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Clinicohematological Study Of Anemia In Geriatric Patients

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ABSTRACT

The present study was conducted in the Hematology section of the Department of Pathology over two years. Two hundred and seventy-three geriatric patients diagnosed as anaemic as per WHO criteria were included in the study—maximum 51.2%number of cases from the age group of 60-65 years. Geriatric anaemia showed slight male preponderance (52.4%) over females (47.6%). Lowest haemoglobin value observed was 3.4 gm/dl, while the highest value was 12.3 gm/dl in males and 11.9 gm/dl in females. Most of the study population presented with moderate grade anaemia (47.6%) Patients requiring hospitalisation (71.8%) outnumbered the patients treated on OPD basis (28.2%). Among the hospitalised patients, moderate grade (51.5%) was common Generalised weakness was the most common symptom (69.6%) followed by fatigue (62.2%). There was a significant association (p= 0.009) observed between the severity of anaemia and dyspnoea Underlying malignancy (20.1%) was the most common comorbid condition among the anaemic subjects. Amongst the 148 cases of anaemia of chronic disease, 120 cases (81%) had normocytic normochromic blood picture, and the majority of the cases had mild anaemia (75 cases-50.6%). Iron deficiency was 2nd leading cause of geriatric anaemia (15.3%); presenting with moderate grade anaemia in a majority (69%). Chronic blood loss was the most common contributing factor for iron deficiency anaemia (61.9%). The incidence of anaemia is quite high among elderly patients, more so when associated with chronic diseases and malignancies. Despite modern diagnostic advances, geriatric anaemia remains underreported and inadequately investigated.

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INTRODUCTION

Anaemia in the elderly is a prevalent problem associated with morbidity and reduced health-related quality of life, regardless of the underlying cause (Vanasse and Berliner, 2010). Using World Health Organization (WHO) criteria for anaemia, the prevalence is found to range from 8 to 44%, with the highest prevalence in men 85 years of age and older (Beghé *et al.*, 2004). As uncovered in the Indian cross-sectional assessments, the power varies from 6% and 30% among folks and someplace in the scope of 10% and 20% among females. In a more seasoned individual, aetiology of whiteness contrasts from increasingly energetic adults and can have outrageous disarrays. Anaemia in the elderly since symptoms like fatigue, weakness attributed to the ageing process itself.

Nevertheless, paleness should not be recognised as an unavoidable aftereffect of developing (Shrivas-

Table 1: Frequency of presenting symptoms in anemic patients

Symptom	Number	Percentage
Generalised weakness	190	69.6
Fatigue	170	62.2
Giddiness	36	13.1
Headache	37	13.5
Bleeding	16	5.8
Dyspnoea	110	40.2
Chest pain	12	4.4
Loss of appetite	77	28.2
Weight loss	70	25.6
Pain in abdomen	18	6.6
Joint pain	25	9.1
Fever	49	17.9
Palpitations	85	31.1

Table 2: Statistical summary of hematological parameters

Hematological Parameters	Mean	Standard Deviation	Range
Hb (gm/dl)	9.14	1.91	3.4-12.3
MCV(fL)	83.8	11.18	53.2-124.6
MCH(pg)	26.6	4.37	13.4-37.5
MCHC (%)	31.3	2.49	17.9-38.1
RBC count(millions/cu.mm)	3.39	0.82	0.78-6.34
HCT (%)	28.7	5.65	6.4-35.9
RDW (%)	14.93	3.25	9.3-36.3
WBC count(x103/cu.mm)	6.7	8.8	1.1-94
Platelet count(lakhs/cu.mm)	3.1	1	0.4-6.6

tava *et al.*, 2013). Contrary to the extensively held feelings that the shortcoming is an innocuous condition of developing age, continuous evidence recommends that whiteness doesn't reflect a standard developing procedure, yet instead is a marker of underlying pathology as well as a purpose behind other physiological dysregulation. In a study of adults aged 85 and older, anaemia was associated with a two-fold rise in 5-year mortality risk, independent of age, sex, and medical conditions (Izaks, 1999). In India, the death rate is declining; thus, there is a significant rise in the elderly population. The demographic change has obvious implication for individuals and society. It will impact on healthcare provision as longer life enjoyed in good health. Several studies worldwide have shown a high prevalence of anaemia with elderly, harming function as well as the quality of life (Olivares *et al.*, 2000). The continuous valuation for different disagreeable consequences of whiteness has made energy for a dynamically complete perception in geriatric iron lack. Despite anaemia being a prevalent and sig-nificant problem in the elderly, it often remains under-diagnosed and is not reported because it is mostly perceived as a mere consequence of ageing (Tettamanti *et al.*, 2010). Powerlessness to break down and survey sickliness in them may provoke deferred assurance of potentially treatable conditions. Therefore, it becomes all the more important to look for type, the severity of anaemia and its etiopathogenesis to plan for better prophylactic and management strategies. Though the prevalence of anaemia in the elderly is high and the size of the geriatric population is rising, very few studies have examined the effects of anaemia in elderly patients, especially in India. Hence, the purpose of the study was to evaluate the characteristics of geriatric anaemia and correlate various possible etiopathology and clinical presentations in geriatric patients attending our tertiary care hospital.

MATERIALS AND METHODS

The present study was conducted in the Hematology section of the Department of Pathology, for two

years. The local Ethics committee approved the review following the Declaration of Helinski.

Design Of Study

Descriptive and cross-sectional. INCLUSION CRITERIA:- 1. Age group above 60 years. 2. Hb < 12 gm/dl in females and < 13 gm/dl in males. EXCLUSION CRITERIA 1. Below 60 years of age. 2. Known haematological disorders since childhood. All samples were screened, and the cases having anaemia and those who were above 60 years of age were enrolled in the study after taking proper consent.

Clinical Workup

A detailed clinical history was recorded, and physical examination was noted in the proforma sheet which included: Chief Complaints history Personal history Dietary history of drugs Environmental history Socioeconomic status

Hematological Investigations

Venous blood collected in EDTA bulb and all routine haematological investigations were carried out. The following parameters were obtained from automated haematology analyser (Sysmex XT-1800i) Hb HCT RBC count RBC indices (MCV, MCH, MCHC) RDW Platelet count.

Observations

The present study was a prospective and cross-sectional study carried out for two years which included 273 anaemic elderly patients and above attending our tertiary care hospital.

Age

The age range in the present study was 60 – 91 years. The mean age was 68.4 years. Maximum patients belonged to the age group of 60 – 65 years (51.2%).

Gender

143 (52.4%) subjects were males, and 130 (47.6%) were females in the present study. Thus, there was a slight male preponderance.

Grading Of Anemia

Most of the study population presented with moderate grade anaemia (47.6%) followed by mild grade (38.8%) and severe grade (13.6%) anaemia. Moderate grade anaemia was seen in the majority for both males (46.2%) and females (49.3%) at the time of the investigation.

Hospitalisation Of Anemic Patients

Majority of study subjects were hospitalised (71.8%) while 28.2% were treated on the outpatient department (OPD) basis. Among the hospitalised patients, moderate grade (51.5%) was common while mild grade anaemia (59.8%) was prevalent among those subjects treated on OPD basis.

The above Table 1 shows the frequency of various presenting symptoms in anaemic patients in the present study. The presenting symptom in the present study was a generalised weakness (69.6%) followed by fatigue (62.2%) as shown in above Table 1.

Association of presenting symptoms and grades of anaemia

There was a significant association observed between the severity of anaemia and dyspnoea with p= 0.009. This shows that the severity of anaemia was higher in subjects presenting with dyspnoea. Similarly, no significant association was found between other presenting symptoms.

Frequency of clinical signs in anaemic patients

The clinical sign in the present study was Pallor (93.7%) followed by oedema (34.7%).

Association between Clinical signs and grades of anaemia

Significant (p=0.008) association was found between oedema and grade of anaemia, suggesting that the severity of anaemia was higher among patients with oedema. Bilateral scripts showed marginally significant association with a grade of anaemia, showing that patients can present with heart failure at severe as well as near-critical categories of anaemia. Pallor, though present in a maximum number of subjects, could not help gauge the severity of anaemia.

Comorbid conditions in anaemic patients

Underlying malignancies (20.1%) were noted to be the most common comorbid condition in anaemic patients in this study; followed by kidney disease (19.4%) and diabetes mellitus (19%).

The above Table 2 gives a statistical summary of various haematological parameters viz Hb, MCV, MCH, MCHC, RBC count, HCT, RDW, WBC count and Platelet count as observed in the present study.

Association between aetiology and grading of anaemias

the association between the various etiologies of anaemia and the grades of anaemia as observed in the present study. Mild grade anaemia was noted in majority cases of combined deficiency anaemia (63.2%), anaemia with chronic disease (50.6%), post-hemorrhagic anaemia (46.2%) and all 3 cases of unexplained anaemia. Moderate grade anaemia was noted in majority cases of iron deficiency

anaemia (69%), megaloblastic anaemia (63.2%), hemato-lymphoid malignancy (64.7%), infection (66.7%) and both the cases of myelodysplastic syndrome. Severe grade anaemia was noted in all cases of both auto-immune hemolytic anaemia (2/2 cases) and aplastic anaemia (2/2 cases).

DISCUSSION

In elderly patients in whom sickliness has high power, neither the haemoglobin edge nor the character of the disease-causing iron lack is comfortably settled. This is a critical difficulty, considering the way that even smooth iron insufficiency can deal with a patient's flourishing and perseverance, paying little brain to the fundamental explanation. Since anaemia is a contributor to morbidity, mortality and frailty in the elderly patients, a better understanding of the pathophysiology of anaemia in this age group is necessary to provide a critical endpoint for intervention that will improve continuance and individual fulfilment in the developing masses. The present study was specifically aimed at analysing the haematological characteristics of geriatric anaemia and investigating the aetiology of anaemia in geriatric patients attending our tertiary care hospital. In the present study, a total of 273 cases of anaemia were studied in geriatric patients (i.e. age above 60 years) attending our tertiary care hospital. For the selection of anaemia cases, WHO criteria were applied. The diagnosis of anaemia was established by clinical examination and supplemented by appropriate haematological investigations, i.e. Hb level, RBC count, HCT, MCV, MCH, MCHC, RDW and PS examination.

Distribution of geriatric anaemia according to age

In the present study, maximum of subjects were in the age group of 60-65 years (51.2%). A similar finding was seen in a survey by Prakash *et al.* (2015).

Distribution of geriatric anaemia according to gender

The current study showed slight male predominance over females similar to other studies mentioned in the above table. Thus, geriatric anaemia, in contrast to anaemia in the younger population, is predominant in males than females. The possible contributory factor may be cessation 85 of menstrual bleeding in elderly females due to menopause (Tilak *et al.*, 2013). have observed that in postmenopausal women, the haemoglobin concentration increases by 0.6 g/dl per decade and hence women may be less anaemic than men in an elderly age group.

Profile of grades of anaemia

The current study showed that maximum subjects had moderate anaemia (47.6%), followed by mild anaemia (38.8%) and severe anaemia (13.6%). Similar finding noted by Raina *et al.* (2014) and Mann *et al.* (2014) study. It was found that predominant piece of the subjects with delicate whiteness was oblivious to being grey, initiating that smooth feebleness in more seasoned routinely goes unscreened and unfamiliar and is much of the time excused and not offered an explanation to the specialist by the patient.

Hospitalisation of anaemic patients

Hospitalised anaemic patients in our study were higher in number than those treated on OPD basis. However, unlike the above mentioned population-based studies, which shows a comparison of hospitalisation between non-anaemic and anaemic patients, our study was hospital-based and limited to anaemic patients only. Hence, in contrast with other studies is not possible.

Clinical profile of geriatric anaemia- Symptoms

In this study, it was observed that generalised weakness (69.6%) was the most common presenting symptoms in the subjects followed by fatigue (62.2%). In the hospital-based studies done by Bhasin and Rao (2011) and Prakash *et al.* (2015), fatigue was most common presenting symptom while Raina *et al.* (2014), found generalised weakness as the most common presenting symptom among the anaemic study subjects. Subjects presenting with dyspnoea (40.2%) were found to have significantly more severe grades of anaemia (p=0.009). This warrants early diagnosis and treatment of anaemia before the development of severe grades of anaemia. Non-specific symptoms like fatigue and weakness should not be ignored in the geriatric population. Although the significant association was not found between the severity of anaemia (p>0.1) and the presence of these symptoms, they are essential pointers towards the presence of anaemia.

Clinical profile of geriatric anaemia- Signs

The current study showed that Pallor was seen in 93.7% of subjects. In Raina *et al.* (2014) study, Pallor was observed in all cases (100%). A clinical facility based Indian examination by Kalantri *et al.* (2010) exhibited that whiteness can unassumingly raise the probability of genuine iron inadequacy while its nonappearance can block extreme feebleness. He also stated that neither presence nor absence of Pallor, regardless of its severity, can accurately rule in or rule out moderate anaemia. Sheth *et al.* (1997)

studied the relation of conjunctival Pallor to the presence of anaemia. It was found that proximity of conjunctival Pallor with no other information prescribing iron insufficiency is reason enough to perform haemoglobin estimation. Whiteness being an enthusiastic finding, is observer unequivocal. It can also be confounded by the presence of factors like icterus or opaque sclera, thus obscuring diagnosis. Its presence should raise suspicion of anaemia, and further evaluation should be done, as it is better to rely on haemoglobin values. The severity of anaemia was significantly higher (p=0.008) among patients with oedema, thus showing that it is an indicator of severe anaemia. Pallor, though present in a maximum number of subjects, was not significantly associated with the grade of anaemia (p=0.587) hence does not help in assessing the severity of anaemia.

Co-morbidities in cases of geriatric anaemia

Underlying malignancies (20.1%) were the most common co-morbidity seen in our study. A similar finding was noted in the study by Corona *et al.* (2014). Amongst them, non-haematological malignancies accounted for about 69.1%. The PS examination in these cases showed normocytic normochromic to be the most common pattern followed by microcytic hypochromic. De Amicis *et al.* (2015) study showed a higher prevalence of diabetes mellitus, liver disease and CKD in anaemic patients as compared to non-anaemic. A study by Robinson *et al.* (2007) on nursing home patients showed that CKD contributes even more unequivocally in increasingly prepared age to the high ordinariness of whiteness. This high prevalence rate of anaemia due to chronic renal disease is significant, as advanced kidney diseases associated with anaemia are known to have an impact on prolonged hospitalisation and mortality. This shows that a large number of the geriatric population have associated co-morbidities which need to be effectively diagnosed and treated.

Haematological Parameters

Our finding is similar to the study done by DeAmicis119 et al. as both are hospital-based studies. However, research done by Callera *et al.* (2015) is a population-based study, so mean haemoglobin value is higher.

Findings of Peripheral Blood smear

Majority of peripheral blood smears in the present study showed a normocytic normochromic picture (58.6%). This is in concordance with findings of other studies, as shown in the above table. Out of the various etiologies showing normocytic normochromic anaemia, anaemia of chronic disease accounted for maximum cases (75%). It was also seen that although iron deficiency presented with a mainly microcytic picture on a peripheral blood smear, few cases showed normocytic profile. This indicates that a normocytic picture on PS does not rule out the presence of IDA completely, and should be investigated further for proper diagnosis. Thus, the morphological pattern of anaemia on peripheral smear alone is not sufficient for etiological diagnosis of anaemia, and further evaluation is needed for making a proper diagnosis.

Etiological Profile Of Geriatric Anemia

In the present study, anaemia of chronic disease was the leading cause of geriatric anaemia accounting for about 54.3%, followed by iron deficiency anaemia (15.3%).

Like in the present study, all the above studies observed anaemia of chronic diseases to be the most common cause of geriatric anaemias. However, this finding is in contrast to few other Indian hospital-based studies- Bhasin and Rao (2011) and Vanamala Alwar *et al.* (2013) which claimed nutritional deficiencies as a leading cause of geriatric anaemia.

Iron deficiency anaemia

In the present study, iron deficiency was the etiological factor in 15.3% (42/273) cases. Similar percentages of iron deficiency anaemia were reported in studies by Tilak *et al.* (2013) (12.3%) and De Amicis *et al.* (2015) (19%). Chronic blood loss was the most common contributing factor for IDA accounting for about 61.9% cases. In contrast, in the rest of cases, IDA can be considered as a result of inadequate nutrition. In 24 out of 42 cases (57%) of IDA, gastro-intestinal blood loss was detected. Stool examination for occult blood was positive in 5 cases while 1 case showed the presence of eggs of hookworm. In a study by Rockey and Cello (1993), the incidence of gastro-intestinal blood loss noted in geriatric patients with IDA was 62%.

Megaloblastic anemia

The current study showed that 6.9% (19/273) of subjects suffered from megaloblastic anemia. Similar percentage of megaloblastic anemia was reported by Prakash *et al.* (2015) study. Majority presented with moderate to severe grades of anemia while PS revealed macrocytic pattern.

Combined Deficiency anemia

In present study, combined deficiency was noted in 6.9% (19/273) cases. Similar to our study, percentages reported by Tilak *et al.* (2013) and De Amicis *et al.* (2015) study were 7.9% and 8% respectively. This reinforces the need to investigate for

other causes of nutrition deficiency anemias, even after one form of deficiency has been detected.

Hematological malignancy

In present study, we observed 17 cases of hematological malignancies accounting to 6.2% anemic cases. Percentage reported by van Staden and Weich (2015) study was 7.1%.

Post-hemorrhagic anemia

About 4.8% (13/273) cases in our study were attributed to post-hemorrhagic state. The percentage reported in van Staden and Weich (2015) study was 6.4%. Similar incidence has been reported in literature (Anía *et al.*, 1997).

Infections

In present study, we observed total 6 cases of infection causing anemia which included malaria (2 cases), retro-viral disease (3 cases) and dengue (1 case). The percentage in our study was 2.2% which is lower than those reported by Geisel *et al.* (2014) studies. Diagnosis was confirmed by PS examination, rapid malarial antigen test, serum antibody concentration for dengue and ELISA test for HIV.

Hemolytic anemia

In present study, we observed total 2 cases of hemolytic anemia which were auto-immune in nature. The percentage in our study was 0.8%. This finding is comparable to De Amicis *et al.* (2015) study which had 1% cases of hemolytic anemia.

Aplastic anemia

In present study, we observed total 2 cases of aplastic anemia. The percentage in our study was 0.8% which is comparable to Mann *et al.* (2014) study which had 1.67% cases. The percentages reported by studies were 4.3% and 4% respectively.

Myelodysplastic

Syndrome In present study, we observed total 2 cases (0.8%) of MDS. The percentages reported by Raina *et al.* (2014) studies were 1.4% and 4.8% respectively.

Unexplained anemia

Findings in present study are in concordance with Tilak *et al.* (2013) study. However, in other studies, unexplained anemia was significantly high. This could be attributed to an incomplete diagnostic evaluation.

CONCLUSIONS

The incidence of anemia is quite high among elderly patients, more so when associated with chronic diseases and malignancies. Despite modern diagnostic advances, geriatric anemia still remains underreported and inadequately investigated. There is obviously a necessity for increasingly vital awareness of sickliness in the more established and of its criticalness to the extent less blessed outcomes, postponed facility remain and extended mortality. The current examination underlines the importance of routine screening and individual assessment of the etiological explanations behind sickliness in old, allowing the perfect initiation of perfect and appropriate treatment.

Conflict of Interest

None to Disclose.

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