European Journal of Molecular Biology and Biochemistry

Journal homepage: www.mcmed.us/journal/ejmbb

ANEMIA IN GROWING CHILDS

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ABSTRACT

Anemia is among the most widespread health problems for children in developing countries. This paper evaluates the impact of a randomized health intervention delivering iron supplementation and deworming drugs to Indian preschool children. At baseline 69 percent were anemic and 30 percent had intestinal worm infections. Weight increased among assisted children, and preschool participation rates rose by 5.8 percentage points, reducing absenteeism by one fifth. Gains were especially pronounced for those most likely to be anemic at baseline. Results Contribute to a growing view that school-based health programs are an effective way of promoting school attendance in less developed countries.

INTRODUCTION

Anemia is a condition in which the body does not have enough healthy red blood cells. Red blood cells bring oxygen to body tissues. There are many types of anemia. Iron deficiency anemia is a decrease in the number of red blood cells in the blood due to a lack of iron. Iron deficiency anemia is the most common form of anemia. You get iron through certain foods, and your body also reuses iron from old red blood cells.

Babies are born with iron stored in their bodies. Because they grow rapidly, infants and children need to absorb an average of 1 mg of iron per day. Since children only absorb about 10% of the iron they eat, most children need to receive 8-10 mg of iron per day. Breastfed babies need less, because iron is absorbed 3 times better when it is in breast Iron deficiency anemia most commonly affects babies 9-24 months old. All babies should have a screening test for iron deficiency at this age. Babies born prematurely may need to be tested earlier. Iron is a component in many proteins, including enzymes and hemoglobin, the latter being important for the transport of oxygen to tissues throughout the body (National Academies of Sciences 2002). Iron deficiency anemia (IDA) – that is low levels of Hb in combination with abnormal levels of other iron

indicators such as transferring saturation (iron stores) – can lead to weakness, poor physical growth, increased morbidity, and delayed psychomotor development. In particular, animal studies suggest that iron deficiency early in life could inhibit the function of neurotransmitters, compromising later brain function. Anemia is one of the world's most widespread health problems, especially among children: approximately 40 percent of children are anemic across various African and Asian settings. In particular, iron deficiency anemia leads to weakness, poor physical growth, and a compromised immune system – decreasing the ability to fight infections and increasing morbidity – and is also thought to impair cognitive performance and delay psychomotor\ development. Recent macroeconomic estimates suggest that the average impact of iron deficiency anemia, through both physical and cognitive channels, could be as large as 4 percent.

MATERIAL AND METHODS

The present study was conducted in department of bio chemistry A.P.S. University, Rewa from February 2013. The comparsing of 100 patients of anaemia.

Inclusion criteria
1. Patient of age 7 to 14 age group.
2. Patient with signs and symptoms of Anaemia.
3. Patients with preliminary investigation like Hb level peripheral blood, serum and bone marrow picture

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suggestive of Anaemia.

Exclusion criteria
1. Patient with age less than 17 years.
2. Patient with bleed
3. Anaemia due to acute blood loss.

A detailed history, recorded particular emphasis on symptoms, suggestive of Anaemia, such as Anaemia weakness and easy feasibility decreased work performance breath less-nests, and swelling over body.

A through physical examination at every patient was done with special reference to pallor nail changes, lymphadenopathy, sternal tenderness, edema, and signs at congestive cardiac failure.

1. Hb : By sahils method, to assess level at Hb. in blood, this was used to grade the severity of Anaemia.

2. Complete Blood count (C.B.C.) : The CBC consist at Hb concentration haematocrit (packed cell volume), mean corpuscular (MCH), MCH concentration total leukocyte count, and plate lets count, total erythrocyte count, and plate lets count. CBC was performed using automated analyzer. This provide information regarding total R.B.C., W.B.C., plate lets count, and differential leukocyte count.

Normal DLC is
Neutrophils – 40-80%
Lymphocytes – 20-40%
Mono cytes – 2-10%
Easinophils -1-6%
Basophils – 1-2%

Peripheral Smear Examination
It was done by preparing a thin layer with leishman, stain was evaluated for RBC morphology white cell morphology, and plate late count. A special note was made regarding the percentage of 5 or more to be neutrophils, materials, parasites and any other abnormal cell.

Reticulocyte count
It was done by 0-3% alcoholic solution of burilent cresyle blue using the technique described by wintrabe. Normal value 0.2-2%

$$\text{Absolute \% Reticulocyte} = \frac{\text{Reticulocyte patient HCl X \% Reticulocyte}}{45}$$

$$\text{Reticulocyte Index} = \frac{\text{Absolute \% Reticulocyte}}{\text{Shift Factor}}$$

Reticulocyte Index greater than 2 reflect adequate marrow function while less than 2 Reflect hypo plastic marrow

Erythrocyte Sedimentation Rate (E.S.R.)
Western method was used normal value- 0-20 mm/h (male)-0-30 mm/h (Fennel)

Bone Marrow Examination
Posterior superior iliac spine was preferred sit for bone marrow aspiration in adult but if patient was obese then it was done from body of sternum.

Film were prepared and stained with leishman's stain and studies with particular reference to followings -
• Type of bone marrow reaction
• Bone marrow cellular city.
• Myeloid to erythroid ration.
• Differential cell count.
• Any abnormal cellular other findings.
• Serum protein electrophoresis

Serum protein electrophoresis was carried out in patients, who were having Anaemia and body pain. M-protein is seen as peak/band on serum protein. Electrophoresis. immunoflxation is indicated to identify abnormal immunoglobin. Quantification of M-protein is carried out by densitometer.

OBSERVATION AND RESULTS
The present study clinical profile of Anaemia in growling children patients was under taken in department of Biochemistry APS University Rewa (M.P.).

100 cases diagnosed as Iron deficiency anaemia with age limit of 5-17 were including in this study. This task depicts are presents age and sex distribution of patient in study group. Maximum number of patient was from <17 years are age group. Male patients wear pre-dominant in the study group. Male patients constitute -50%, while female constitute 50% of study group.

This table depicts presenting symptoms present in study group. Most frequent symptoms were weakness and fatigue (100%), decreased work performance (80%), breath- less-ness an exertion (60%), swelling over body (45%), Anorexia (20%), Palpitation (10%), Bleeding form and site (8%), Body pain (8%) and Pica (5%).

Table 1. Child anemic patients were classified in 3 grades as per HB level

Grand	Hb level gm /dl
Grade-o-(wnl)	>13 gm /dl (male) >12 gm /dl (female)
Grade (mild)	10-12 .99 gm/dl (male) 10-11 .99 gm/dl (female)
Grade (moderate)	7.1- 9.99 gm/dl
Grade-3 (severe)	< 7mg/ dl

All patients were to following investigation.

Table 2. Reticulocyte index

HCL	C shift factor
45%	1
35%	1.5
25%	2
15%	2.5

Table 3. Distribution of patient in the study group age and sex

S.No.	Age in years	Male		Female		Total	
		No. of patients	%age	No. of patients	%age	No. of patients	%age
1.	5-10	15	40.00	10	40.00	20	40
2.	11-14	10	24.00	8	32.00	14	28
3.	15-17	25	36.00	7	28.00	16	32
	Total	50	100	50	100	50	100

$P > 0.05$ statically insignificant

Table 4. Distribution of Case According to severity

S.No.	Hb in gm %	No. of Patients	Per%
1	Mild anemia 10-12gm	19	19.00%
2	Modrate anemia 7.1-9.99	44	44.00%
3	Severe Anemia	37	37.00%

Table 5. Distribution of Cases according to the red-cell morphology in peripheral smear

S.No.	Morphology	No. of Patients	Per%
1.	Normocytic normochromatic	52	52.00%
2.	Micro-cystic hypro chromic	38	38.00%
3.	Dimorphic	6	06.00%
4.	Megaloblastic	4	04.00%
	Total	100	100%

Table 6. Distribution of cases according to the symptoms

S.No.	Symptoms	No. of Patients	Per%
1.	Weakness	100	100.00%
2.	Decreased work performance	80	80.00%
3.	Breathless-ness	60	60.00%
4.	Swelling over body	45	45.00%
5.	Anorexia	20	20.00%
6.	Palpitation	10	10.00%
7.	bleeding from any site	8	08.00%
8.	Bony pain	8	08.00%
9.	Pica	5	05.00%

Table 7. Distribution of Case according to the red-cell morphology in peripheral smear

S.No.	Morphology	No. of Patients	Per%
1.	Normocytic normochromatic	52	52.00%
2.	Micro-cytic hypochromic	38	38.00%
3.	Dimorphic	6	06.00%
4.	Megaloblastic	4	04.00%
	Total	100	100%

DISCUSSION

This study was conducted in Department of Biochemistry A.P.S. University, Rewa (M.P.) A total 100case were taken randomly for the study. For the assessment of the clinical status before and after treatment the score was used which is mentioned. The score before and after the treatment was considered and test was applied. There was female in the incidence of the iron deficiency anaemia, among the total of 100 case studied. 50 case were female (50%) and 50 case were male (50%). Out of 100 cases in most frequent symptoms were

weakness and fatigue (100%), decreased work performance (80%), breath- less-ness an exertion (60%), swelling over body (45%), Anorexia (20%), Palpitation (10%), Bleeding form and site (8%), Body pain (8%) and Pica (5%) (Table 6). Out of 100 cases the morphology of R.B.C. Normocytic picture was present in 52%, Micro cystichyprochromic (38%), dimorphic picture (6%) and megaloblastic picture (4%) (Table 7).

1. There was no control group as such since the sample size was small.
2. A few patients were irregular not following the instruction given by the physician so assessment of drug action could not be controlled well.
3. In some case a few necessary details were lacking and study conducted based on the available data.
4. Other than Hb % no much extensive investigation procedure.

LIMITATION
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