



A STUDY OF CLINICAL PROFILE OF ANEMIA IN ELDERLY PATIENTS IN TERTIARY HEALTHCARE HOSPITAL.

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ABSTRACT

Detection of anemia in an older person should prompt appropriate clinical attention. When the presence of anemia becomes apparent, it is critical to differentiate whether it is physiological or pathological condition. As present study shows one third of the elderly patients had severe to life threatening anemia, it is advisable to evaluate each anemic patient carefully. We found that one fourth patients had anemia of chronic disease, comprehensive geriatric assessment essentially should include clinical review for presence of anemia and associated signs to reflect the possible etiology. Most frequent etiologies in our Indian standards in Anemia of Elderly are A OCD, IDA, B12 & folate deficiency, hematologic malignancies. Even though senescence is thought to be a contributing factor, underlying pathology always to be thoroughly explored. An effort should always be made to reach etiological diagnosis before instituting specific therapy. Appropriate attention should also be paid towards diet and nutrition of the geriatric population.

KEYWORDS : Anemia of elderly, A OCD, nutrition, malignancies (A OCD- anemia of chronic disease, IDA- iron deficiency anemia)

INTRODUCTION:

Anemia poses a significant health burden globally with an overall prevalence of 27% among populations worldwide.⁽¹⁾The National Health and Nutrition Examination Survey III study demonstrated that in elderly anemic patients, one third of cases are due to nutritional deficiencies while two thirds are due to chronic disease (ACD) or unexplained reasons for anemia (UA).⁽¹⁾Anaemia is quite frequently diagnosed in older individuals and is a key indicator of various reactive and clonal conditions. The aetiology of anaemia at older age is complex and ranges from bone marrow failure syndromes to chronic kidney disease, and from nutritional deficiencies to inflammatory processes. More than 10% of community-dwelling adults aged 65 years and older have WHO-defined anaemia. In older adults specifically, the presence of anemia, as well as low hemoglobin (Hb) levels, were found to be independent risk factors for increased frailty, reduced physical performance, and an increased risk of falls⁽²⁾.As the geriatric population grows, the incidence of anemia and its complications in this population will become a significant healthcare burden⁽³⁾.There are ample studies on anaemia in India but in old age people >65 years, there are certainly gaps in the knowledge about clinical features, complications and outcomes & a tertiary healthcare hospital would be an appropriate facility to study this. Hence in this study we have assessed the clinical profile of anaemia in the age group of above 65 years in tertiary care setting.

METHODOLOGY:

A cross sectional study was done in 163 (sample size) patients above 65 years selected by random sampling with anaemia (HB < 11 gm/dl) admitted or presenting to OPD of tertiary healthcare centre in duration of 18 months. After taking consent, all patients were evaluated clinically by taking thorough history by using pretested proforma and thorough physical examination and laboratory investigations and statistical analysis of data is done using IBM SPSS version 20.

RESULTS:

In our study, we found that mean age of the patients with

anaemia was 69.9 ± 5.1 years and Male to female ratio was 1.03:1. Most common presenting complaint was generalised weakness. History of decreased appetite was observed in 75 (46%) patients. 52 (32%) patients had history of alcohol consumption or smoking. 68.7% patients had one or > 1 comorbidities like hypertension, diabetes mellitus, chronic kidney disease and most common comorbidity was hypertension in 68 (41.7%). 39 (13.5%) patients had history of prior blood transfusion.

Majority, 67 (41.1%) had moderate anaemia, 45 (27.6%) mild anaemia, 40 (24.5%) had severe and 11 (6.7%) had life threatening anaemia.

37 (22.7%) patients had Anaemia of Chronic Disease (ACD), 126 (77.3%) patients had anaemia of other Causes like Iron Deficiency Anaemia in 38 (23.3%) patients, B12 deficiency in 29 (17.8%) and dimorphic Anaemia in 13 (8%) patients.

Most common type of morphological anaemia was Normocytic Normochromic Anaemia in 72 (44.2%) patients.

In our study majority of the patients of Anaemia of Chronic Disease (59.5%), B12 deficiency (51.7%), Unexplained Anaemia (66.7%) and Plasma Cell Dyscrasia (85.7%) were males. Majority of the patients of Dimorphic Anaemia (53.3%), Acute Leukaemia (81.3%), Lymphoproliferative Disorder (83.3%) and Aplastic Anaemia (80%) were females.

Mean haemoglobin was lowest in (6.5 ± 1.3 gm%) in Dimorphic anaemia. Haematocrit was lowest in in Dimorphic anaemia (22.5 ± 6.2 %) and Haematological Malignancies (22.7 ± 5.3 %). MCV was lowest in in Dimorphic anaemia (81.2 ± 20.5 fl) and unidentified anaemia (81.1 ± 9.7 fl). MCHC was lowest in in IDA (31.4 ± 3.3 gm/fl) (all p values < 0.05).

Mean MCH was lowest in (24.5 ± 3.8 pg) in IDA. RDW was highest (18.7 ± 4 fl) in Sr. B12 deficiency. Reticulocyte count was lowest (0.4 ± 0.2 %) in IDA and Sr. B12 level was lowest (73.8 ± 38.4 pg/ml) in dimorphic anaemia (all p values < 0.05).

Table No 1: Age Group Of Patients

Age group	Frequency	Percent
65 to 70 Years	112	68.7
71 to 80 Years	46	28.2
> 80 Years	5	3.1
Total	163	100.0

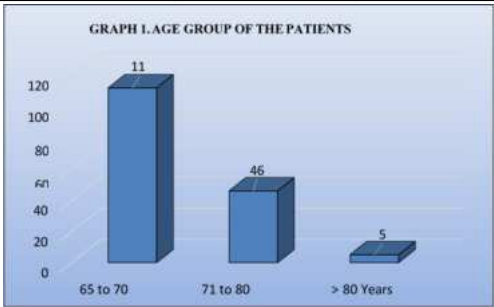


Table 2. Gender Distribution Of The Patients:

Gender	Frequency	Percent
Male	83	50.9
Female	80	49.1
Total	163	100.0

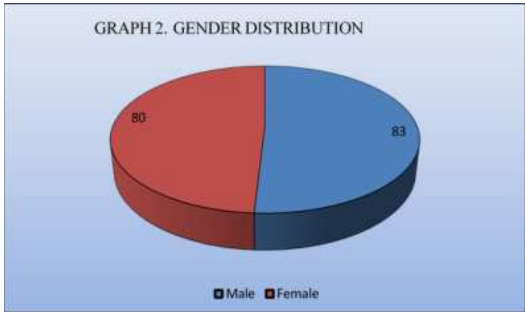


Table 3. Chief Complaints Of The Patients:

Chief Complaints	Frequency	Percent
Generalized weakness	44	27.0
Shortness of Breath	37	22.7
Easy fatiguability	22	13.5
Dyspnea on Exertion	16	9.81
Bipedal edema	5	3.1
Abdominal Distension	5	3.1
Decreased urine output	5	3.1
Fever	5	3.1
Decreased appetite	4	2.4
Lower backpain	3	1.8
Per rectal bleeding	3	1.8
Abdominal Pain	2	1.2
Altered sensorium	2	1.2
Cough with expectoration	2	1.2
Hematemesis	1	0.6
Chest pain	1	0.6
Difficulty in swallowing	1	0.6
Dry cough	1	0.6
Pyrexia of unknown origin	1	0.6
Recurrent LRTI	1	0.6
Vasculo-toxic snake bite	1	0.6
Loose stools	1	0.6
Total	163	100.0

Table 4. Personal History:

Personal History	Frequency	Percent
Decreased appetite	75	46.0
Decreased urine output	3	1.8
Constipation	3	1.8
Decreased sleep	3	1.8
Normal	79	48.5
Total	163	100.0

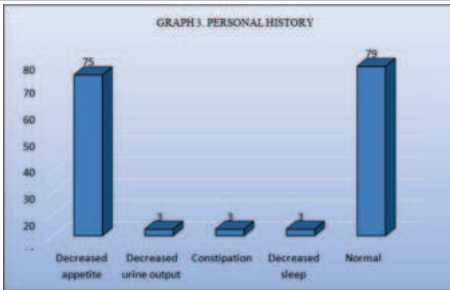


Table 5. Addictions Among Patients:

Addictions	Frequency	Percent
Chronic alcoholic	33	20.3
Chronic smoker	2	1.2
Chronic alcoholic & Smoker	2	1.2
Tobacco chewer	15	9.3
No Addictions	111	68
Total	163	100.0

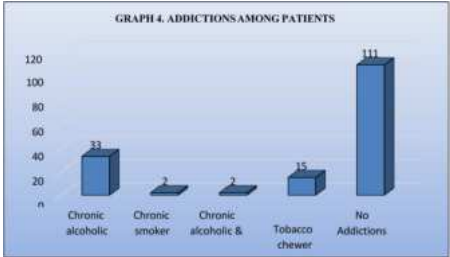


Table 6. Past History Of The Patients:

Past history	Frequency	Percent
Hypertension	68	41.7
Chronic Obstructive Pulmonary Disease	22	13.5
Diabetes Mellitus	20	12.3
Chronic Kidney Disease	15	9.2
Ischemic Heart Disease	7	4.3
Rheumatic Valvular Heart Disease	6	3.7
Heart Failure with Reduced EF	6	3.7
Hypothyroidism	4	2.5
Rheumatoid Arthritis	2	1.2
Diabetic Kidney Disease	2	1.2
H/o Fissure Surgery	1	0.6
Seizure Disorder	1	0.6
Follicular Lymphoma	1	0.6
Graves' Disease	1	0.6
Peripheral Vascular Disease	1	0.6
No Comorbidities	51	31.3
Total	163	100

Table 7. Diet Pattern Of The Patients:

Diet pattern	Frequency	Percent
Mixed	141	86.5
Veg	22	13.5
Total	163	100.0

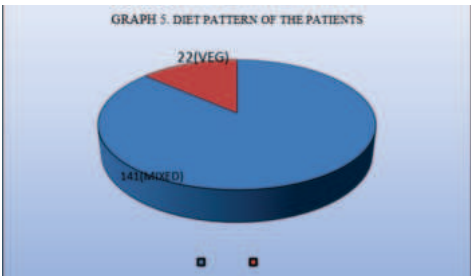
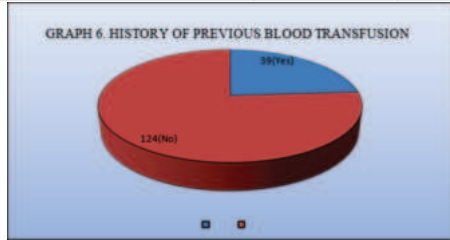


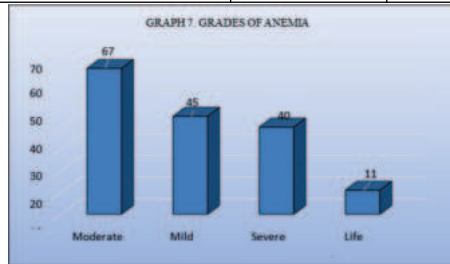
Table 8. History Of Previous Blood Transfusion:

Blood Transfusion	Frequency	Percent
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Yes	39	13.5
No	124	86.1
Total	163	100.0

**Table No.9 : Grades Of Anemia**

Grades of Anemia	Frequency	Percent
Moderate	67	41.1
Mild	45	27.6
Severe	40	24.5
Life Threatening	11	6.7
Total	163	100.0

**Table No 10: Diagnosis Of Anemia**

Diagnosis		Frequency	Percent
Anemia of Chronic Disease (ACD) (n=37)	Chronic Kidney Disease	16	9.8
	Congestive Cardiac Failure	6	3.7
	Decompensated chronic liver disease	5	3.1
	Hypothyroidism	4	2.5
	Chronic Obstructive Pulmonary Disease	1	0.6
	Mixed Connective Tissue Disease	1	0.6
	Rheumatoid Arthritis	1	0.6
	Right Ventricular Dysfunction	3	1.8
Other Causes (n=126)	Iron Deficiency Anemia	38	23.3
	B ₁₂ deficiency	29	17.8
	Dimorphic Anemia	13	8.0
	Unexplained Anemia	12	7.4
	Acute Leukemia	11	6.8
	Plasma cell dyscrasia	7	4.3
	Lymphoproliferative disorder	6	3.7
	Aplastic Anemia	5	3.1
	Myeloproliferative disorder	4	2.5
	Pure red cell aplasia	1	0.6
Total		163	

Table 11. Association Between Age Of The Patients And Diagnosis:

Diagnosis	Age Groups (Years)			Total
	61 to 70	71 to 80	> 80	
Anemia of Chronic Disease	28(75.7%)	8(21.6%)	1(2.7%)	37(100%)
Iron Deficiency Anemia	24(63.2%)	12(31.6%)	2(5.2%)	38(100%)
B ₁₂ deficiency	17(58.6%)	10(34.5%)	2(6.9%)	29(100%)
Dimorphic Anemia	9(69.2%)	4(30.8%)	0(0.0%)	13(100%)
Unexplained Anemia	7(58.3%)	5(41.7%)	0(0.0%)	12(100%)

Acute Leukemia	8(72.7%)	3(27.3%)	0(0.0%)	11(100%)
Plasma Cell Dyscrasia	6(85.7%)	1(14.3%)	0(0.0%)	7(100%)
Lymphoproliferative Disorder	5(83.3%)	1(16.7%)	0(0.0%)	6(100%)
Aplastic Anemia	5(100%)	0(0.0%)	0(0.0%)	5(100%)
Myeloproliferative disorder	3(75%)	1(25%)	0(0.0%)	4(100%)
Pure red cell aplasia	0(0%)	1(100%)	0(0.0%)	1(100%)
Total	112(100%)	46(100%)	5(100%)	163(100%)

Chi Square 12.73**P value 0.****Table 12. Association Between Gender Of The Patients And Diagnosis:**

Diagnosis	Gender		Total
	Male	Female	
Anemia of Chronic Disease	22(59.5%)	15(40.5%)	37(100%)
Iron Deficiency Anemia	19(50%)	19(50%)	38(100%)
B ₁₂ deficiency	15(51.7%)	14(48.3%)	29(100%)
Dimorphic Anemia	6(46.2%)	7(53.3%)	13(100%)
Unexplained Anemia	8(66.7%)	4(33.3%)	12(100%)
Acute Leukemia	2(18.2%)	9(81.3%)	11(100%)
Plasma Cell Dyscrasia	6(85.7%)	1(14.3%)	7(100%)
Lymphoproliferative Disorder	1(16.7%)	5(83.3%)	6(100%)
Aplastic Anemia	1(20%)	4(80%)	5(100%)
Myeloproliferative disorder	2(50%)	2(50%)	4(100%)
Pure red cell aplasia	1(100%)	0(0.0%)	1(100%)
Total	83(50.9%)	80(49.1%)	163(100%)

Chi Square 16.21**P value 0.094****Table 13. Morphological Types Of Anemia:**

Types of Anemia	Frequency	Percent
Normocytic Normochromic	72	44.2
Microcytic Hypochromic	61	37.4
Macrocytic Anemia	30	18.4
Total	163	100.0

Table 14. Mean Blood Parameters Of Aacd And Other Types Of Anemia:

Parameters	Anemia of Chronic Dis. (AOCD)		Other Causes		p value
	Mean	Std. Dev.	Mean	Std. Dev.	
Hemoglobin (gm%)	8.5	1.3	7.4	1.8	0.000
MCV (fl)	82.1	8.8	83.3	17.2	0.661
MCHC (gm/dl)	34.2	2.0	32.9	3.2	0.016
MCH (pg)	28.2	2.9	27.1	4.5	0.126
RDW (fl)	15.2	2.6	17.1	3.3	0.001
Reticulocyte Count (%)	0.8	0.5	0.6	0.4	0.023

Table 15. Mean Values Of Iron Profile Parameters And Sr. B12 Levels In Aacd And Other Types Of Anemia:

Parameters	Anemia of Chronic Dis.		Other Causes		p value
	Mean	Std. Dev.	Mean	Std. Dev.	
Serum Iron (μg/dl)	68.9	29.8	65.4	29.0	0.513
Serum Ferritin (μg/dl)	84.6	44.5	74.0	44.3	0.185
TIBC (μg/dl)	349.1	37.6	356.0	51.9	0.434
Transferrin saturation (%)	32.7	5.7	33.4	4.5	0.443
Sr B ₁₂ levels (pg/ml)	60.0		235.6	121.8	0.000

Table 16. Mean Age, Hemoglobin, Hematocrit And Severity Of Anemia:

Parameters	Mild		Moderate		Severe		Life Threatening		p value
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Age (Years)	70.1	5.9	70.1	5.2	69.8	4.6	68.2	2.8	0.687
Hemoglobin (gm%)	9.7	0.5	7.9	0.5	6.0	0.6	3.9	0.9	0.000
Hematocrit (%)	28.4	2.7	25.6	4.4	21.9	6.3	18.4	7.0	0.000
MCV (fl)	83.0	12.4	82.5	15.0	85.3	18.2	77.1	19.0	0.464
MCHC (gm/dl)	33.6	2.0	33.5	2.4	33.1	3.6	31.3	5.9	0.113
MCH (pg)	27.5	3.3	27.5	4.5	27.9	4.0	23.9	5.0	0.039
RDW (%)	16.0	3.1	16.2	3.1	17.5	3.2	19.0	3.8	0.008
Reticulocyte Count	0.7	0.5	0.7	0.4	0.5	0.4	0.5	0.3	0.012

Table 17. Blood Parameters (Sr. Iron, Sr. Ferritin, TIBC, Transferrin Saturation And Sr. B₁₂) And Severity Of Anemia:

Parameters	Mild		Moderate		Severe		Life Threatening		p value
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Serum Iron (µg/dl)	65.0	27.9	71.2	27.6	59.1	30.4	68.2	36.9	0.214
Serum Ferritin (µg/dl)	76.4	39.3	81.9	44.7	68.5	47.0	76.8	54.4	0.518
TIBC (µg/dl)	351.9	43.9	347.9	44.6	370.1	60.2	344.5	32.9	0.114
Transferrin saturation (%)	32.5	6.1	33.7	4.9	33.3	3.5	32.9	2.8	0.654
Sr B ₁₂ levels (pg/ml)	293.7	94.3	258.1	110.4	212.3	130.4	254.7	115.7	0.012

Table 18. Blood Parameters (Hemoglobin, Hematocrit, MCV, Mchc) Among Other Causes Of Anemia:

Diagnosis		Hemoglobin (gm%)	Hematocrit (%)	MCV (fl)	MCHC (gm/dl)
Aplastic anemia	Mean	7.8	26.8	83.6	34.4
	Std. Dev.	1.5	5.4	3.2	1.1
B ₁₂ deficiency	Mean	7.0	23.6	104.0	33.7
	Std. Dev.	1.8	5.5	12.2	4.1
Dimorphic anemia	Mean	6.5	22.5	81.2	32.8
	Std. Dev.	1.3	6.2	20.5	2.7
Hematological Malignancies	Mean	7.3	22.7	83.0	34.0
	Std. Dev.	2.0	5.3	6.4	2.4
IDA	Mean	7.5	25.0	66.9	31.4
	Std. Dev.	1.8	5.5	8.8	3.3
UA	Mean	9.0	29.4	81.1	32.3
	Std. Dev.	1.3	3.9	9.7	2.1
P value		0.010	0.007	0.000	0.018

Table 19. Blood Parameters (Mch, Rdw, Reticulocyte Count And Sr. B₁₂ Levels) Among Other Causes Of Anemia:

Diagnosis		MCH (pg)	RDW (fl)	Reticulocyte Count	Sr. B ₁₂ levels (pg/ml)
Aplastic anemia	Mean	29.0	16.4	0.9	293.8
	Std. Dev.	1.6	1.9	0.4	26.5
B ₁₂ deficiency	Mean	29.3	18.7	0.5	90.1
	Std. Dev.	5.6	4.0	0.3	81.3
Dimorphic anemia	Mean	26.5	17.1	0.5	73.8
	Std. Dev.	4.6	3.3	0.4	38.4

Hematological Malignancies	Mean	28.0	17.2	1.0	304.1
	Std. Dev.	3.0	3.2	0.4	40.7
IDA	Mean	24.5	16.6	0.4	326.6
	Std. Dev.	3.8	2.9	0.2	39.4
UA	Mean	26.3	15.3	0.8	322.8
	Std. Dev.	4.0	2.8	0.3	27.5
P value		0.001	0.048	0.000	0.000

CONCLUSION

Detection of anemia in an older person should prompt appropriate clinical attention. Present study shows non-specific symptoms like generalized weakness, Shortness of Breath in and easy fatiguability which are ignored in the geriatric population as they could be important pointers towards presence of anemia in these patients. When the presence of anemia becomes apparent, it is critical to differentiate whether it is physiological or pathological condition. As present study shows one third of the patients severe to life threatening anemia, it is advisable to evaluate each anemic patient carefully, irrespective of the screening costs, provided that the diagnostic tests chosen are appropriate, reasonable and justified. We found that one fourth patients had anemia of chronic disease, comprehensive geriatric assessment essentially should include clinical review for presence of anemia and associated signs to reflect the possible etiology. It can be improved by correction of underlying cause. Most frequent etiologies in our Indian standards in Anemia of Elderly are AOCD, IDA, B12 & folate deficiency, hematologic malignancies (includes MDS). Multiple concomitant etiologies will be present. Even mild anemia also leads to adverse outcome in health. Even though senescence is thought to be a contributing factor, underlying pathology always to be thoroughly explored. An effort should always be made to reach etiological diagnosis before instituting specific therapy. Appropriate attention should also be paid towards diet and nutrition of the geriatric population.

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