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A RETROSPECTIVE STUDY OF SEVERE ANEMIA IN CHILDREN IN A TERTIARY CARE RURAL HOSPITAL OF MAHARASHTRA

Paediatrics

Sri Pravallika Ita* Post graduate student, Department of Paediatrics, Dr.Vitthalrao Vikhe Patil Pravara Rural Hospital, Loni, Maharashtra, India*Corresponding Author

Jayashree P Jadhav Head of the Department, Department of Paediatrics, Dr.Vitthalrao Vikhe Patil Pravara Rural Hospital, Loni, Maharashtra,India

ABSTRACT

Background- Anemia is a very common hematological disorder in infancy.In India and other developing countries, incidence of nutritional anemia is as high as 60- 80% of the childhood population. Anemia occurring during infancy affects the physical and neurological development of the child. It exposes the infant to the risk of infection which aggravates anemia so that there is a vicious cycle of anaemia, infection, anemia. This can be prevented if anemia is detected early and treated properly. This study, was conducted to evaluate the factors causing anaemia in children aged between 6 months to 12 years of age. Material and methods-The retrospective study was conducted in Dr.Vitthalrao Vikhe Patil Pravara Rural Hospital, Loni over a period of two years September 2015 to September 2017. Patients between the age group of 6 months to 12 year admitted with anemia of hemoglobin <7g/dl were included in the study. Previously diagnosed hemolytic anemia were excluded from the study. **Results-** Out of 300 cases of severe anemia,40% were male and 60% were female. Maximum age group is between 3 – 5 years. Symptoms like fever, cough/cold, increased paleness and failure to thrive is significantly higher ($p<0.05$),77% had hepatomegaly and 57% had splenomegaly.68.3 % are severely malnourished, 49.7% had microcytic hypochromic anemia. Conclusion- Females are prone for nutritional anemia. Severe anaemia is more common in severe acute malnutrition, they are more prone for respiratory infections. Aggressive action should be taken in anganwadi, Preschool and school going children for supplementation of iron especially in rural areas.

KEYWORDS

Hemoglobin ,Anemia ,Paediatrics ,Prevalence, Rural area ,Malnutrition

INTRODUCTION :

Anemia is a very common hematological disorder in infancy. Child is said to be anemic when the hemoglobin and or hematocrit is two standard deviation below the mean for that particular age and sex. The WHO guidelines of hemoglobin and hematocrit levels below which anemia are present in a population is given as:-

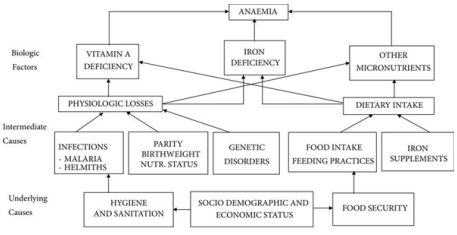
S.No	Age or gender group	Hb.gm.	Hematocrit[3]
1.	Children 6month to59month	llgm%	68.3%
2.	Children 5years to 1 1 years.	11.5gm%	71.3%
3.	Children 12years to 14years.	12gm %	74.5%

Hemoglobin level bellow 7gm/dl is considered severe anemia,7 to 9.9gm/dl moderate and 10 to 10.9gm/dl as mild anemia. Anemia in infancy can be physiological or pathological. Within the first week of life progressive decline in hemoglobin level begins and persists for approximately 6-8 weeks. The result of this decline is generally referred to as 'physiologic anemia of infancy. Anemia of prematurity is an exaggerated form of normal physiologic anemia of infancy. It is normochromic normocytic type of anemia with low reticulocyte count. Iron deficiency is the most common cause of anemia in infancy, while inherited disorders of hemoglobin synthesis, the Hemoglobinopathies form, by far the largest group of genetically determined anemia. There is considerable sex difference in iron status during infancy. Boys are at 10 time higher risk of being classified as having iron deficiency anemia at 9 months.Common signs and symptoms of anemia are Progressive pallor, Edema, Tremors , Refusaloffeed,,failuretothrive,Irritability, Recurrentfever,Delayed development.Pigmentation,vomiting ,diarrohea ,cough ,cold,breathlessness .

The clue to the diagnosis can be obtained by proper history and routine investigations like complete blood count, hemoglobin percentage, peripheral blood smear, blood indices, red cell distribution width, reticulocyte count, osmotic fragility, sickling test, Hb - electrophoresis, etc. and renal function tests, liver function tests. The peripheral blood smear may help to type the anemia on the basis of morphology. It may also have evidence of hemolysis, sepsis etc. The liver function test may be altered with increased bilirubin, in hemolytic anemia. Similarly renal function test and liver function test may be deranged in chronic diseases.

Anemia has adverse affect on children especially in first two years of life such as behavioural delay ,reduced cognitive development ,low immunity and growth ,weight ,fatigue ,difficulty with concentration ,lethargy ,increased mortality and susceptibility to infection. Anemia exposes the infant to risk of infection with aggrevates anemia so that there is a vicious cycle of anemia and infection . All this can be prevented if anemia is detected early and treated properly. Hence this study is done in rural settings to study clinic investigational profile of severe anemia in age group of 6months to 12 years ,who are admitted in our hospital.

Conceptual framework for causes of childhood anaemia–



METHODS :

The present retrospective study was conducted in department of Paediatrics, Dr.Vitthalrao Vikhe Patil Pravara Rural hospital Loni, Maharashtra ,India for a period of 2 years (September 2015 to September 2017).All patients in the age group 6 months to 12 years with hemoglobin <7 gm /dl were included in the study .Previously diagnosed hemolytic anemias were excluded from the study.

Data collection for this study included a retrospective review of hospital medical records of all children aged 6months to 12 years who were admitted to paediatric ward . Laboratory investigations reports such as complete hemogram, peripheral blood smear , reticulocyte count, osmotic fragility, sickling test, Hb - electrophoresis, etc. and renal function tests, liver function tests were noted. Various data on demographic ,nutritional status and clinical profile were noted.

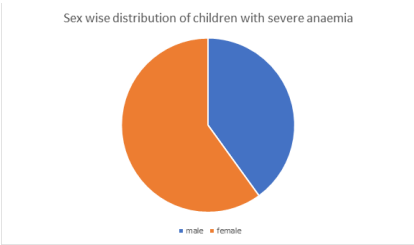
RESULTS:

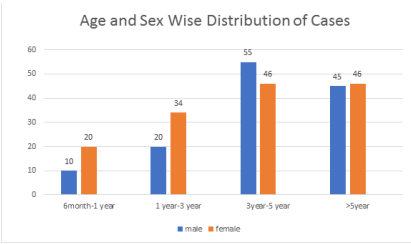
A total of 7562 children were admitted to paediatric ward during the study period. As per the diagnostic criteria defined for severe anemia according to hemoglobin level and after fulfilling the inclusion and exclusion criteria ,a total of 300 children were enrolled in the study. Out of this 40% were male and 60% were female. Girls were more affected as compared to boys.

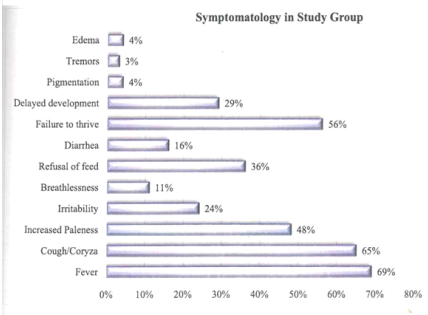
Age and Sex Wise Distribution of Cases

Out of 130 male anemic cases maximum i.e. 42.3% cases were within 3 to 5 years age group and 34.6% were more than 5 years old. Only few percent male anemic cases were below 3 years old. Out of 170 female

anemic cases, maximum i.e. 41.2% were within 3 to 5 years age group while 27.1% were above 5 years old. Age group distribution shows that maximum anemic cases were within 3 to 5 years and above 5 years age group in both sexes.







By applying Z test of difference between two proportions the proportion of symptoms fever, cough/cold, increased paleness and failure to thrive is significantly higher ($p<0.05$).

Commonest presenting symptom of anemic cases is fever i.e. in 69% cases, cough/cold is the second commonest while 56% and 48% had common symptom of failure to thrive and increased paleness respectively. Symptom of irritability is in 24% anemic cases, 36% presented with refusal to feed, 29% had delayed development, breathlessness in 11% cases, and diarrhea in 16% cases. Some cases also had pigmentation i.e. 4% or edema and tremors in 3% cases.

DISCUSSION:

Anemia is a very common disorder in all age groups and that too in periods of rapid growth like infancy and adolescent. Most patients of mild degree anemia are without any symptoms or sign and they are brought to the pediatrician when some other acute infection, which in a normal infant has very low mortality, is complicated or increased in severity due to underlying anemia. Anemia has also got significant influence on the normal brain growth during infancy. Though anemia can be treated but it is believed that the neurodevelopmental sub-normality due to anemia (iron-deficiency) is irreversible.

Present study shows prevalence of severe anemia is 3.9%, which correlate with Venkatesh G et al (2.2%) and contrast with Rangrao maroti bhise et al (6.1%) due to their small sample size. In the study population the percentage of anemic female (60%) was more compared to that of male (40%). A study by Kapur Deeksha et al, Venkatesh G et al shows similar results with female preponderance. Maximum number of cases i.e. 125 cases were found in the age group of 3 to 5 years. The peak incidence was in the same age group in both sexes.

CONCLUSION

Anemia in children is common preventable health issue. Females are more prone for nutritional anemia. Severe anemia is more prevalent among patients of severe acute malnutrition. Severe anaemia patients are more prone for respiratory tract infections. Aggressive action should be taken in anganwadi, Preschool and school going children for supplementation of iron especially in rural areas.Avoidance of gender discrimination by parents will enable the girl child to receive medical attention at appropriate time.

Conflict of interest: We have no conflict of interest
Funding: No funding sources
Ethical approval: The study was approved by the Institutional Ethics Committee.

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