IRON DEFICIENCY ANAEMIA IN MODERATE TO SEVERELY ANAEMIC PATIENTS

Muhammad Idris, Anis-ur-Rehman*

Departments of Pathology and *Paediatrics, Ayub Medical College, Abbottabad

Background: Anaemia is defined as a clinical abnormality characterized by reduction in haemoglobin concentration below the normal for age, sex, physiological condition and altitude from the sea level of a person. It can be of different types, the commonest being iron deficiency anaemia which affects mostly pregnant and lactating females and growing children in the developing world. The present study was conducted at Ayub Teaching Hospital on this problem of global importance. **Methods:** One hundred consecutive anaemic patients were selected from Ayub Teaching Hospital. After detailed history and examination, preliminary blood tests including full blood counts, platelets count, retics count, absolute blood values and blood film examination (all tests done by visual method) were done in the laboratories of Ayub Teaching Hospital and Ayub Medical College, Abbottabad. A clinical diagnosis was made based upon the findings of history, examination and blood tests. In patients suspected to have iron deficiency anaemia, serum iron studies (i.e. serum iron, Total iron binding capacity (TIBC) and serum ferritin) were done to confirm the diagnosis. **Results:** Sixty eight patients were found to have iron deficiency anaemia. Females were affected more than the males. Female to male ratio being 1:5:1. Majority of the patients (82.2%) were aged 21-60 years. However, there were two peaks (21% & 25%) in age groups 21-30 and 41-50 respectively. Based upon serum ferritin concentrations, most of the patients were found to suffer from moderate iron deficiency anaemia (53%).**Conclusion:** Iron deficiency anaemia is the commonest type of anaemia in our area. It is more common in females. It is more common in age group 21-60 years, with two peaks, one in 21-30 years and the other in 41-50 years.

Key Words: Anemia, Iron deficiency, Ferritin

INTRODUCTION

Anemia is defined as a clinical condition characterized by reduction in hemoglobin concentration of blood below the normal for the age, sex, physiological condition and altitude above sea level of that person.[1] It is a global problem, mainly affecting poor people in developing countries.[2] Pregnant and lactating females, growing children and elderly people with some underlying disease causing blood loss are at more risk as compared to other groups of population.[3] However, nobody is immune to have anemia.

Anemia can be caused by innumerable factors, the most common being deficiency of essential elements for hemoglobin synthesis (Iron, Vitamin B12 and Folic Acid), blood loss, repeated pregnancies in females of reproductive age, worm infestation, hemolysis due to known or unknown causes and bone marrow conditions causing suppression of red cell synthesis. Chronic ailments like chronic renal failure, rheumatoid arthritis and tuberculosis are also known causes. In elderly females genital blood loss due to pelvic malignancies and in both sexes gastrointestinal blood loss is also an important cause of anaemia in this age group.[4-6]

Iron deficiency anaemia is the commonest type of anaemia throughout the world and in one study it has been reported to affect about 50-60% of young children and pregnant females and 20-30% of non-pregnant females in the developing countries.[7]

In Pakistan various studies have been performed on different segments of population covering different aspects of this important public health problem.[8-10]

This study aimed at knowing the proportion of iron deficiency anemia in moderate to severely anaemic patients to have an idea of the pattern of anemia in this particular group of anemic patients in our area.

MATERIAL AND METHODS

One hundred clinically anaemic patients of either sex, of age 12 years or more with haemoglobin <8 gm/dl were selected from Ayub Teaching Hospital, Abbottabad. Detailed history was taken from each patient, including history of present illness, past illness, anemia among other members of the family, socio-economic history, history of blood loss, ingestion of drugs, Hakeem (Eastren Medicine/Quacks) treatment, menstrual, gynecological and obstetrical history in females, history of diarrhoea, dysphagia, malaria, eating habits, quality and quantity of food consumed, history of blood transfusion or donation and worm infestation.

A thorough physical examination was done with special care to haematopoietic system i.e. pallor, koilonychia, lymphadenopathy, hepatomegaly, splenomegaly, purpura, bruises, pelvic examination in females (with the help of a female colleague) and rectal examination. Systemic examination of every system was performed on each patient.

Following history and examination, preliminary blood tests were performed on 5 ml venous blood, including full blood counts by visual method, ESR by Westergren method, platelets and reticulocyte count and absolute values by manual method. Hemoglobin was done by cyenmethemoglobin method.

A Giemsa stained blood film was also made for every patient and examined by the same hematologist for all patients.

A clinical diagnosis was made on the basis of history, examination and blood tests. Further tests were performed to confirm the diagnosis. In patients with clinical diagnosis of Iron deficiency anaemia serum iron, Total Iron Binding Capacity and Serum ferritin level were carried out. These tests were performed by kit method (Randox). Serum ferritin <18µg/l was considered diagnostic, while values between 18µg/l and 45µg/l were considered as suggestive of iron deficiency.

Serum transferrin saturation was estimated by formula. (Serum transferrin saturation = Serum iron x 100/ TIBC).

In doubtful cases bone marrow examination for stainable iron was done to establish the diagnosis. The Prussian blue reaction using potassium ferric ferocyanide was used as a diagnostic test (all chemicals from Randox).

RESULTS

Results of the study are shown in tables 1-3. Iron deficiency anemia was the commonest type of anaemia affecting about 68% patients (Table-1). It was more common in females, female to male ratio being 1:5:1(Table-2).

Table-1: Gender distribution of patients with iron deficiency Anaemia.

Sex	No. of patients	Percentage
Male	27	39.71%
Female	41	60.29%
Female to male ratio= 1:5:1		

There were two peaks of iron deficiency anemia i.e. 21-30 years and 41-50 years affecting 21% and 25% patients respectively. Majority of the patients with iron deficiency anemia were aged between 20-60 years (82.2%). Severity of iron deficiency was arbitrarily categorized into moderate and severe groups on the basis of serum ferritin level. Majority of the patients (53%) had moderate iron deficiency anemia (Table-3).

Table-2: Age distribution of iron deficiency Anaemia patients

Age group	No. of patients	Percentage
12-20	05	7.3%
21-30	14	21%
31-40	12	17.4%
41-50	17	25%
51-60	13	19.1%
>60 years	07	10.2%
Total	68	100%

Table-3: Based upon serum ferritin level, severity of iron deficiency Anaemia.

Severity	No.	%
Moderate Serum ferritin 6-12 µg/l	36	53%
Severe Serum ferritin < 6µg/l	32	47%

DISCUSSION

Anemia is estimated to affect about 2000 million people mostly in the developing countries.[1] Whatever the underlying cause may be, poor socio-economic conditions, lack of health education and inadequate health facilities in rural areas of the developing countries further aggravate the severity of the problem. Most of the earlier research on anaemia in different parts of the world including Pakistan was mainly focused upon young children and females of child bearing age. Very few studies were conducted on anaemia in general population in the past.[14] By conducting this study efforts was made to address this problem in adults. Our findings are different from those of an earlier researcher, who concluded that anaemia is more common in males. However, other researchers had almost similar observations as our.[15-17]

These researchers found significantly lower haemoglobin levels in women aged thirty years and more and those in the third trimester of pregnancy.

Another earlier study conducted in Pakistan showed significant association between anaemia and socio-economic status and anaemia and poor diet.[18]

A study conducted in Karachi revealed highly significant association between anaemia, pica, diarrhea and repeated infections in children.[19]

In our study significant causal factor could not be clearly defined in 20 patients (29.4%) with 12 (17.6%) females and 8 (11.76%) males. In the remaining 48 patients (70%), 19 males and 29 females, majority was found to have anaemia due to some sort of chronic blood loss (80% males and 90% females). In seven patients (5 females and 2 males) anaemia was found to be due to multiple factors including dietary deficiency, poor socio-economic condition and worm infestation. Here it is worth mentioning that relationship of iron deficiency anaemia with above mentioned factors was mainly determined on clinical grounds based upon history, examination and basic investigations. Sophisticated investigations like endoscopy etc were not carried out in this study. Further studies are required on bigger sample sizes with more sophisticated equipment on general population to address this issue in detail. This will make the treatment of iron deficiency anaemia more effective.

It is suggested that no anemic patient should be treated blindly with haematinics etc. They must be investigated to find out the cause and type of anaemia before starting treatment.

REFERENCES

1. Viteri Fe. A new concept in the control of iron deficiency: Community based preventive supplementation of at-risk groups by weekly intake of iron supplements. Biomed Environ Sci 1998;11(1):46-60.
2. Cook JD. Iron deficiency anaemia. Baillieres Clin Haematol 1994;7:787-804.
3. Wintrobe's clinical haematology 9th edition. Etiological factors in iron deficiency. Philadelphia: Lea & Febiger;1993.
4. Weissinger F. Basic principals and clinical significance of iron-deficiency. Fortsch Med 1999;115(31):35-38.
5. Jackson J. The angiographic diagnosis of colonic carcinoma. Clin Radiol 1998;53(5):345-49.
6. Sakiewiez P, Pagarini E. The use of iron in patients on chronic dialysis: mistake and misconceptions. J Nephrol 1998;11(1):5-15.
7. Iron deficiency. Bulletin of the World Health Organization, 1998; 76(Suppl-2):121-123.
8. Hayat TK. Iron deficiency anaemia during pregnancy. J Coll Physicians Surg Pak 1997;7(1):11-13.
9. Syed TS. Iron deficiency anaemia in pregnant women attending the antenatal clinic. Medical Channel 1998;3(3):49-51.
10. Akhter MS, Akhter MW, Tajammul A, Malik M, Nighat U, Akhtar NS. Profile of anaemic patients attending a tertiary care hospital in Pakistan, study of 650 cases. Medical Channel 1997;3(2):9-12.
11. Hassan K, Ikram N, Shafi MS, Akhtar MJ. Iron deficiency anaemia – Bone marrow aspiration vs serum iron, TIBC & transferring saturation. Specialist 1994;10(2):145-50.
12. Schmaurrer-B. Laboratory diagnosis in iron deficiency anaemia. Fortschr Med 1997;115(31):32,34-35.
13. Smieja MJ, Cook DJ, Hunt DL, Ali MA, Guyalt GH. Recognizing and investigating iron deficiency anemia in hospitalized elderly people. Can Med Assoc J 1996;155(5):691-6.
14. Khan IA. A study of anaemia in NWFP. Khyber Medical journal 1988;6(1-2):34-40
15. Paracha PI, Hameed A, Simon J, Jamil A, Nawab G. Prevalence of anemia in semiurban areas of Peshawar, Pakistan: A challenge for health professionals and policy makers. J Pak Med Assoc 1997;47(2):49-53
16. Karim SA, Khurshid M, Memon AM, Jafarey SN. Anemia in pregnancy – Its cause in the underprivileged class of Karachi. J Pak Med Assoc 1994;44(4):90-91.
17. Hashmi JA, Afroz N, Nisa Q, Malik F, Saeed M, Choudhry AS. Study of anemia in pregnancy at the Jinnah postgraduate Medical Center, Karachi. J Pak Med Assoc 1973;12(3):23-33.
18. Heiner JD, Siddiqui AR, Aziz MA. Anemia in pregnancy in an urban population of West Pakistan. Pak J Med Res 1972; 11(1);26-35
19. Baig L, Thaver I, Haq IU, Iqbal R. risk factors associated with anemia in children six months to five years of age residing in a squatter settlement of Karachi. Pak J Med Res 1996;35(4)176-8.

Address for Correspondence:
Dr. Muhammad Idris, Department of Pathology, Ayub Medical College, Abbottabad
Email: midris63@yahoo.com