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Anemia in children - A hospital based study

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A B S T R A C T

Anemia is a global health issue which plays an important role in childhood morbidity and mortality. If anemia is not identified and treated properly, it may seriously impair growth and development of the children. This is a prospective study of 225 cases of children between 0 -14 years. Haemoglobin level < 11g% was considered as anemic.Anemia was observed in 92 children. More number of cases were seen in 0-5 yrs. Males were more commonly affected than females. Microcytic hypochromic anemia was the commonest morphological type found. This study shows the trend of anemia in children and insists the importance of cost effective, basic investigations like peripheral smear and other RBC parametersto diagnose the type of anemia at the earliest.

Introduction

Anemia is characterised by reduced hemoglobin levels, red cell count and associated with alteration in red cell morphology(1). About one quarter of the world population is affected with anemia(2). The detrimental effects of anemia in children may be impaired cognitive performance, reduced immunity, fatigue, weakness, poor work productivity and motor development (1,3). About 89 million children are anemic in India and it plays an important role in childhood morbidity and mortality (4).

The aim of this study is to assess the trend and different morphological patterns of anemia in young children.

Materials and Methods

This prospective study of 225 cases was carried out in the hematology lab, Department of pathology, Dr. B R Ambedkar Medical College, Bangalore, from Jan 2015 to March 2015. The samples of children, aged 0-14 yrs who had come for the routine hemotological investigations were included in this study. Children with haemoglobin level < 11g% were considered as anemic. Five part automatic cell counter Pentra ES 60 was used and the following parameters like Hb, RBC count, hematocrit, MCV, MCH, MCHC and RDW were considered. Peripheral smears were stained by Romanowsky stain. Reticulocyte count was done wherever needed.

Results and Discussion

There were 225 children of age group 0 – 14 years (Males-129, Females-96) included in this study. 92 children were diagnosed with anemia. Sex wise distribution of anemia is given in table 1.

Sex wise distribution of anemia

Males (59%) were affected more than females (41%).

Age wise distribution of anemia

Age wise distribution of anemia is given in Table 2.

More number of 0-5 years old children were anemic compared to 5-14 years. The commonest morphological type observed was microcytic hypochromic anemia (63%) followed by normocytic normochromic anemia (24%) (Table 3). Microcytic hypochromic anemia was slightly more common in male patients (males- 30cases and females- 28 cases).

Childhood anemia is a challenging issue in healthcare centers and hospitals. Microcytic hypochromic anemia is the commonest type in pediatric age group. Since iron deficiency is the most common etiology for microcytic hypochromic anemia, it is possible to correct anemia with combined supplemental iron and improved diet(5). Apart from iron deficiency, other conditions like childhood infections, inherited diseases, deficiency of micronutrients and environmental conditions also play an important role in anemia. The underlying cause may vary with different regions of the world (6). Our study shows more anemia cases in males(59%) compared to females (41%).

Around 64% of under five children and 28% of 5-14 years old children were found to be anemic. A study conducted on tribal children in Orissa by Sahu et al(8) showed anaemia in 93.8% of under five children and 99% of 5-14 years old children. Gomber et al(9) conducted a study on urban slum school children aged 5-10.9 years and found 41.8% of them to be anemic.

Microcytic hypochromic anemia is the most common morphological type identified in our study, which is in accordance with Agrawat et al. But Rathna et al(10) found normocytic normochromic anaemia to be the commonest type in their study.

Peripheral smear picture has to be correlated with other parameters like Hb, MCV,MCH,MCHC,RDW to arrive at the diagnosis. Special investigations like serum iron studies, , B12 &folic acid assay, bone marrow examination,Hb electrophoresis etc. are necessary whenever needed. In our study further work up was done by doing other reliable investigations wherever needed to confirm the diagnosis and to guide treatment.

Conclusion

Since anemia during vulnerable growth period affects development, it is important to diagnose anemia at the earliest in children. This study highlights the importance of peripheral smear examination and other RBC parameters which are the basic, cost effective and affordable investigations in developing countries like India and most of the types of anemias could be diagnosed by detailed morphological examination of peripheral smear.

Table.1 Sex wise distribution of anemia

Sex	No of anemia cases (Total – 92 anemia cases)	Percentage %
Male	54	59%
Female	38	41%

Table.2 Age wise distribution of anemia

Age	Total no of cases	No of anemia cases	Percentage of anemia %
0-5 yrs	103	66	64%
5-14 yrs	122	26	28%

Table.3 Morphological types of anemia

Type of anemia	No of cases	Percentage %
Microcytic hypochromic anemia	58	63%
Normocytic normochromic anemia	22	24%
Normocytic hypochromic anemia	08	9%
Dimorphic anemia	04	4%
Total no. of cases	92	100%

Table.4 Comparison of sex distribution of Anemia

	Agrawat AH et al (7)	Our study
Males with Anemia	48%	59%
Females with Anemia	52%	41%

Table.5 Comparison of Age wise distribution of Anemia (0-5yrs)

Age	Sahu et al	Our study
0 - 5 yrs	93.8%	64%

Table.6 Comparison of Age wise distribution of anemia (5-14yrs)

Age	Gomber et al	Sahu et al	Our study
5-14 yrs	41.8%	99%	28%

Table.7 Comparison of morphological types of anemia

Type of anemia	Rathna s et al	Our study
Microcytic hypochromic anemia	27%	63%
Normocytic normochromic anemia	55%	23%
Normocytic hypochromic anemia	11%	9%
Dimorphic anemia	3%	4%
Macrocytic anemia	4%	1%

Fig.1 Dimorphic anemia showing macro ovalocytes and microcytes (100x)

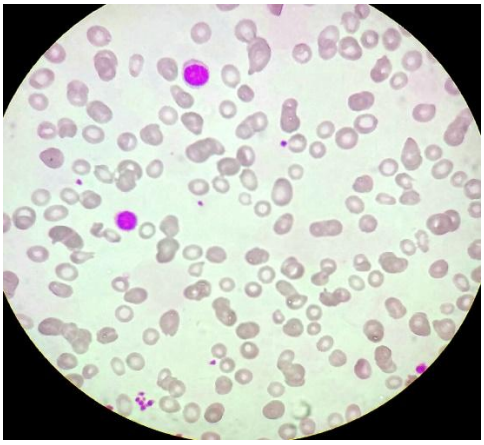
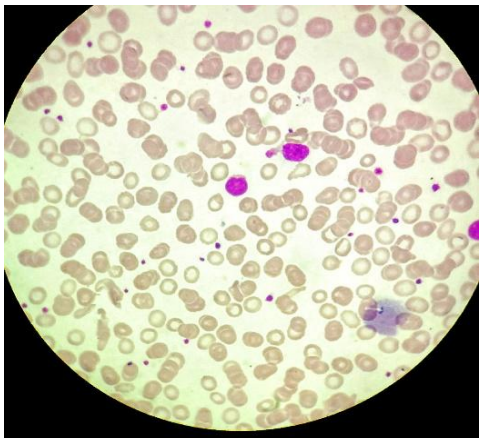


Fig.2 Microcytic hypochromic anemia shows many microcytic hypochromic red cells (100x)



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