5: Symptoms of patients and type of Anaemia										

General physical examination	Haemoglobin levels in patients (gm/dl)						
	Severe Hb < 6		Moderate Hb 6-9		Mild Hb > 9		Total
	n=23	%	n=40	%	n=37	%	n=100
Pallor	23	100	36	90	8	21.6	67
Glossitis	13	56.5	7	17.5	0	0	20
Angular stomatitis	7	30.4	2	5.0	0	0	9
Koilonychia	9	39.1	2	5.0	0	0	11
Pedal oedema	6	26.1	0	0	0	0	6
Knuckle pigmentation	5	21.7	2	5.0	0	0	7
Facial puffiness	3	13.5	0	0	0	0	3
Table-6: General physical examination findings in patients and severity of anaemia							

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mean pulse rate between types of anaemia. The mean BP was 121.2 / 76.3 mmHg. It was less in cases with severe anaemia with Hb <6 gm/dl (118.7 / 75.2 mm Hg), compared to cases with Hb > 9 gm/dl (122.7/77.3 mm Hg). There was no significant difference in mean blood pressure in different types of anaemia (table-6).

DISCUSSION

Anaemic cases younger than 50 years were more likely to have more severe anaemia as compared to older cases than 50 years. This is probably the younger individuals have a higher risk of worm infestations and also the onset of menopause with cessation of menstrual blood loss after the age of 50 in women.

53 cases in women had anaemia when compared to 47 cases in men. This shows that women are more likely to have anaemia.

The standard textbooks of medicine, which describe nutritional deficiencies, especially iron deficiency as the most common cause of anaemia.[6,7] In our study, out of the 7 other cases grouped, 3 cases had megaloblastic anaemia, 4 cases of severe anaemia had pancytopenia (2 cases) and chronic myeloid leukemia (2 cases).

Cases with more severe anaemia were more likely to have the number of symptoms. Patients with Hb > 10 gm/dl were usually symptomatic and incidentally detected to have anaemia on routine evaluation. All cases with Hb < 6 gm/dl had at least one symptom, while out of 39 cases with Hb >9 gm/dl, only 12 cases (30.8%) had at least one symptom. 100% of the cases with Hb < 6 gm/dl complained of fatigue, compare to just 13.5% of cases (n=5) with Hb > 9 gm/dl. Cases with Hb < 6 gm/dl (Severe /anaemia) had an average of 3.7 symptoms, compared to cases with Hb > 9 gm/dl (Mild anaemia) who had an average of 0.6 symptoms. This is consistent with the standard textbook of medicine which states that mild anaemias of insidious onset are usually asymptomatic.[7]

34.8% (8 out of 23) cases with Hb <6 gm/dl were vegetarians and were more likely to have Dimorphic anaemia. This could be because vegetarians are likely to have more severe anaemia as dietary iron of plant origin has less bioavailability.[8,9]

All cases with Hb < 6 gm/dl had at least one sign. Out of 39 cases with Hb > 9 gm/dl, only 8 cases had at least one sign. All the signs were found more frequently in cases with severe anaemia. 100% of the cases with Hb < 6 gm/dl had glossitis, compared to 21.6% of cases with Hb > 9 gm/dl. Cases with severe anaemia also had the number of signs on general physical examination. Cases with Hb > 9 gm/dl, had only an average of 0.2 signs.

The pulse rate has been described to be higher in case of severe anaemia as specified in standard textbooks. This is a part of the compensatory mechanism to raise the cardiac output and maintain tissue oxygenation.[10] Ickx et al. in 2000, demonstrated that anaemia causes a rise in pulse rate and stroke volume in patients whose Hb was lowered from 13 gm/dl to 8 gm/dl.[11]

Limitations

However, large sample study is needed to confirm these observations. The signs and symptoms we noted in this study with regard to anaemia could be utilized as useful diagnostic tools in picking up cases for further investigations and management. This would be more appropriate in crowded outpatient setting/ health camps where the time spent on each patient could be limited because of a large number of people seeking medical care.

CONCLUSION

Younger cases were more likely to have severe anaemia. Female in the menstruating and peri-menopausal age group were found to have moderate anaemia. Dimorphic anaemia was the most commonly seen type of anaemia. The most common presenting symptom was fatigue. The most common finding on general physical examination was pallor. The mean blood pressure was lower in cases with severe anaemia. In our study, we encountered pancytopenia and chronic myeloid leukemia in 4 cases, and they had severe anaemia.

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