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ORIGINAL ARTICLE

Management of Iron-Deficiency Anemia on Inpatients and Appropriate Discharge

ALI ZULQAR NAIN[1], AMBREEN SEHAR[1]
[1]MO at DHQ Hospital Sheikhupura.
Corresponding author: Ali Zulqar Nain, Email: alizulqarnain89@gmail.com

ABSTRACT

Introduction: Anaemia is a condition in which the number of red blood cells is insufficient to meet physiologic needs; it is caused by many conditions, particularly iron deficiency.

Aims and objectives: The main objective of the study is to analyse the management of iron-deficiency anemia on inpatients and appropriate discharge.

Material and methods: This cross sectional study was conducted in DHQ hospital Sheikhupura with the permission of ethical committee of hospital. Data were collected from 100 patients. Participants were selected through randomly sampling technique. Iron deficiency criterion for men was defined as hemoglobin under 13 g/dL, and women under 12 g/dL, with ferritin less than 30 ng/dL for any patient. Diagnostic criteria in patients with congestive heart failure were ferritin below 300 ng/dL and transferrin saturation (TSAT) under 20%.

Results: The data was collected from 103 patients. The only factors which emerged as statistically significant from the adjusted logistic regression analysis model were insufficient intakes of iron (OR = 7.39; 95% CI: 1.45-37.57) and vitamin C (OR = 6.14; 95% CI: 1.34-28.27), frequent (≥2 times per week) tea consumption (OR = 0.01; 95% CI: 0.01-0.08), infrequent (≤2 times per week) red meat consumption (OR = 3.71; 95% CI: 1.01-13.61), and the possession of a personal history of IDA (OR = 6.00; 95% CI: 1.45-24.76).

Conclusion: It is concluded that Iron-deficiency anemia is also tricky in patients with chronic diseases. Iron supplementation has been shown to help reduce mortality in those with blood loss.

INTRODUCTION

Anaemia is a condition in which the number of red blood cells is insufficient to meet physiologic needs; it is caused by many conditions, particularly iron deficiency. Traditionally, daily iron supplementation has been a standard practice for preventing and treating anaemia. However, its long-term use has been limited, as it has been associated with adverse side effects such as nausea, constipation, and teeth staining [1]. Intermittent iron supplementation has been suggested as an effective and safer alternative to daily iron supplementation for preventing and reducing anaemia at the population level, especially in areas where this condition is highly prevalent [2].

Anemia, as defined by low hemoglobin or hematocrit, is commonly used to assess the severity of iron deficiency in populations without high rates of malaria. The high physiological requirement for iron in pregnancy is difficult to meet with most diets. Therefore, pregnant women should routinely receive iron supplementation, especially in developing countries. Prenatal iron supplementation is not compulsory in many industrialized countries and the recommended dose is usually small (30 mg ferrous iron daily) [3]. However, for developing countries, the recommendation is a daily dose of 60 mg of iron for pregnant, non-anemic women for six months and an increased dose of 120 mg of iron daily if the duration of supplementation is shorter, if iron deficiency prevalence in women of a given country is high, and if pregnant women are anemic. This supplement should include 400 µg of folic acid or lower doses if this amount is not available [4].

Earlier studies have provided sufficient evidence to show that iron supplementation with or without folic acid results in a significant reduction in the incidence of anemia during pregnancy [5]. There has also been a limited impact of iron supplementation in community settings owing to lack of compliance and poor infrastructure. However, data regarding quality of evidence for the effectiveness of iron during pregnancy are lacking. Besides, the data on studies in developing countries have not been presented separately [6].

Aims and objectives: The main objective of the study is to analyse the management of iron-deficiency anemia on inpatients and appropriate discharge.

MATERIAL AND METHODS

This cross sectional study was conducted in DHQ hospital, Sheikhupura with the permission of ethical committee of hospital. . Data were collected from 100 patients. Participants were selected through randomly sampling technique. Iron deficiency criterion for men was defined as hemoglobin under 13 g/dL, and women under 12 g/dL, with ferritin less than 30 ng/dL for any patient. Diagnostic criteria in patients with congestive heart failure were ferritin below 300 ng/dL and transferrin saturation (TSAT) under 20%.

Data collection: All the data were collected through a questionnaire. The data was divided into two groups, one was control group and one was selected patients. We compare the selected patients with control group. A detailed sociodemographic data form was given to all subjects. Pregnancy characteristics, age, medication history, tobacco and alcohol use, and educational and familial status were recorded. Patients' charts were reviewed for inpatient supplementation of iron, discharge supplementation on paperwork, and documentation of iron-deficiency anemia. Patients' charts were also assessed to see rates of hematology and gastroenterology consults. Rates of blood transfusions, esophagogastroduodenoscopy (EGD), or colonoscopies performed were analyzed. This also reviewed if need for EGD or colonoscopy, blood transfusions, or reason for admission was symptomatic anemia if there was a statistical relationship with discharge documentation. We used Chi-squared, relative risk (RR), and odds ratio (OR) to analyze this.

Statistical analysis: The data was collected and analysed using SPSS version 21.0. Student's t-test was used to compare the data that was normally distributed.

RESULTS

The data was collected from 103 patients. The only factors which emerged as statistically significant from the adjusted logistic regression analysis model were insufficient intakes of iron (OR = 7.39; 95% CI: 1.45-37.57) and vitamin C (OR = 6.14; 95% CI: 1.34-28.27), frequent (≥2 times per week) tea consumption (OR = 0.01; 95% CI: 0.01-0.08), infrequent (≤2 times per week) red meat consumption (OR = 3.71; 95% CI: 1.01-13.61), and the possession of a personal history of IDA (OR = 6.00; 95% CI: 1.45-24.76).

Of 103 patients discharged, 57/103 (55.3%) were admitted due to symptomatic anemia including: gastrointestinal or genitourinary bleeding, syncope, lightheadedness, or weakness. Colonoscopy or EGD during hospitalization was done on 20/103 (19.4%) of the patients. Either gastroenterologist or hematologist was consulted for 45/103 (43.7%) of the patients. Inpatient iron

supplementation was done with 62/103 (60.2%) of the patients. Oral ferrous sulfate supplementations were given in 21/103 (20.4%) of these patients.

Table 1: Multivariate logistic regression analysis of the factors associated with iron deficiency anemia among the study sample of female

Variables	Adjusted OR (95% CI)
Intake of iron	
< Recommended intake	7.39 (1.45-37.57)
≥ Recommended intake	1 (Ref.)
Intake of vitamin C	
< Recommended intake	6.14 (1.34-28.27)
≥ Recommended intake	1 (Ref.)
Frequency of tea consumption	
≤2 times a week	0.01 (0.01-0.08)
≥3 times a week	1 (Ref.)
Frequency of red meat consumption	
≤2 times a week	3.71 (1.01-13.61)
≥3 times a week	1 (Ref.)
Blood clotting during menstruation	
Yes	1.66 (0.42-6.47)
No	1 (Ref.)
Past personal history of iron deficiency anemia	
Yes	6.00 (1.45-24.76)
No	1 (Ref.)
Past family history of iron deficiency anemia	
Yes	1.04 (0.26-4.17)
No	1 (Ref.)

Table 2: Inpatient Iron Supplementation and Discharge

Inpatient iron supplementation and discharge	N (%)
Any form of iron supplementation inpatient	62 (60.2%)
Oral ferrous sulfate inpatient	21 (20.4%)
Intravenous iron sucrose inpatient	33 (32%)
Intravenous sodium ferric gluconate inpatient	8 (7.8%)
Oral iron supplementation on discharge	53/103 (51.5%)
Appropriate follow-up with primary care physician, hematologist, gastroenterologist, or obstetric gynecologist on discharge paperwork or discharged on oral iron supplementation	54 (52.4%)
Proper documentation of iron-deficiency anemia on discharge paperwork	50 (48%)

DISCUSSION

This demographic group (ie, women of childbearing age) is at a heightened risk of deficiency in comparison with the general population due to their greater nutritional needs for the maintenance of their metabolic stores and because of their potentially high nutritional demands due to menstrual blood loss, pregnancy, and/or lactation [7].

The study observed an overall IDA prevalence of 12.5%, a significantly lower rate than that found by a prior study among a sample of female Saudi university students, which reported a prevalence of IDA of 64% (defined as hemoglobin <12 g/dL). In developing countries, the overall prevalence of anemia has been estimated at 43%, but in highly developed countries, it has been reported at a far lower level of 9% [8].To take an example, research in an Indian setting reported a prevalence of 44.0% among female university students, and widespread IDA has also been found among female students in other developing countries such as Bangladesh, where 63.3% of a female student sample was found to have IDA [9]. In contrast, in Australia, a developed country, only a 3% prevalence of IDA was found by a study using a sample of female university students.

Iron-deficiency anemia is a highly prevalent condition in the USA. It can put patients at increased risk of death due to decreased oxygen transportation, cause cardiac arrhythmias, and decrease quality of life [10]. Iron-deficiency anemia has been poorly diagnosed and treated in inpatients in the past, with only 60-66% receiving adequate iron supplementation. Only 60.2% of those who were admitted to the hospital with diagnostic criteria of iron-deficiency anemia were supplemented, consistent with prior studies. Our study shows that outpatient management of iron-deficiency anemia after discharge is inadequate, and this can place patients at increased risk for morbidity and mortality [11].

CONCLUSION

It is concluded that Iron-deficiency anemia is also tricky in patients with chronic diseases. Iron supplementation has been shown to help reduce mortality in those with blood loss. Iron deficiency due to congestive heart failure and chronic kidney disease confers increased fatigue and decreased exercise capacity. Main risk factors in relation to contracting anemia were inadequate intakes of iron and vitamin C, frequent tea consumption, infrequent red meat consumption, and a past personal history of IDA.

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