



EVALUATION OF MORPHOLOGICAL PATTERN OF ANAEMIA IN CHILDREN: A HOSPITAL BASED STUDY OF 100 CASES

Pathology

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ABSTRACT

Background: Anaemia is a widely prevalent nutritional problem in India. Early detection and treatment of anaemia among young children play a vital role in promoting the physical and mental growth and development.

Material and Methods: The present study is a prospective study which included 100 cases. Blood samples were collected for haematological investigations.

Results: out of the total 100 cases, 52% were girls and 48% were boys. The most common morphological pattern observed was microcytic hypochromic blood picture followed by normocytic normochromic anaemia.

Conclusion: Anaemia in children has become a frequent diagnosis. Its early diagnosis and management may help to reduce the severe outcomes and improve the quality of life.

KEYWORDS

Anaemia, children, microcytic, hypochromic, normocytic.

INTRODUCTION

Anaemia is a major health problem worldwide. Iron deficiency is the most common cause of nutritional anaemia worldwide followed by folic acid and vitamin B12 deficiency anaemia.¹ Anaemia is defined as the fall of hemoglobin concentration or the hematocrit below the lower limit of 95% reference interval for the individual's age, sex and geographic location. Anaemia is a global health issue, particularly in paediatric age group and it continues to remain over 70% in most parts of India.² Among the various causes of anaemia, the most common are low socio economic status, faulty dietary habits, loss of appetite, illiteracy, poverty and poor health status of mothers during pregnancy. Fetal development is greatly influenced by maternal nutrition and therefore maternal iron deficiency during pregnancy is associated with fetal growth retardation, low birth weight, intra uterine growth retardation, inadequate weight gain and poor mental growth and development. Morphological classification of anaemia is based upon the size of RBCs which is measured by the mean corpuscular volume (MCV), anaemia can be microcytic (MCV<80 fl), normocytic (MCV 80 – 100fl) or macrocytic (MCV> 100fl).³

MATERIAL AND METHOD

This is an prospective study conducted in the Postgraduate Department of Pathology, Acharya Shri Chander College of Medical Sciences and Hospital, Sidhra, Jammu (J&K). The primary aim of the study was to evaluate the morphological pattern of anaemia in children. The study was conducted over a period of 12 months from March 2017 to March 2018. 100 cases were included in this observational study with Hb 11g/dl or less. Under all aseptic conditions, venous blood was collected with EDTA used as an anticoagulant. Haemoglobin (Hb) estimation, hematocrit (PCV), mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean corpuscular haemoglobin concentration (MCHC) estimation were done using Sysmex five part differential automated cell counter. Peripheral blood smear was stained by Leishman's stain.

RESULTS

A total of 100 cases were enrolled in the present study, out of which 52% were girls and 48% were boys (Table 1). The age varied from 6 months to 18 years as depicted in Table 1. Majority of the patients (38%) were in the age group of 2-5 years followed by the age ≤ 1 year and only 4% were ≥ 18 years in age.

Majority of the cases (49%) had moderate anaemia i.e. Hb 7-7.9g/dl followed by mild anaemia in 39% cases (Hb 8-10g/dl) whereas severe anaemia was found only in 11% cases i.e. Hb ≤ 6.9g/dl (Table 2).

The most common type of anaemia in the present study was found to be microcytic hypochromic anaemia (42%), followed by normocytic normochromic anaemia and macrocytic anaemia in 38% and 14%

cases respectively. Only 6% cases had dimorphic anaemia. Among the girls, microcytic hypochromic anaemia was most common followed by normocytic normochromic anaemia. Normocytic normochromic was the most frequent anaemia among boys followed by microcytic hypochromic anaemia. (Table 3)

DISCUSSION

In the present study, anaemia was commonly observed in female patients (52%) with Male: female ratio of 0.9:1. Our results were similar with the study by Kapur and Aggarwal. Whereas the results were not in consistent with the studies by Rathna et al and Gombert et al. In our study, majority of the patients were in the age group of 2-5 years. Indian study by Prakash et al and Sharada et al showed similar findings.¹ However our results were not in agreement with the study by Rathna et al.

In this study, majority of the cases (49%) had moderate anaemia followed by mild and severe anaemia in 39% and 12% respectively. These findings were similar to the studies done by Rathna et al and Jain et al.

The most common morphological pattern of anaemia in the present study was microcytic hypochromic (42%). Prakash et al and Kapur et al also found the similar results.

The present study showed that microcytic hypochromic was the common anaemia in females whereas normocytic normochromic was the frequently observed anaemia in males. These findings were in accordance with the study by Rathna et al.

CONCLUSION

Anaemia is a frequently observed health problem especially in individuals of low socio economic status and thus impairs and delays the growth and development in young children. Evaluation of morphological pattern of anaemia may play a vital role in establishing the etiopathogenesis and therefore early diagnosis and treatment of the underlying cause can reduce the mortality and morbidity.

Table 1: Basic demographics

		No. of cases	Percentage (%)
Gender	Males	48	48
	Females	52	52
Age (in years)	≤ 1	18	18
	2-5	38	38
	6-9	14	14
	10-13	12	12
	14-17	14	14
	≥ 18	4	4
	Total	100	100

Table 2: Depicting the severity of anaemia

Anaemia	No. of cases	Percentage (%)
Mild (Hb 8-10g/dl)	39	39
Moderate (Hb 7-7.9g/dl)	49	49
Severe (Hb \leq 6.9g/dl)	12	12
Total	100	100

Table 3: Depicting the morphological pattern of anaemia

Pattern of anaemia	Females	Males	Total
Microcytic hypochromic	31	11	42
Normocytic normochromic	14	24	38
Macrocytic	5	9	14
Dimorphic	2	4	6
Total	52	48	100

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