



A Clinical Study Of Anaemia In Elderly With Special Reference To Iron Deficiency Anaemia

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Abstract

Introduction: Anemia in the elderly is associated with significant clinical outcomes, early recognition of which is essential as anaemia may represent the first sign of a serious underlying disease. In this study, we determined to study the clinical presentation and the associated causes of anemia in the elderly population and to estimate the prevalence of iron deficiency anaemia (IDA) in this age group.

Material and methods: It was an observational study conducted in a tertiary care centre where 150 patients aged 60 and above with anaemia were enrolled. Those with a previous history of anaemia or undergoing iron therapy were excluded. History, examination, and relevant work-up were recorded in a structured proforma and analysed.

Results: The most common symptom, generalised weakness, was noted in 40% of cases, followed by a history of bleeding in 30% of patients. Dyspnea and palpitations were present in 17% and 13% of cases, respectively. Blood loss was mainly in the form of hematemesis or melena (67%). A significant number (50%) had presented with edema. The majority had moderate anemia (51%).

Most (60%) had microcytic hypochromic (MCHC) anemia; IDA due to blood loss was the most common cause of MCHC anaemia. The causes of blood loss were mostly gastric and duodenal ulcers followed by gastrointestinal malignancies. Chronic kidney and chronic liver disease were the common comorbid conditions associated with anaemia in them.

Conclusion: Anaemia is common, and its prevalence increases with age and markedly after age 60. The etiology of anaemia in the elderly is multifactorial and needs to be managed meticulously.

Keywords: Anemia, elderly, iron deficiency anaemia, hematemesis, melena

Introduction

Anemia is the quantitative and qualitative reduction of the total red cells or haemoglobin concentration below the lower limit of age or sex of the individual. According to WHO, anaemia is defined as haemoglobin less than 12g/ dl in women and 13g/ dl in men. It is common, and its prevalence increases with age and markedly after the age of 60¹. Both prevalence and incidence increase by age 65, with a steeper increase after age 80². 10% of individuals older than 65 are anaemic, increasing to more than

50% in more than 80 years³. The prevalence of anaemia was higher among women before 65 years but greater in men after 65 years. The prevalence of anemia in the elderly has been found to range from 8-44%, the highest being in men aged 85 years or older². Although the prevalence of anaemia is high in the elderly, several features of anaemia make it easy to overlook since the symptoms may be thought to be due to ageing. Typical symptoms of anaemia, such as fatigue, weakness, and dyspnoea are not specific and,

in elderly patients, tend to be attributed to advancing age. The etiology of anaemia in the elderly is multifactorial. The most common causes of anaemia in the elderly are anaemia of chronic disease in 30-45%, iron deficiency anaemia in 15-30%, and no identifiable reason in 15-25%⁴. Iron deficiency is nearly always due to chronic gastrointestinal diseases. A frequent cause is chronic upper and lower gastrointestinal blood loss because of esophagitis, gastritis, peptic ulcer, colon cancer or premalignant polyps, inflammatory bowel disease, or angiodysplasia⁵. Iron malabsorption is also relatively frequent in the elderly. For poorly understood reasons, the classical triad of malabsorptive symptoms, including diarrhoea, weight loss, and abdominal pain, is less common in the elderly⁶, making the diagnosis frequently overlooked in this age group. A long-term use of proton pump inhibitors have also been implicated in the malabsorption of the element⁷. However, only a few reports have addressed this issue, which remains controversial⁸. Finally, malnutrition is an obvious contributing factor to iron deficiency in the elderly. With these facts in view, this study was undertaken to study the clinical presentation and significant causes of anaemia in the elderly and to evaluate iron deficiency anaemia in elderly patients.

Material and methods

This observational study was conducted in the Department of Medicine, Gauhati Medical College and Hospital, Guwahati, from 1st June 2018 to 31st May 2019 after obtaining approval from the Institutional Ethics Committee. We considered a person aged 60 years and above as elderly. Anaemia was defined according to the WHO expert group—anaemia in an adult is defined as haemoglobin (Hb) <12g/ dl in women and <13g/ dl in men. Severe anaemia is diagnosed when Hb <7g/ dl, moderate

when Hb 7-9g/ dl, and mild when Hb is 10-11.9 g/ dl in women and 10-12.9g/ dl in men. Iron deficiency anaemia in our study was diagnosed by a serum ferritin level of <30 ng/ml and transferrin saturation level of >15%.

Inclusion Criteria:

Patients with 60 years or above with anaemia.

Exclusion Criteria:

Patients with a previous history of anaemia.

Patients on iron therapy

We enrolled 150 patients after obtaining consent. Relevant history and physical examination findings were noted, and investigations were performed accordingly. The data was recorded in a preformed and pretested proforma. Collection of blood was done before any blood transfusion or the initiation of haematopoietic medication, while for most, the blood sample was taken from the antecubital vein, peripheral smears, and haematocrit were examined from blood obtained by pricking a finger. Bone marrow aspirations were performed in case of pancytopenia, monoclonal gammopathy, suspicion of Myelodysplastic Syndrome, blood smear showing abnormal white cells, nucleated red cells, or indeterminate cells status of iron stores and unexplained progressive or unresponsive anaemia. Radiological imaging or endoscopy was done as indicated.

Results

Most of the patients (75%) belonged to 60-69 age group. 18% of the patients belong to 70-79 years age group and only 7% patients belong to 80 years or more age group. (Table 1)

Table-1: Age distribution (n=150)

| AGE GROUP(YEARS) | NO OF CASES | % |
|------------------|-------------|-------|
| 60-69 | 112 | 74.66 |

| | | |
|-------|----|-------|
| 70-79 | 28 | 18.66 |
| ≥80 | 10 | 6.67 |

84 patients were males comprising of 56% and 66 patients were female comprising of 44% patients. (Table 2)

Table 2: Sex distribution(n=150)

| SEX | NO OF CASES | % |
|--------|-------------|-----|
| Male | 84 | 56% |
| Female | 66 | 44% |

The most common symptom was generalised weakness (40%). There was history of bleeding in 30% of the cases. Around 25% of the patients complained of swelling of feet or body. The other common symptoms were dyspnoea (17%), palpitation (13%), fever (6%), cough (12%) and passage of worms in stool (2%). (Table 3)

Table 3: Symptoms of the patients

| SYMPTOMS | NUMBER | % |
|---------------------------|--------|-------|
| Generalised weakness | 60 | 40 |
| Dyspnoea | 25 | 16.66 |
| Palpitation | 19 | 12.66 |
| Bleeding from any site | 45 | 30 |
| Weight loss | 19 | 12.66 |
| Swelling of body or feet | 37 | 24.66 |
| Fever | 9 | 6 |
| Cough | 18 | 12 |
| Passage of worms in stool | 3 | 2 |
| Dysphagia | 2 | 1.33 |
| Anorexia | 42 | 28 |

Out of 150 patients, 45 (30%) patients gave history of blood loss among which 30 (66.67%) had haematemesis or/and melaena; 7 (15.55%) had haemoptysis, 5 (11.11%) had haematochezia and 3 (6.67%) had epistaxis. Pallor was noted in all the cases, oedema was found in 50% cases; icterus was seen in 13% cases; hepatomegaly, splenomegaly and/or lymphadenopathy was found in 12.6% cases. (Table 4)

Table 4: Physical findings(n=150)

| PHYSICAL FINDINGS | NUMBER | % |
|-------------------|--------|-----|
| Pallor | 150 | 100 |
| Oedema | 75 | 50 |

| | | |
|--------------------|----|-------|
| Icterus | 20 | 13.33 |
| Koilonychia | 11 | 7.33 |
| Lyphadenopathy | 19 | 12.66 |
| Hepatomegaly | 19 | 12.66 |
| Splenomegaly | 19 | 12.66 |
| Hepatosplenomegaly | 2 | 1.33 |

The incidence of IDA was 47.3%. Among those with anaemia of chronic disease, around 42% (19) patients had chronic kidney disease, 20% (9) had chronic liver disease and cardiac disease, 11% (5) had pulmonary tuberculosis, 4% (2) had rheumatological disease. Around 11% (17) patients had mild anaemia, 52% (77) had moderate anaemia and 37.3% (56) patients had severe anaemia. Out of the 84 male patients, 32 (38.10%) patients had severe anaemia and 24 (36.36%) female patients out of 66 had severe anaemia. Microcytic hypochromic anaemia was present in 90 patients (60%), normocytic normochromic in 52 patients (34.66%) and macrocytic hypochromic in 8 (5.33%) patients. In those having microcytic hypochromic anaemia, 78.89% (71) had iron deficiency anaemia, 16.67% (15) had anaemia of chronic disease and 4.44% (4) had haemoglobinopathies. **(Table 5)** Out of the 71 cases with iron deficiency, 84.5% (60) patients had blood loss related anaemia, 15.5% (11) patients had iron deficiency anaemia due to nutritional cause. **(Table 6)** and 17 (8) had chronic obstructive airway disease. **(Table 7)**

Table 5: Causes of microcytic hypochromic anaemia (n=90)

| CAUSE | NO OF PATIENTS | % |
|-------------------|----------------|-------|
| Iron deficiency | 71 | 78.89 |
| Haemoglobinopathy | 4 | 4.44 |
| Chronic disease | 15 | 16.67 |
| TOTAL | 90 | 100 |

Table 6: Causes of iron deficiency (n=71)

| CAUSES | NO. | % |
|-------------|-----|------|
| Nutritional | 11 | 15.5 |
| Blood loss | 60 | 84.5 |

Table 7: Anaemia of chronic disease (n=45)

| CAUSE | NUMBER | % |
|------------------------|--------|-------|
| Pulmonary tuberculosis | 5 | 11.11 |
| Chronic kidney disease | 19 | 42.22 |
| Chronic liver disease | 9 | 20 |
| Cardiac disease | 9 | 20 |

| | | |
|------------------------------------|---|-------|
| Rheumatological disease | 2 | 4.44 |
| Chronic obstructive airway disease | 8 | 17.77 |

Out of 60 patients who underwent endoscopy, 28.33% (17) had either gastric or duodenal ulcer or both; 21.66% (13) patients had varices, 15% (9) patients had Gastritis, 10% (6) had carcinoma esophagus and carcinoma stomach each; 8.33% (5) had carcinoma colon; 3.33% (2) patients had colitis and haemorrhoids each. (**Table 8**)

Table 8: Endoscopic findings (n=60)

| ENDOSCOPIC FINDINGS | NUMBER OF PATIENTS | % |
|--------------------------------------|--------------------|-------|
| Gastritis | 9 | 15 |
| Gastric ulcer/duodenal ulcer or both | 17 | 28.33 |
| Varices | 13 | 21.66 |
| Ca oesophagus | 6 | 10 |
| Ca stomach | 6 | 10 |
| Ca colon | 5 | 8.33 |
| Colitis | 2 | 3.33 |
| Haemorrhoids | 2 | 3.33 |
| Total | 60 | 100 |

Discussion

In the present study, the incidence of anaemia was highest in the 60-69 age group (74.66%), followed by 18.66% in the 70-79 age group. In Ania B.J. et al. study, anaemia was most frequent in men aged 85². Our study about sex distribution is comparable to the study by Vijay Tilak et al⁹. The most common symptom in this study was generalized weakness, which was seen in 40% of patients. The following common symptom was blood loss. In studies by Vasanth P. et al., out of 200 patients, generalised weakness was the most common presentation (40.2%), anorexia was found in 40%, and weight loss in 16% of patients.¹⁰ In the study by Wasim M Khatib, Tasneem V Bisht et al., pallor was the most common finding, followed by oedema (20%), hepatomegaly (6.19%) and splenomegaly (5.23%)¹¹. Iron deficiency anaemia remains the top cause of anaemia as confirmed by analysis of reports on burden of disease in 187 countries between 1990-2010 by Kassebaum NJ et

al¹². Artz A.S. et al. found chronic kidney disease as the most common cause of anaemia of chronic disease¹³. In a Hospital based study in South India by Bhasin A. et al., chronic kidney disease followed by malignancy were the common causes of anaemia of chronic disease in elderly patients¹⁴. Kirkeby O.J. et al. found that blood loss most often caused the iron deficiency¹⁵. Eisenstaedt R et al., 2006 found that common causes of blood loss in iron deficiency anaemia include gastritis, peptic ulcer, colon cancer, and angiodysplasia⁵. Bross M.H. et al. found 16.6% of patients have iron deficiency due to nutritional causes¹⁶. In the study by Goddard A.F. et al., colon carcinoma, gastric carcinoma, gastric ulcer, angiodysplasia of 5-10%, 5%, 5%, 5% respectively were found to be the causes of blood loss¹⁷. In the study by Lopez A. et al, the most common causes of blood loss were colon carcinoma, gastric carcinoma, gastric ulcer, and angiodysplasia¹⁸.

Conclusion

The most common symptom seems to be generalised weakness though it may be confused to be associated with physiological ageing also. Iron deficiency anaemia remains the commonest cause of anaemia in

1. Ania BJ, Suman VJ, Fairbanks VF, Rademacher DM, Iii LJM. Incidence of Anemia in Older People: An Epidemiologic Study in a Well Defined Population. *Journal of the American Geriatrics Society*. 1997 Jul;45(7):825–31.
2. Ania BJ, Suman VJ, Fairbanks VF, Melton LJ. Prevalence of Anemia in Medical Practice: Community Versus Referral Patients. *Mayo Clinic Proceedings*. 1994 Aug;69(8):730–5.
3. Berliner N. ANEMIA IN THE ELDERLY. ANEMIA IN THE ELDERLY.
4. Joosten E. Iron deficiency anemia in older adults: A review: Iron deficiency anemia in older adults. *Geriatr Gerontol Int*. 2018 Mar;18(3):373–9.
5. Eisenstaedt R, Penninx BWJH, Woodman RC. Anemia in the elderly: Current understanding and emerging concepts. *Blood Reviews*. 2006 Jul;20(4):213–26.
6. Freeman HJ. Adult celiac disease in the elderly. *WJG*. 2008;14(45):6911.
7. Ganz T. Systemic Iron Homeostasis. *Physiological Reviews*. 2013 Oct;93(4):1721–41.
8. Reimer PJ, Bard E, Bayliss A, Beck JW, Blackwell PG, Ramsey CB, et al. IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0–50,000 Years cal BP. *Radiocarbon*. 2013;55(4):1869–87.
9. Agravat AH, Pujara K, Kothari RK, Dhruva GA. A clinico-pathological study of geriatric anemias. *Aging Medicine*. 2021 Jun;4(2):128–34.
10. Vasanth P, Singh S, Ngangbam T. A study of clinical profile of elderly patients admitted in

the elderly with an incidence of 47.3% in our study. It should be carefully evaluated to rule out malignancies.

References

- medicine wards of a tertiary care hospital in Northeast India. *J Med Soc*. 2018;32(3):205.
11. Khatib WM, V. Bisht T, Gosavi AN, Patel PM. Clinicopathological Profile of Anaemia in Elderly - A One Year Study. *IOSR*. 2016 Sep;15(09):85–7.
12. Kassebaum NJ, Jasrasaria R, Naghavi M, Wulf SK, Johns N, Lozano R, et al. A systematic analysis of global anemia burden from 1990 to 2010. *Blood*. 2014 Jan 30;123(5):615–24.
13. Artz AS, Thirman MJ. Unexplained Anemia Predominates Despite an Intensive Evaluation in a Racially Diverse Cohort of Older Adults From a Referral Anemia Clinic. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*. 2011 Aug 1;66A(8):925–32.
14. Bhasin A, Rao MY. Characteristics of Anemia in Elderly: A Hospital Based Study in South India. *Indian J Hematol Blood Transfus*. 2011 Mar;27(1):26–32.
15. Kirkeby OJ, Fossum S, Risøe C. Anaemia in Elderly Patients: Incidence and causes of low haemoglobin concentration in a city general practice. *Scandinavian Journal of Primary Health Care*. 1991 Jan;9(3):167–71.
16. Bross MH, Soch K, Smith-Knuppel T. Anemia in Older Persons. 2010;82(5).
17. Goddard AF, James MW, McIntyre AS, Scott BB, on behalf of the British Society of Gastroenterology. Guidelines for the management of iron deficiency anaemia. *Gut*. 2011 Oct 1;60(10):1309–16.
18. Lopez A, Cacoub P, Macdougall IC, Peyrin-Biroulet L. Iron deficiency anaemia. *The Lancet*. 2016 Feb;387(10021):907–16.