Anaemia in Children with age of 1 to 5 Years

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ABSTRACT

**Aim:** Determination of anaemia pattern in 1 to 5 years age group admitted in paediatric ward.

**Methods:** The descriptive mode of study was conducted in Paediatrics Department, Mayo Hospital, Lahore from March to Aug 2018. In the age group of 1 to 5 years, 300 patients were admitted from 1 March 2018 to 30 August 2018.

**Results:** Out of 300 patients, there were 213 (71%) male patients and 87 (29%) female patients. The number of patients in other age groups was as follows: there were 152 (50.66%) patients in the age group of 1 to 2 years, 74 (24.66%) patients were in the age group of > 2 to 3 years, 53 (17.66%) patients were in the age group of > 3 to 4 years and 21 (7%) were in the age group of > 4 to 5 years. 34 (11.33%) patients were found with normocytic anaemia i.e., presence of macrocytic anaemia such as microcytic anaemia characterized by presence of microcytic picture and 6 (2%) patients were having mix cellularity. Moreover, the levels of vitamins were not assessed because some of the required laboratory facilities were not available.

**Conclusion:** The current study is highlighting that the most common anaemia seen in children is microcytic anaemia particularly iron deficiency. This can easily be diagnosed by peripheral picture, TIBC, haemoglobin, serum iron level and treated effectively by proper nutrition and iron supplementation.

**Keywords:** Anaemia, haemoglobin percentage, microcytic anaemia, nutritional anaemia, peripheral smear.

INTRODUCTION

Anaemia has been defined as decrease of Red Cell Mass or haemoglobin below the standard range according to the age and gender of patient (Meghna, Desai, & Terlouw, 2005). There are numerous types of anaemia, produced by different underlying reasons. Haematologist inclines to classify anaemia as macrocytic, microcytic or normocytic on the basis of morphology of Red Blood Cells (Graham, et al., 2008).

From the list of causes, the most frequent are such as deficiencies of nutrition or antagonists’ presence such as drug and worm infestation (Villanor, Mbise, Spiegelman, Nodossi, & Fawzi, 2000). The problem in iron absorption can be genetic such as owing to certain change, iron cannot be absorbed by the body. There can be either internal or external loss of blood (Mehboob, 2003). There may be presence of Hb synthesis genetic disorder (Bergeron, Weng, Robin, Olney, & Soutieres, 2005). Sometimes erythropoiesis is stopped by immune system or deficiency of erythropoietin. Endocrine suboptimal function may result in anaemia (Wright, Kelly, Trial, Parkenson, & Summerfield, 2004). Anaemia caused by bone marrow suppression may be because of existence of certain toxins, heavy metal poisoning, radiotherapy chemotherapy, certain viral infection and different drugs (Ishtiaq, Baqui, Anwar, & Hussain, 2004). The aetiology in other cases may be multifactorial such as anaemia in uraemia, connective tissue disorders or malignancy (Villalpando, Shamah-Levy, Ramirez-Silva, & Mejia, 2003).

Early diagnosing and treating anaemia are of very important as in children the anaemia is connected with poor growth result. It is connected with delayed development; poor growth and the child become vulnerable to catch infection (Neuspiel, 2001). If the anaemia is not controlled properly then it may result in the involvement of other organs such as chronic anaemia can lead to failure of heart, psychomotor or neurological disorder and hepatosplenomegaly (Bogen, Duggan, Dover, & Wilson, 2000). The prevalence of anaemia in the world is approx. 30% and South Asia and Africa are at the highest prevalence level (Meghna, Desai, & Terlouw, 2005).

MATERIAL AND METHODS

The descriptive mode of study was carried out in Paediatrics Department, Mayo Hospital, Lahore from March to Aug 2018. In the age group of 1 to 5 years, 300 patients admitted in the ward.

Further assessment was made of these patients on the basis of medical history collected from guardian or parents. Certain points were noted such as socio-economic and demographic data, pica, any
behavioural change like irritability, easy fatigability, bruising, bleeding from any site, haematemesis and petechial-melena. The patients with drug history with duration of drug intake and with worm infestation history were given special importance. Detailed history of nutrition was noted with daily intake of calorie because it can indicate nutritional anaemia. Assessment of development was done. Patients having family history of inheriting anaemia were sorted out. Complete systemic inquiry was conducted for chronic anaemia. Complete systemic examination was performed. The weight was considered underweight it was less than third centile. Likewise, height was measure on centile charts. Sample of bloods taken by venepuncture into different containers. There was a tube with EDTA for determining of haemoglobin, mean corpuscular, haematocrit, mean corpuscular haemoglobin concentration, mean corpuscular haemoglobin,Red Blood Cells count, White Blood Cell count and Erythrocyte Sedimentation Rate (ESR). There was preparation or peripheral smear and morphology of Red Blood Cell was studied to find out the kind of anaemia. The second tube was plain and blood sample was taken for complete iron binding capacity, serum iron and serum ferritin and at room temperature it was allowed to clot. Both the tubes carrying blood sample were sent to laboratories in order to perform analysis immediately. As per World Health Organisation standard, if the level of haemoglobin is less than 11 gm/dl means that anaemia is diagnosed.

After basic categorisation on the basis of morphology further examinations were conducted to find out the aetiology such as LFT, reticuloocyte count, haemoglobin electrophoresis, serum bilirubin level, biopsy and bone marrow aspiration etc.

RESULTS

Out of 300 patients, there were 213(71%) male patients and 87(29%) were female patients as shown in Table 1.

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<tr>
<th>Table 1: Gender distribution</th>
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<tr>
<td>Gender</td>
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<tr>
<td>Male</td>
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<td>Female</td>
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The number of patients in other age groups was as; there were 152(50.66%) patients in the age group of 1 to 2 years, 74(24.66%) patients were in the age group of >2 to 3 years, 53(17.66%) patients were in the age group of >3 to 4 years and 21(7%) were in the age group of >4 to 5 years (Table 2).

<table>
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<th>Table 2: Age distribution</th>
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Pallor was the commonest clinical presentation and it was observed in 300(100%) patients. Thereafter, malnutrition was the commonest presentation and was found in 121(40.33%) patients. Change in behaviour was seen in 52(17.33%) cases. These changes were irritability and easy fatigability was found in 12(6%) cases and history of pica and easy fatigability was observed in 18(9%) patients. Haematemesis and Malena were found in 9(3%) and 12 (4%) patients. Patients with history of warm infestation were 43(14.33%), history of drug intake were 2(0.66%), with family history of inherited anaemia 3(1%).

<table>
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<th>Table 3: Symptomatology</th>
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<td>Symptoms</td>
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<td>Pallor</td>
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<td>Behavior changes</td>
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<td>Malena</td>
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<tr>
<td>Hamatemesis</td>
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<td>Warm infestation</td>
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<td>Drugs intake</td>
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<td>Inherited anaemia</td>
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<td>Malnutrition</td>
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12(4%) patients out of 300 were found with severe anaemia with haemoglobin less than 5 gm/dl, 103(34.33%) patients were having 8 gm/dl and 185(61.66%) patients were found with mild anaemia with haemoglobin of >8 gm.

34(11.33%) patients were found with normocytic anaemia i.e., presence of macrocytic 4(1.33%) and 256(85.33%) patients were found with microcytic picture and 6(2%) patients were having mix cellularity. Moreover, the levels of vitamins were not assessed because some of the required laboratory facilities were not available.

DISCUSSION

In all age group, the presence of anaemia is of great public health importance. It is the most common problem having 30% international prevalence i.e., 1.5 billion people across the world. The major consequences of nutritional anaemia is not limited to the mortality and morbidity in children it is also extended to affect the intellectual development and growth of the children.

In the current research, it was observed that anaemia was found more in male than the female.
The observance of this difference in past may be because male was given more importance in the society as compared to the female and consequently were taken to hospital in case of disease earlier than the female. In different researches, mostly females were found with anaemia.

Out of clinical symptoms and sign pallor was found in all patients i.e., 100%. This result was in line with the other researches. 40.33% patients were found with malnutrition i.e., cow milk intake, delayed weaning and reduced caloric intake. Under nourished children were found with high frequency of anaemia. This finding was in consistent with other researches.

52 patients were found with behaviour change and the most common symptom was pica, irritability and easy fatigability as found in other researches. 43(14.33%) patients were found with warm infestation which was evidently less than the other researches which found 76% patients with worm infestation. The difference may of the reason that the research was carried out in rural area and mostly the patients of the current study were having good socio-economic status.

Likewise, 12 and 9 patients had Malena and hematemesi and out of these 2 patients had chronic liver illness and the rest 2 patients had aplastic anaemia same patients had petichi-bone tenderness and bruises. This was not in line with other researches that anaemia may be showing complaints of different systemic disease.

In the current research, patients having inherited anaemia bears typical facial feature, hepatosplenomegaly, jaundice alike results were found in different researches. It was found that underweight and stunted children significantly had low level of haemoglobin as compared to their counterpart who were well nourished. Somewhere it has been reported that the malnutrition prevalence enhancing vary fast between 3 to 18 months and has high prevalence between the age of 18 to 23 months likewise in the current research.

Normocytic cells have been shown by peripheral smear in 34 patients and the same was observed in patients having chronic leukaemia and anaemia, macrocytic was found in 4 patients. In 256(85.33%) patients mostly microcytic was found. In other studies there was high prevalence of anaemia is microcytic and in that mostly the patients were seen with deficiency anaemia and only seven patients were having thalassemia.

The findings of the current research have been supported by various studies that the most common variety is iron deficiency anaemia and the other most common is normocytic anaemia their case diamorphic anaemia. Various researches conducted in India also supported the diagnosis of the current study that mostly the deficiency of iron in the children is due to malnutrition.

The most common type of anaemia found in the current study was deficiency of iron or can be said nutrition anaemia and the same had been seen more frequently in malnourished children between 1 to 2 years of age as observed in the researches carried out in different part of the world.

CONCLUSION

The current study has highlighted that anaemia is the main health issue in this part of the globe where the prevalence of malnutrition is high. As anaemia remains a main health issue, institution of appropriate therapy, delay in diagnosis, ongoing infections, low socio-economic status and severe malnutrition can be connected with the significant mortality and morbidity and this may enhance significantly chances of adverse result. Deficiency of nutrition particularly deficiency of iron is the main reason for anaemia in our people. Easily the same can be diagnosed by laboratory test such as TIBC, Hb%, ferritin level, serum iron and treatment can be done by iron supplementation.

Reference:


Sheriff, A., Emond, A., Bell, J., & Golding, J. (2001). Should infant be screened for anemia? A prospective study investigating the relation between hemoglobin at 8, 12, 18 months and development at 18 months. Arch Dis Child, 84, 480-5.


