PROPORTION OF SEVERE ANAEMIA AMONG PAEDIATRIC PATIENTS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Anaemia is a major public health problem but mostly ignored whether the country is developing or developed. In developing countries it serves as a primary cause for 40% of maternal death either directly or indirectly. World Health report of 2002 identified anaemia as one among the top 10 risks for infant mortality, maternal mortality and preterm birth. A study was carried out in a tertiary care hospital to find the proportion of anaemia among under five admitted children. It was found that severe anaemia was proportionately high.

INTRODUCTION

Anaemia is the commonest cofactor in many paediatric patients both in indoor as well as office practice. More than 30% of the world population i'e1500 million people are suffering from anaemia [1]. According to NFHS III statistics, about 79% of children between 6-35 months age group are suffering from anaemia, of which 72% of children from urban and 81% from rural areas. Anaemia in children is one of the social health problems because the children have reduced exercise capacity, slower growth, impaired cognitive development and delay in wound healing. Anaemic children are also at increased risk of dying due to complications of malnutrition and infection.

Preschool, school and adolescent children and women in child bearing age are at increased risk. Protein, calorie malnutrition states have been associated with severe other micronutrient deficiencies resulting in altered erythropoiesis. In PEM decreased amino acid substrate affects erythropoietin synthesis. Inadequate erythropoiesis and decreased Hb concentration characterise nutritional anaemia.

During intrauterine life the source of this nutrition is entirely maternal in origin, whereas post natally they are obtained through breast milk and diet [2].

In recent years several studies indicated that Iron-deficiency anaemia leads to serious health problems, such as poor cognitive and motor development, behavioural problems in children [3]. Anaemia is defined as a decreased concentration of haemoglobin and red blood cell mass compared with that of age and sex matched controls [4,5]. According to Dreyfuss et al. [6] two billion children are affected with iron deficiency anaemia worldwide. There are multiple causes of iron deficiency anaemia, including inadequate iron intake, respiratory infections, helminthic' infestation, malaria, diarrhoea, vitamin A and vitamin C deficiencies (World Health Organization/United Nations University/UNICEF, 2001; UNICEF /UNU /WHO /MI, 1998). Raju and Bindu (2005) reported that deficiency of iron is also produced by bleeding and sloughing of cells (menstrual flow) and transfer to developing foetus [7].

METHODOLOGY

Inclusion criteria

All patients admitted in the department of paediatrics at our institute during the study period. Amongst them patients having severe anaemia Hb < 7

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gm% (WHO Grading) were evaluated as per Performa

Exclusion criteria

Patients having mild and moderate anaemia are excluded. Patients having severe anaemia due to haemolytic anaemia, malaria, aplastic anaemia and patients expired due to congestive cardiac failure within 12hrs of admission.

Detailed history regarding diet and socioeconomic status of family and presenting symptoms and signs, detailed anthropometry recorded.

Venous blood was collected in a Wintrobes bulb for haematological investigations. Peripheral smear was taken simultaneously. Following investigations were carried out.

1. Hemoglobin was determined by sahli's method. It is expressed in gm%.
2. Peripheral smear was stained by Leishman's stain and examined for evidence of microcytosis, macrocytosis, anisocytosis and poikilocytosis.
3. PCV, MCV, MCH, MCHC, RDW were determined by automated cell counter. Iron deficiency anemia diagnosed in patients having low PCV, low MCV, low MCHC, increased RDW, decreased serum Iron and increased TIBC and peripheral smear suggestive of microcytic, hypochromic picture. Megaloblastic anemia was diagnosed in patients having decreased PCV, increased MCV, normal or decreased MCH, normal to decreased MCHC and peripheral smear suggestive of macrocytosis. Dimorphic anemia was diagnosed as decreased PCV, normal or decreased or increased MCV with decreased or normal MCH, normal or decreased MCHC, normal or low or increased RDW and peripheral smear suggestive of dimorphic picture. Normal value for PCV is 35-45%, for MCV 77-95fl, for MCH 25-33pg, for MCHC 31-37gm/dl and RDW 14.5-18.5.
4. Reticulocyte count was done by Brilliant crystal stain method.
5. Serum iron determination was done by Ramany's dipyridyl method.
6. Total iron binding capacity was determined by Ramsay's method.
7. Serum vitamin B12 determined by Architect method.
8. Serum Folic acid determined by Architect method.
9. Stool examination was conducted in all patients to find worm infestation and presence of occult blood.

RESULTS AND DISCUSSION

In present study, total patients of anemia were 7412 (81.2%) of which severe anemia patients were 202 (2.2%) which is comparable to 3.5% of severe anemia of NHFS III statistics.

It is observed from the above table, anemia were more in 1-2 years of age groups because of poverty, maternal anemia, continued exclusive breast feeding after 6 months, improper complimentary diet . Deeksha kapoor et al finds maximum number (27%) of patients anemia in 13 to 18 months but they have not typed the anemia. Kela kusum et al finds severe anemia maximum in 13 – 18 months of age. Jain et al finds that high prevalence of anemia in 1-2 years of age group (59%). ICMR has reported 63% children are up to 3 years of age. So as the age advances there is decreased incidence of anemia probably due to introduction of proper family feeding.

It is observed from our study that all three types of anemia were more in 1-2 years age group, which is in accordance to previous studies [9-13]. It may be due to poverty, maternal anemia, continued exclusive breast feeding beyond 6 months and improper complimentary diet. As the age advances there is decrease in the incidence of anemia probably due to introduction of proper feeding. In iron deficiency anemia female are more (28.7%) against 25.7% male, while in megaloblastic anemia 18.3% of were male against 15.3% female and in dimorphic anemia females were 6.9% against 4.9% male which is statistically not significant (p>0.05). Deeksha et al find that female were 52% and male were 48% while shailey avashi et al finds female were 45% and male were 54.5%. praful et al observed that female were 39% and male were 61%.

There is no statistical significant difference between the two sexes in the current study, which is in accordance to previous studies [1,3,5,11,13], whereas study conducted by Neeraj Jain et al [14] found higher incidence of anemia in girls and Rebecca J Stoltzfus et al [15] found higher incidence of anemia in boys.

Table 1. Prevalence of severe anaemia

No. of patients admitted	Patients with severe anemia	Percentage
9124	202	2.2%

Table 2. Age wise distribution patients with severe anaemia

Age in years	Total
<1year	45
1 – 2year	74
2 – 3year	29
3 – 4 year	26
4 – 5year	17
>5year	11
total	202

Table 3. Comparison

Age	Iron deficiency anaemia
6months-1year	14%
1 - 3year	42%
3 – 6year	18%

Table 4. Sex wise distribution of anemia

Sex	Total
Male	99(49%)
female	103(50.99%)

Table 5. Comparison with other studies

Sex	Study [9]	Study [10]	Study [12]
Male	61%	52%	54.5%
Female	39%	48%	45.5%

CONCLUSION

Prevalence of anaemia among under-fives admitted at tertiary care hospital is high. Iron deficiency anaemia is the leading type.

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