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A Study of Severity and Frequency of Anemia in Different Age Group in 6 Months to 5 years Children at a Teaching Hospital in Rural Haryana, India

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Abstract
Background: *Anemia is a global health problem in children specially in under five children causing morbidity and mortality. Our aim of this study was to find the prevalence of anemia in different age group and its pattern of severity in hospitalized under five children.*
Methods: *This was a prospective study from January2015 to December2015 in which all the children having clinical anemia and hemoglobin level less than 11gm/dl were included in the study. Data were analyzed with regard to, age, sex, dietary habits, socioeconomic status and hemoglobin level with complete blood count and peripheral smear examination.*
Results: *A total of 109 children were analyzed in which female outnumbered male. Anemia was most prevalent (60.55%) in age group between 6-24 months followed by age group between37-60 months (21.10%). Children having vegetarian dietary habits, belonging to low socioeconomic status, and had not taken first 4-6 months breast feeding had high number of cases of anemia. Regarding pattern of severity of anemia maximum number (47.705%) belonged to moderate type of anemia followed by mild(35.77%0 and severe(16.50%).*
Conclusion: *In our study most vulnerable age group for anemia in children were 6 months to 24 months specially those belonged to low socio economic group, had vegetarian dietary habits and not taken breast feed in first4-6 months of their life. Maximum number of children had moderate anemia. These vulnerable children should be screened earliest so that short and long term effect of anemia can be prevented.*

Introduction

Nutritional deficiency anemia is reported to be the most common health problem occurring world-wide, in the developed countries like America and developing countries like India. According to WHO, the prevalence of anemia worldwide reported is 25%, out of which 43% prevalence is seen in developing countries[1]. According to the third NHFS in 2005 -2006, it has been reported that 80% of the infants fall in the age group of 12 to 23 months in India are found anemic[2]. The etiology of anemia vary according to the age of

the infants. The most common type of nutritional deficiency anemia in India is iron deficiency anemia. Patients in the infant age group, anemia develop due to the poor feeding habits, replacement of breast feeding with cow's milk, weaning with cereals which are poor in iron and other nutrients such as vitamin B12 and folate[3].

Anemic infants clinically present with nonspecific symptoms such as irritability, loss of appetite, lethargicity etc. There is also behavioural and cognitive delay noticed in such patients. Other signs and symptoms included are impaired learning skills, decreased social interactions and reduced mental and motor development[1]. Due to the scarce availability of the literature on the anemia in the admitted children in the hospitals, the present study is done for the early diagnosis and better management of anemia in infants. The aim of the present study is to study the pattern, occurrence of anemia and its severity in different age groups with regard to genders, their feeding history and their socioeconomic status.

Material and Method

This was a prospective study done at Maharishi Markendshwar Institute of Medical Sciences and Research, Mullana, Ambala, India during a period from January 2015 to December 2015. All the children between age of 6 months to 60 months, clinically suggestive of anemia with hemoglobin level less than 11gm% were included in the study. Children suffering from any chronic diseases, hemoglobinopathies, undergone recent surgery and with hemorrhagic diseases were excluded from the study. All the children fulfilling inclusion criteria were recorded in predetermined performa with regard to patient's age, sex, dietary history, socioeconomic status with detailed clinical examination. Two ml of veous blood were collected for hemoglobin level, complete blood count and peripheral smear examination.. Severtiy of anemia were graded as per WHO classification. Statistical analysis were done by chi – square test.

Results

Table 1. showing distribution of gender pattern of anemic children

Gender	number	Percentage	P value (chi square)
Male	47	43.12	0.31
Female	62	56.88	

Table 2. Showing number of anemic children in different age groups

Age	Number	Percentage	p value(chi square)
6 – 24 months	66	60.55%	0.00001
25 – 36 months	20	18.34%	0.025
36 – 60 months	23	21.10%	0.086

Table 3. Showing number of anemic children with regard Breast feeding pattern

Breast feeding (for 4 -6 months)	Number	Percentage	P value(chi square)
Yes	45	41.28%	0.197
No	64	58.72%	

Table 4. showing distribution of dietary habits of anemic children

Diet	Number	Percentage	P value(chi square)
Mixed	44	40.36%	0.155
Vegetarian	65	59.64%	

Table 5. Showing distribution of anemic children according to their socioeconomic status

Socioeconomic status	Number	Percentage	p value(chi square)
Lower	40	36.69%	0.155
Middle	35	32.11%	0.975
Upper	34	31.19%	0.927

Table 6

Severity of anemia	Number	Percentage	p value(chi square)
Mild (10 – 10.9)	39	35.77%	0.904
Moderate (7.0 – 9.9)	52	47.70%	0.340
Severe (< 7.0)	18	16.51%	0.009

Total 109 patients were included in the study who has clinical diagnosis of anemia with hemoglobin level less than 11 gm%. Out of 109 children 47 were male and 62 were females with male to female ratio 1:1.31.

Maximum number of children belonged to age group between 6 months to 24 months followed by age group between 37months to 60 months and 25 to 36 months and differences were statically significant. Breast fed babies were 45 in number

and non breast fed babies outnumbered with 64. Regarding dietary pattern 65 (59.64) children were vegetarian and 44 (40.36%) were non-vegetarian. We found majority of anemic children come under lower socioeconomic group 40 (36.69%) followed by middle 35 (32.11%) and upper socioeconomic group 34 (31.19%).

Mean hemoglobin level in my study was 8.79gm%. Minimum Hb level was observed as 2.4 gm% and maximum was 10..9 gm% with range of 8.5 gm%.

Regarding pattern of severity of anemia maximum number of children 52 (47.70%) observed under moderate type followed by mild 39 (35.77%) and severe 18 (16.50%) and differences were statistically significant.

Discussion

In our study a total of 109 patients were analyzed among which 47 were male and 62 were females with male to female ratio 0.75:1. Similar observation reported by Nalli RK et al [4]. Khaled et al reported a very high number of male patients 87.8% in their study[5].

The prevalence of anemia in any country depends upon many factors specially the socioeconomic status, literacy rate, budget of health services etc. In our study, most affected age group of children suffering from anemia observed between 6 months to 24 months and was found statistically significant. A total 66 (60.55%) children belong-ing to this age group had anemia. Similar observations were found by Firdos et al, Schellenberg, Humaira RQ and Akin F et al [6,7,8,9]. Among the anemic children mild, moderate and severe were 35.77%, 47.70% and 18% respectively. Sinha AK et al in their study found mild type of anemia as most prevalent in hospitalized children and a study done by Muthusamy BG on 1-12 years hospitalized children observed equal number of patients of mild and moderate anemia[10,11]. Quaderi HR found similar observation as moderate type anemia was most prevalent followed by mild and severe type[8]. Meghanga FP et al in their study

found severe type of anemia as most prevalent followed by moderate and mild [12].

Mean hemoglobin level in my study was 8.79 gm%. Minimum Hb level was observed as 2.4 gm% and maximum was 10..9 gm% with range of 8.5 gm%. Quaderi HR et al found mean of 9.2 gm% and Meghanga FP found 7.87 as mean hemoglobin in their study.[8,12]. Chandyo RK found higher mean hemoglobin as11.2 gm% a study in Nepal [15].

Anemia is a late manifestation of iron deficiency anemia. So many children may have subclinical anemia and that can only be diagnosed with serum iron level[13]. In India 70% under 5 children, 55% women and 24% men were anemic as per NFHS 3 (2005-2006)[2].

Our study shows that vulnerable groups of children for developing anemia were aged between 6-24 months, babies who did not take breast feeding for first4-6 months and those who were pure vegetarian dietary habits and belonged to low socioeconomic group. Similar observation was reported by Bharti et al[14]. These vulnerable children should be screened earliest for anemia and proper intervention should be initiated.

Limitations of our study was a relatively small sample size. This study may be further improved by doing serum ferritin level and serum iron level specially in mild and subclinicalcases so that these cases can be early recognized and earliest management of anemia could be instituted.

Conclusion

In our study most vulnerable age group for anemia in children were 6 months to 24 months specially those belonged to low socio economic group, had vegetarian dietary habits and not taken breast feed in first4-6 months of their life. Maximum number of children had moderate anemia. These vulnerable children should be screened earliest so that short and long term effect of anemia can be prevented.

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