IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 23, Issue 3 Ser. 5 (March. 2024), PP 46-48
www.iosrjournals.org

Morphologic Pattern Of Anemia In Hospitalized Infants

Dr.Sanskruti Gajanan Korde[1], Dr.Deepak S. Sadhu[2] ,
Dr.Mohammed Abdul Sameer[3], Dr.Sanjivani Sahebrao More[4]

[1](Resident Doctor,Department Of Pathology, Dr.S.C.G.M.C,Nanded /Muhs,Maharashtra , India),
[2](Assistant Professor,Department Of Pathology,Dr.S.C.G.M.C,Nanded /Muhs,Maharashtra , India),
[3](Professor And Head,Department Of Pathology,Dr.S.C.G.M.C,Nanded /Muhs,Maharashtra , India),
[4] (Assistant Professor,Department Of Pathology,Dr.S.C.G.M.C,Nanded /Muhs,Maharashtra , India),

Abstract:
Background*:*
Materials and Methods*: Anemia is a global health problem. It affects almost one fourth of the world population but its prevalence is more in pregnant women and young children. It is an indicator of poor health and poor nutrition. It is associated with increased mortality and morbidity among children. If not identified and treated at this stage it will affect physical growth ,mental development, school performance and immunity during their childhood. As there is less availability of data on anemia in hospitalized infants this study has undertaken to determine the morphological patterns of anemia, it's severity and distribution according to sex among the hospitalized infants.*
Objectives *: To determine the morphological patterns and severity of anemia among hospitalized infants along with its distribution according to sex among them.*
Material and method : *Venous blood anticoagulated samples were collected and analyzed by an automated counter Sysmex XP300. RBC parameters like RBC count, Hemoglobin, Hematocrit, Mean cell volume, Mean cell hemoglobin, Mean cell hemoglobin concentration and Red cell distribution width were studied. On the basis of mean corpuscular volume morphological classification of anemia was done and was confirmed on peripheral smear examination.*
Results*: In our study,total 310 (62%) hospitalized infants were anemic, most of them were males(52.90%),majority of infants among them were suffering from respiratory tract infection followed by acute gastroenteritis. Microcytic Hypochromic anemia was the most commonly noted pattern.*
Conclusion: *The prevalence of anemia among hospitalized infants was 62% according to our study and microcytic hypochromic anemia was the most common pattern seen among them indicating that nutritional deficiency mainly iron deficiency being the most important cause of anemia among hospitalized infants.*
Key Word*: Infants, Anaemia, teriary centre.*

Date of Submission: 16-03-2024 Date of Acceptance: 26-03-2024

I. Introduction

Anemia is a global health problem.[1]It is an indicator of poor health and poor nutrition.[2]It affects almost one fourth of the world population but its prevalence is more in pregnant women and young children.[(3,8,9)]

Anemia is a manifestation and not a disease per se.[4]It is associated with increased mortality and morbidity among children.[5]The severity of anemia is associated with premature birth,multiple birth,low birth weight and feeding pattern.[6]In infancy anemia is due to increased iron requirement for rapid growth and development.Many of the cases remain undiagnosed, as they are asymptomatic.But if not identified and treated at this stage it will affect physical growth ,mental development,school performance and immunity during their childhood.[7]

Early diagnosis and appropriate treatment helps in preventing such problem. As there is less availability of data on anemia in hospitalized infants this study has undertaken to determine the morphological patterns of anemia, it's severity and distribution according to sex among the hospitalized infants.

II. Material And Methods

Study period and area: The study was conducted from 1st Febuary 2023 to 31st of December 2023, at Dr. Shankarrao Chavan Government Medical College, Vishnupuri, Nanded, Maharashtra.

Study design: Cross sectional study.

Study population: All the infants (6month – 12 month) who were hospitalized for any other illness but found to have anemia on routine blood investigations (complete hemogram) were included in the study except Infants who were known cases of Thalassemia/ bleeding disorders and who had history of blood transfusions.

Venous blood anticoagulated samples were collected and analyzed by an automated counter Sysmex XP300. RBC parameters like RBC count, Hemoglobin, Hematocrit, Mean cellvolume, Mean cell hemoglobin, Mean cell hemoglobin concentration and Red cell distribution width were studied.On the basis of mean corpuscular volume morphological classification of anemia was done and was confirmed on peripheral smear examination.

III. Result

The WHO Criterion (hemoglobin< 11g/dl) was used to diagnose anemia. The degree of anemia was categorized based on these cut-off points: 10.0 – 10.9 g/dl – mild anemia, 7.0– 9.9 g/dl – moderate anemia, < 7 g/dl – severe anemia.

A total of 500 infants were hospitalized during the study period, out of which 310(62%)infants were fulfilling the criteria and they were included for the present study. There were 164(52.90%) males and 146(47.09%) females **(Table No 2).** Out of 310 infants who were included in the study, most of them were suffering from respiratory tract infections and acute gastroenteritis **(Table No 1).**

Based on WHO classification,77.4% infants had moderate anemia, 8.6% had Mild anemia, and 14% had severe anemia. Microcytic hypochromic anemia (51.61%) was the most commonly observed pattern of anemia followed by normocytic hypochromic anemia(18.70%) **(Table No. 3)**.

Table No 1 : Distribution of study subject based on the clinical diagnosis :

Clinical Diagnosis	Number of cases	Percentage
Respiratory Tract infection and fever	**130**	**41.9%**
Acute Gasteroenteritis	**79**	**25.4%**
Pneumonia	**38**	**12.2%**
Low birth weight	**25**	**08.06%**
Preterm	**28**	**09.03%**
Neohrotic syndrome	**03**	**0.96%**
Others(congenital heart disease,cerebral palsy,seizure disorder,etc)	**07**	**2.2%**

Table No 2 : Sex wise distribution of anaemia :

Gender	Number of cases	Percent
Male	164	**52.90%**
Female	146	**47.09%**

Table No. 3 : The following patterns were observed

MORPHOLOGICAL PATTERN	Number of cases	Percentage
Normocytic Normochromic Anaemia	**52**	**16.77%**
Normocytic Hypochromic Anaemia	**58**	**18.70%**
Microcytic Hypochromic Anaemia	**160**	**51.61%**
Macrocytic Anaemia	**16**	**5.16%**
Diamorphic Anaemia	**24**	**07.7%**

Table No 4 : Comparison of severity of anaemia among preterm and term infants

Gender	Haemoglobin <7gm/dl	Haemoglobin >7gm/dl
Preterm Infants	**68%**	**32%**
Term Infants	**9 %**	**91%**

On comparison severity of anemia is more common in preterm infants than term infants and the difference is statistically significant **(Table No 4).**

IV. Discussion

Most of the studies on anemia are population based.There are only few studies conducted on hospitalized children which limits the comparitive analysis of results.

Out of 500 infants hospitalized at our hospital during the study period around 310 (62%) found to have anemia. These results are similar to study by Saba F et al where 33% hospitalized infant has anemia where in study by Ashoka et al 66% are anemic.[10,15]

In our study prevalence of anemia is more in male (52.90%) than female(47.09%)**(Table No 2).**The similar sex distribution was noted in the study by Saba et al while in study by Dos santhos et al there was no difference in sex distribution.[10,11]

In our study Respiratory tract infection is the most common illness associated with anemia followed by acute gastrointestinal tract infection **(Table No 1).** Same results were found in study by Dos santhos et al and by Ashoka et al.[11,15]In study done by Lima et al infectious diarrhoea is the most common cause of anemia in infants.[13]The confusion is always there over the relationship between anaemia and infection.It is accepted that the deficiency or excess of iron affects the immune response.In respiratory tract infection the rate of haemoglobin utilization is increased along with increased repiratory efforts leading to anemia while in gastrointestinal tract infection anaemia is due to parasitic degradation,increased blood loss through feces and vomiting.[11]

Microcytic Hypochromic anemia(51.61%) is found to be most common morphological type of anemia followed by normocytic hypochromic anemia **(Table No. 3)** similar to the studies by Ashoka et al,Kapur et al.[14,15] where most common pattern is microcytic hypochromic anemia followed by normocytic normochromic anemia.

V. Conclusion

The prevalence of anemia among hospitalized infants was 62% according to our study and microcytic hypochromic anemia was the most common pattern seen among them indicating that nutritional deficiency mainly iron deficiency being the most important cause of anemia among hospitalized infants.

The occurrence of anemia among infant 6 month -12 month is high so there is urgent need for specific public health action to prevent anemia.There is need of uniform screening criterion for anemia so that we can detect it at early stage and prevent anemia considering its serious consequences on motor and cognitive development of children.Screening should be done at the stage of infancy. After screening appropriate diagnostic tests will allow most cases of anemia to be diagnosed.

References

[1] 1.World Health Organization. The World Health Report 2002: Reducing Risks, Promoting Healthy Life.Geneva;2002.

[2] Scholl To, Hediger Ml. Anemia And Iron-Deficiency Anemia: Compilation Of Data On Pregnancy Outcome.American Journal Of Clinical Nutrition, 1994;59:492s–500s.

[3] Leite Ms, Casdoso Am, Coimbra Jce. Prevalence Of Anemia And Associated Factors Among Indigenous Children In Brazil; Results From The First National Survey Of Indigenous People's Health And Nutrition.Nutr J. 2013;12:69.

[4] Awu C, Respirance L, Birnstein H. Screening For Iron Deficiency. Ped Rev. 2002;23(5):171–177.

[5] Singh Rk, Patra S. Extent Of Anemia Among Preschool Children In Eag States, India: A Challenge To Policy Makers. Anemia.2014;2014(4):1.

[6] Xu K, Zhang Cm, Huang Lh, Fu Sm, Liu Yl Et Al. Risk Factors For Iron Deficiency Anemia In Infants Aged 6 To 12 Months And Its Effects On Neuropsychological Development. Zhonqquo Dang Dai Er Ke Za Zhi.2015;17(8):830-6.

[7] Who – World Health Organization: Iron Deficiency Anaemia Assessment, Prevention And Control. A Guide For Programme Managers. Geneva: World Health Organization; 2001.

[8] Bernoist B, Mclean E, Egli I, Cogswell M: Worldwide Prevalence Of Anemia 1993 – 2005: Who Global Database On Anemia. Geneva: World Health Organization;2008.

[9] Milman N: Anemia – Still A Major Health Problem In Many Parts Of The World! Ann Hematol 2011;90:369– 377.

[10] Saba F, Poornima S, Balaji P A, Varne Srr, Krishnamurthy J. Anemia Among Hospitalized Children At A Multispecialty Hospital, Bangalore (Karnataka). India J Family Med Prim Care 2014;3(1):48-53.

[11] Dos Santos Rf, Gonzalez Es, De Albuquerque Ec, Dearruda Ik, Dinizada S, Figueroa Jn, Pereira Ap. Prevalence Of Anemia In Under Five-Year-Old Children In A Children's Hospital In Recife, Brazil. Rev Bras Hematol Hemoter 2011;33(2):100 Doi: 10.5581/1516- 8484.20110028.

[12] F Akin, E Selma, C Kilicaslan, S B Boke, S Arslan. Iron Deficiency Anemia Among Hospitalized Children In Konya, Turkey. Anemia 2013;1(2):32-35.

[13] Lima Ac, Lima Mc, Guerra Mq, Romani Sa, Eickmann Sh, Lira Pi. Impact Of Weekly Treatment With Ferrous Sulfate On Hemoglobin Level, Morbid And Nutritional Status Of Anemic Infants. J Pediatr (Rio J). 2006;(82):452 – 7.

[14] Kapur D, Aggarwal Kn. Iron Status Of Children Aged 9 – 36 Months In An Urban Slum Icds Project In Delhi. Indian Ped 2002;39:136 – 44.

[15] J.H. S, Ashoka A., Shashikala P., A Study Of Patterns Of Anemia In Hospitalized Infants At A Tertiary Care Hospital. Indian J Pathol Oncol 2017;4(2):260-262.