A Study of Severe Anemia in Elderly with Special Reference to Etiology

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Abstract - *This study was a prospective, observational study conducted over two years in a tertiary care hospital in Navi Mumbai, India, to study severe Anemia in the elderly with a special reference to etiology. Owing to India's increasing elderly population, Anemia in the elderly is a common condition that is vastly overlooked. The study included 50 individuals with severe Anemia (Hb less than 8g/dL), with an age more than or equal to 60 years. Our study's age varied from 60 to 82 years, with maximum patients from 60 to 65. Easy fatigability was present in 80% of patients, followed by anorexia, tiredness, breathlessness, and pedal edema. Generalized weakness, black colored stools, jaundice, headache, dysphagia, intermittent claudication, giddiness, and lower limb weakness and paresthesia were some other symptoms experienced by these patients. The most common type of Anemia among elderly patients, as found through this study, was microcytic hypochromic, followed by normocytic normochromic, dimorphic, and macrocytic hyperchromic Anemia. Severe Anemia in the elderly had varied manifestations.*

Keywords — *Anemia, Atypical, Elderly, Etiology, Haemoglobin, Fatiguability*

I. INTRODUCTION

Anemia is defined as a hemoglobin concentration of less than 12g/dl in women and less than 13g/dl in men according to world health organization criteria. Severe Anemia in the elderly is defined as a hemoglobin concentration of less than 8 mg/dl in both women and men. The most common causes of Anemia include nutritional deficiencies (iron, vitamin B12, folate), chronic diseases, hematopoietic malignancies (Myelodysplastic syndrome), bleeding disorders, various blood disorders (Thalassemia, Sickle cell disease), autoimmune hemolysis, etc. Anemia in the elderly should not be ignored as it can disguise various underlying conditions.

Diagnosis of Anemia is made initially with complete blood count and peripheral smear examination. It is then used to determine the causative factors, serum iron studies, serum vitamin B12 levels, reticulocyte count, LDH, Liver function tests, and Renal function tests are done. If these tests are inconclusive, then a bone marrow examination can be done.

Anemia affects the quality of the life of the patient as well as the caregiver as it causes various health hazards. This study contemplates a review of clinical manifestations and causative factors of severe Anemia in the elderly.

II. MATERIALS AND METHODS

The study was a prospective observational study in which the data was collected from elderly patients (age $\geq$ 60 yrs) detected having severe Anemia (both inpatient and outpatient) attending MGM Hospital for treatment from May 2018 to December 2019 in the Department of Geriatrics, MGM Medical College Hospital, Navi Mumbai.

The detailed history of symptoms such as easy fatigue and loss of energy, unusually rapid heartbeat with exercise, shortness of breath, headache, dizziness, concentration difficulty, pale skin, leg cramps, insomnia, and thorough physical examination, particularly the gastrointestinal system. All previous history of hospital admissions and investigations were recorded. Investigations done were complete blood count, serum iron studies, serum vitamin B12 levels, P.S for cell type, reticulocyte count, stool for occult blood, urine routine & microscopy, USG abdomen & pelvis, bone marrow aspiration & biopsy.

III. OBSERVATION & RESULTS

The study included 50 elderly patients of Anemia with age equal to or more than 60 years, ranging from 60 to 84. Easy fatigability was the commonest symptom, present in 40 (80%) patients followed by anorexia in 30 (60%) patients, tiredness in 23 (46%) patients, breathlessness and pedal edema in 21 (42% each) patients, generalized weakness in 18 (36%), lightheadedness and jaundice in 5 (10% each), black colored stools, headache and dysphagia 4 (8% each) patients, claudication 3 (6%) patients, bleeding only in 1 (2%) patients. The associated morbidities present were Diabetes mellitus in 16 (32%) patients, Hypertension in 23 (46%) patients, ESRD in 7 (14%) patients, CVA in 5 (10%) patients. Out of the total, 50 patients, 18 (36%) patients had a history of frequent alcohol consumption, and 7 (14%) patients were using anticoagulants for different conditions. The most common type of Anemia seen in peripheral smear among elderly patients was found to be microcytic hypochromic (56%), followed by normocytic normochromic

(24%), dimorphic, and macrocytic hyperchromic Anemia (10% each). 8 (16%) patients had positive stool occult blood, and pallor was seen in 48(96%) patients. Bone marrow examination was performed in 14 (28%) patients and was found to be microplastic in 12%, megaloblastic with erythroid hyperplasia in 8%, marked erythroid hyperplasia in 4% patients. Hypercellular marrow in 2% and severely hypocellular marrow was seen in 2% of patients. On ultrasonography, hepatomegaly was seen in 105, splenomegaly in 8%, and hepatosplenomegaly in 6% of patients. The majority of the patients (30%) had 6-7 gm% Hb, followed by 26% had 5-6 gm % Hb, and 20% had more than 7gm%, 16% had 4-5gm% Hb, and 8% had less then 4gm%Hb. In the study, serum iron levels were <50µg/dl in 60%, 50-100µg/dl in 10%, 100-150µg/dl in 18%,150-200µg/dl in 4% and >250µg/dl in 8% patients. Thus, most elderly patients with severe Anemia had severe iron deficiency, i.e., serum iron levels <50µg/dl. The serum ferritin concentration was <100ng/ml in 60%, 200-300ng/ml in 22%, >400ng/ml in 8%, 100-200ng/ml in 6%and between 300-400ng/ml in 4% patients. Vitamin B 12 level was found to be <500pg/ml in 80% patients. Reticulocyte count was <1 in 42% and 1-2 in 38% of patients with more than 4 in only 4%.
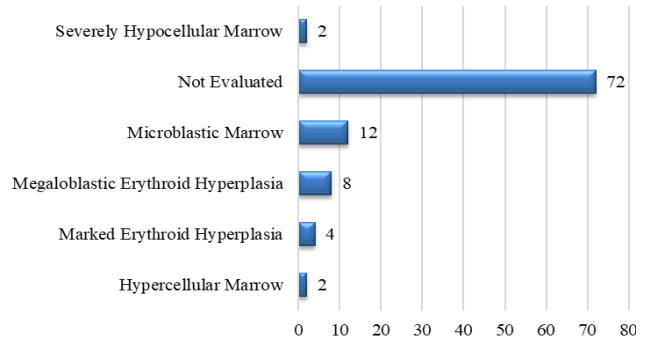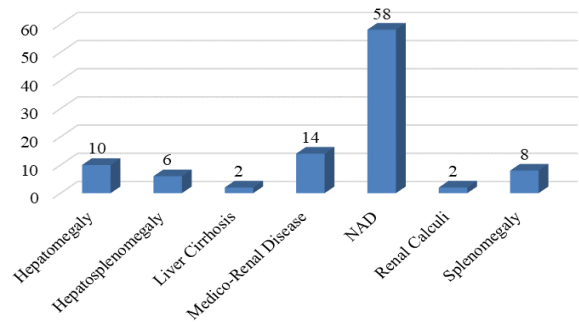
IV. FIGURES

Fig. I Symptoms and their frequencies noticed during the study

Fig. II Types of Anemia and their distribution

Fig. III Bone marrow examination & findings

Fig. IV Findings of USG Abdomen & Pelvis
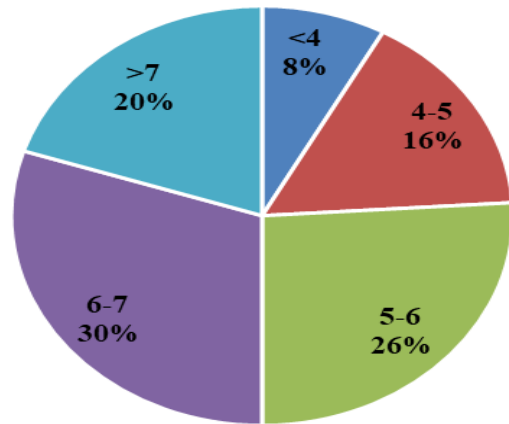
Fig. V Distribution of no. of patients with various levels of hemoglobin
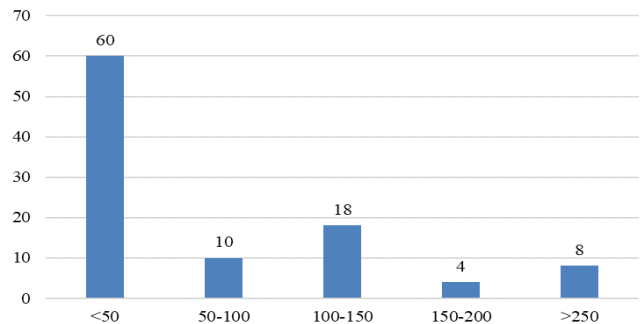

Fig. VI Distribution of levels of Serum Iron among patients with anemia
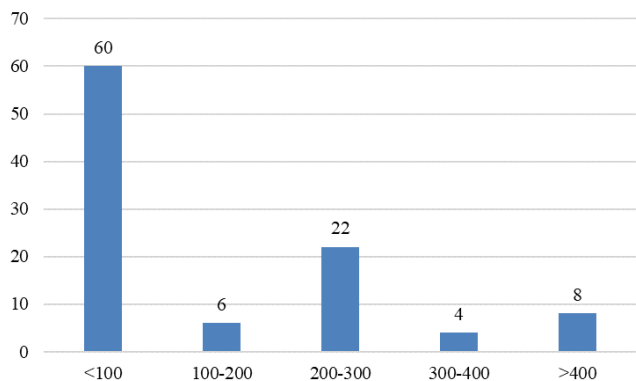
Fig. VII Distribution of levels of Serum Ferritin among patients with anemia
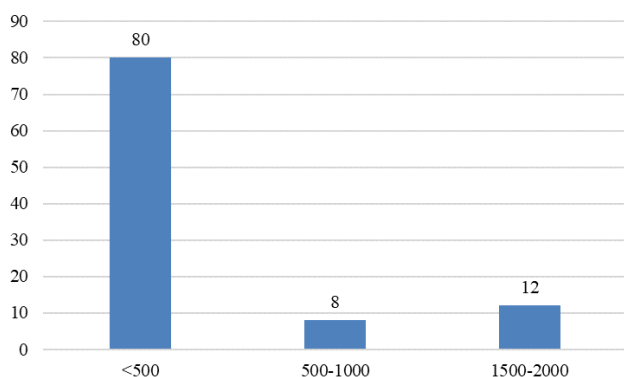

Fig. VIII Fig. VIII Distribution of levels of Vit B12 among patients with anemia
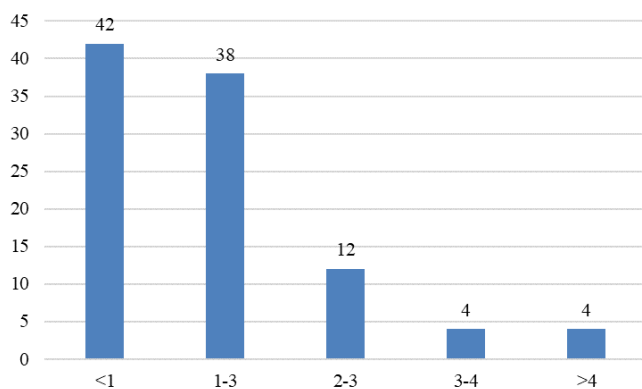

Fig. IX Distribution of levels of Retic Count among patients with Anemia

V. DISCUSSIONS

In this prospective observational study, elderly patients of the age ≥60 years (both inpatient and outpatient) detected having severe Anemia (hemoglobin less than 8 g/dl) were studied for clinical signs and symptoms, and etiologies delineate strategies for treatment and prevention of severe Anemia.

In the study, 38% were between 60-65 years, followed by 32% between 65 and 70, with gender-wise distribution of 50% males and 50% females. Among the various clinical features in the study, easy fatigability was present in 80%, followed by anorexia in 60%, tiredness in 46%, breathlessness & pedal edema in 42% each, generalized weakness in 36%, lightheadedness & jaundice in 10% each, black-colored stools headache & dysphagia in 8% each, claudication in 6%, bleeding 2% were also seen. The tissue hypoxia, which occurs due to the decreased oxygen-carrying capacity, is responsible for the clinical signs and symptoms. In 78% of the patients, no other non-specific symptoms of severe Anemia were observed. In the study, 32% of patients had diabetes mellitus, 46% had hypertension, and 14% had ESRD, 10% presented with CVA. In the study, 36% of the patients had a history of frequent alcohol consumption. Excessive alcohol consumption causes bone marrow suppression, which ultimately affects all three lineage precursors. It indirectly causes nutritional deficiencies, mainly vitamin B12 deficiency. In the study, 96% had pallor with a peripheral smear showing 56% microcytic hypochromic Anemia, followed by 24% normocytic normochromic anemia,10% each of dimorphic & macrocytic hyperchromic Anemia. Stool occult blood allows for an increase in early-stage cancer detection showed 16% positivity in the study. Bone marrow examination is the most reliable test for diagnosing Anemia. Diseases that show hypoplasia and marrow infiltration are demonstrated well in bone marrow aspiration and biopsy. It should be considered in unclear macrocytic Anemia, especially when additional cytopenias are seen and other possible causes of leukopenia or thrombocytopenia have been excluded. In 28% of 0f patients, bone marrow examination showed microplastics in 12%, megaloblastic with erythroid hyperplasia in 8%, and marked erythroid hyperplasia in 4% of patients. The abdomen's ultrasonography showed hepatomegaly in 10%, splenomegaly in 8% & hepatosplenomegaly in 6% of patients. Liver cirrhosis was seen in 2%, medico-renal disease in 14%, and renal calculi in 2% of patients. In the study majority of patients(30%) had 6-7 gm% Hb with serum iron levels <50µg/dl in 60% , vitamin B12 < 500pg/ml in 80% and reticulocyte count <1 in 42% &1-2 in 38% of patients.

VI. CONCLUSIONS

Anemia is seen commonly in the elderly with varied etiologies presenting with vast clinical manifestations. Therefore, early detection and thorough workup are necessary to prevent complications and diagnose the underlying conditions.

Among the elderly population, iron deficiency anemia is very common, although vitamin B12 deficiency is rare. Nutritional deficiencies contribute to the various presenting symptoms such as easy fatigability, anorexia, tiredness, breathlessness, and pedal oedema, which remain the most common symptoms. Anemia can have atypical presentations with giddiness, lower limb weakness in elderly populations. Frank or occult bleeding through the gastrointestinal tract is a serious etiological factor in which exclusion of underlying

gastrointestinal malignancy is important.

Detailed personal history about nutrition, substance abuse, drugs, bowel characteristics, and bleeding manifestations should be taken.

Bone marrow examination is not necessary for all patients due to the presence of specialized blood tests.

The study established the etiological factors and the presenting symptoms in the elderly population by including the laboratory investigations and the different blood parameters.

ACKNOWLEDGMENT

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