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Original Research Article

To study and analyze hematological parameters in anaemia in males

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ABSTRACT

Background & Method: Hematological parameters like Hb (haemoglobin), TC (total count), DC (differential count), PCV (packed cell volume), MCV (mean red cell corpuscular volume) done in the automated cell counter and peripheral smear findings were studied.
Study Designed: Observational study.
Results: Out of 250 cases, 192 i.e. 76.8% cases showed microcytic hypochromic anaemia, 30 cases i.e. 12% had normocytic hypochromic anaemia, 27 cases i.e. 10.6% had normocytic normochromic anaemia and dimorphic anaemia was seen in 02 cases i.e. 0.6% cases. Out of 250 cases, 193 i.e. 77.2% cases showed microcytosis maximally in 0-5 years age group and 57 cases i.e. 22.8% had normocytic picture. The distribution of peripheral smear (RBC size) finding with age varied significantly (p value <0.05).
Conclusion: Iron deficiency is almost universal when dealing with this magnitude of anaemia. However, clinically speaking, many technical experts believe that to differentiate severe anaemia, a screening for other causes is desirable, all males are recommended to be screened. In the present study of pediatric cases 0-5 years age group males were most affected and prevalence was more in males as compared to females and the predominant morphological pattern was microcytic hypochromic anaemia.

1. Introduction

Hemolytic weakness is characterized as abbreviated red platelet endurance because of either inherent deformities in the red platelets or outside factors.[1] By far most of erythrocyte problems that happen in the pediatric age bunch result from anomalies inside the red platelets (intra corpusculardefects).[2] Intra-corpuscular imperfections are quite often hereditarily decided, while, the irregularities inside the plasma are generally obtained. Periodically in G6PD inadequacy, an acquired irregularity of erythrocytes prompts hemolysis just when exceptional conditions exist in the plasma like the presence of specific medications, synthetics or other molecules.[3]

Among hemolytic anaemias Thalassemia major, Hereditary spherocytosis, G6 PD lack and procured causes like diseases and falciparum intestinal sickness can cause extreme anaemia.[4]

The early history of megaloblastic weakness is the historical backdrop of malignant iron deficiency. The principal case was accounted for in 1822. In 1849, Addison depicted a patient with deadly idiopathic sickliness. For a long time, malignant paleness was secretly alluded to as "Addisonian vindictive weakness".[5] Ehlrich presented the expression "megaloblast" to portray the enormous nucleated erythroid antecedents found in vindictive anaemia.[6]

Megaloblastic morphology might be found in various conditions. In guys, it results from a lack of folic corrosive or nutrient B12 or both. Vit. B12 and folic corrosive are the cofactors which are fundamental for the union of nucleoproteins and consequently, their lack brings about damaged union of DNA and RNA which prompts incapable erythropoiesis and diminished life expectancy of RBCs[7].

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2. Materials and Methods

Our study is a hospital based study done in a tertiary care health center. Study duration 2014 Study was conducted at 2016 Hematological parameters like Hb (haemoglobin), TC (total count), DC (differential count), PCV (packed cell volume), MCV (mean red cell corpuscular volume) done in the automated cell counter and peripheral smear findings were studied.

2.1. Inclusion criteria

1. Below 15 years male
2. WHO criteria for anaemia
3. Males with hemoglobin < 11gm/dl

2.2. Exclusion criteria

1. Males above 15 year of age
2. Hemoglobin above 11 gm/dl
3. Hb Electrophoresis, wherever applicable

3. Results

Table 1: Distribution of the various morphological types of anaemia

Morphological Types	Number	Percentage
Microcytic Hypochromic Anaemia	192	76.8
Normocytic Hypochromic Anaemia	30	12
Normocytic Normochromic Anaemia	27	10.6
Dimorphic Anemia	2	0.6

Table 1 Out of 250 cases, 192 i.e. 76.8% cases showed microcytic hypochromic anaemia, 30 cases i.e. 12% had normocytic hypochromic anaemia, 27 cases i.e. 10.6% had normocytic normochromic anaemia and dimorphic anaemia was seen in 02 cases i.e. 0.6% cases.

Table 2 The distribution of peripheral smear (RBC chromasia) with age did not differ significantly as p value >0.05.

Table 3 Out of 250 cases, 193 i.e. 77.2% cases showed microcytosis maximally in 0-5 years age group and 57 cases i.e. 22.8% had normocytic picture. The distribution of peripheral smear (RBC size) finding with age varied significantly (p value <0.05).

4. Discussion

In the current investigation, all the cases having MCV <59fl showed 100% microcytic RBCs, none was normocytic on fringe smear assessment. MCV between 59-80fl showed microcytic cells in 79% cases and normocytic cells in 21% cases.[8] MCV >80 fl showed 96% cases with normocytic

Table 2: Age wise distribution of cases according to peripheral smear (RBC Chromasia) finding

Peripheral Smear (RBC Chromasia) Finding	Age Group						Total		P Value
	0-5 years		6-10 years		11-15 years				
	No.	%	No.	%	No.	%	No.	%	
Dimorphic	02	1.55	0	0.00	01	1.80	02	0.80	p-value=
Hypochromic	114	87.69	61	92.42	46	83.63	222	88.80	0.396, Pearson
Normochromic	14	10.76	5	7.58	08	14.57	26	10.40	Chi-Square =
Total	130	100	66	100	55	100	250	100	3.146

Table 3: Age wise distribution of cases according to peripheral smear (RBC size) finding

Peripheral Smear (RBC Size) Finding	Age Group 0-5 years		6-10 years		11-15 years		Total		P Value
	No.	%	No.	%	No.	%	No.	%	
Microcytic	104	80.62	51	78.46	37	67.72	193	77.20	P-Value = 0.047,
Normocytic	26	19.37	15	21.53	18	32.72	57	22.80	Pearson Chi-Square =
Total	130	100	66	100	55	100	250	100	8.166

cells and 4% cases with microcytic cells.

MCH <20 pg showed 100% cases having hypochromasia. MCH between 20-27 pg showed 90% cases having hypochromic cells alongside 9.47% cases having normochromic cells and 0.38% cases had dimorphic populace which was independently included as far as hypochromasia.[9] MCH>27pg showed 84.85% cases having normochromic cells followed by 9.09% cases having hypochromic cells and 6.06% cases had dimorphic population.[10] The p-esteem for this relationship between's MCH finding with chromasia was 0.000 for example p-esteem <0.005.

From both the examinations it was noticed that RBC records are identified with size and chromasia of RBC.[11] This importance is credited to acceptable quality control of the cell counter in our instituition and normal adjustment of the same.[12] Be that as it may, the MCV is an incredibly helpful incentive in arrangement of anaemias[13] however the MCH regularly don't add critical and clinically important data. Since MCH assume a significant part in research center quality control on the grounds that the qualities will stay stable for a given example over time.[14]

5. Conclusion

Iron deficiency is almost universal when dealing with this magnitude of anaemia. However, clinically speaking, many technical experts believe that to differentiate severe anaemia, a screening for other causes is desirable, all males are recommended to be screened. In the present study of pediatric cases 0-5 year's age group males were most affected and prevalence was more in males as compared to females and the predominant morphological pattern was microcytic hypochromic anaemia.

6. Source of Funding

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7. Conflicts of Interest

There are no conflicts of interest.

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