Human hemoglobin denovo synthetic Replenshment

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ABSTRACT:-

From 152 anemic patients , paired venous blood samples collected . one of the samples for each patient was at may 2007 then high protein diet consumption and the other at May 2008 in AL Mamiran /Babylon . The paired samples were assessed by acid haematin haemoglobinometry "Sahlis Type " and "The Hb Pipette " The test patients were categorized into three categories First are those who attain normal haemoglobin concentration (140/152) post to high protein diet . Second are those who sustained low haemoglobin concentration even after consumption of high protein diet (8/152). While the third are those who worsent i.e. got lowered haemoglobin concentrations (4/152) The first group attributed to denovo haemoglobin synthesis while the second may due reduced anabolic rate or high catabolic rate of haemoglobin The third however ,may got chronic infectious diseases , or suffer from haemorrhagic. blood loss . *Ancylostoma dudenele* was associated with low Hb value in both male and female subjects .

Introduction:-

Hb is a metalo-chromoprotein consisting of globulin molecule attached to four red colored haem molecules. The globin molecule consists of two alpha polypeptide chains and two beta polypeptide chains. Haem is a metal complex containing an iron atom in the center of porphyrin structute . Hb is formed in the developing erythrocyte(Normoblasts)in the bone marrow.The biosynthesis of Hb involves a gene expression process to Hb specific polygene to form haem , globin subunits followed by subunit assembly as well as iron metabolism. Three Hb genotype are known as Hb , HbS and HbF. Hb genotype is the normal Haemoglobin . While HbS is found in Sickle cell anemia, HbF however, indicate presence of fetal haemoglobin. Low haemoglobin levels is indicative either for hyposynthesis or hypercatabolism. These are disease condition with genetic predisposition, malnutrition and chronic metabolic or infectious diseases . (Dacie &lewis 2001)

The objective of the present work was at:

1-assessing Hb level in a rural area in AL Mamirah village an agricultural area suffers malnutrition .

2-gaving fed concentrate to these population

3-rechecking their haemoglobin and *Ancylostoma dudenele* one year later on

Materials And Methods:-

152 venous paired blood samples were collected from the anaemic patients. The samples were assessed through acid haematin haemoglobinometry "Sahlis Type " and Hb pipette(Talib 1988). One of the samples for each patient was at May 2007. another sample was at 2008 , with test on intestinal Helminthus.

High protein diet supplement regularly was distributed to those patients and recommendation of inclusion of red meat and liver in daily food.(Child and Cuttpert 1992).

Results:-

The average hemoglobin concentration was 9.255 g/dL for male and 8.962 g/dl for females at the year 2000 . Likewise , It was 12.457 g/dl and 10.462 g/dl for the year 2001 . The overall average was 9.058 g/dl for 2000 and 11.083 g/dl for 2001 . While the mean of hemoglobin differences between 2001 and 2000 was 3.315 for male and 1.5 for female with an overall mean Hb difference was 2.025 (Table -1) .85 out of 152 patients with anemia (Hb subnormal values) were grouped as 6 , 9 , 12 , 15 , 18 , and 24 years ages and Hb mean values were scored . female values were 10.811 ,9.75 , 9 , 9.428 , 9 and for the aforementioned age groups . For males , however, they were 7,8 , 9.625 , 9.083 , 9 , 9.4 for same mentioned age groups to the first Hb values . Meantime , the second Hb values after concentrate high protein diet for males they were 11.583 , 11.556 , 12.5 , for 6 ,9 , and 12 years old .For females they were 11.83 , 11.023 , 11.86 , 11.643 , 10.5 , 10.66 for the ages groups 6 , 9 , 12 , 15 , 18 , 24 years old ,accordingly .

The means of Hb differences as it induced by high protein diet were 2.834 , 1.365 , 2.893 , 2.215 , 2.275 , for the age groups 6 ,9 ,12 ,15 ,24 , respectively . (Table 2) it was evident that males mostly gate benefit of Hb increase more than females and the overall of both sexes (Fig. -1) .

Some of the test groups (8 subjects)did not showed any increase of their Hb concentrations (Table3A). Others , however , becomes worsened since they undergoes decrease in their Hb concentration inspite of high protein diet consumption (Table 3 B) .

Results in tables 1 ,2 and 3 suggested that the study patients can be categorized into three categories : 1-those who gain benefit of increase of Hb values ,2-those who did not have such benefit and 3-those who became worsened with Hb decrease value (Table 4).

A one year later *Ancylostoma duedenale* infestations were noted in higher percent than males (Table 5) in this community .

Table (1):- Hemoglobin concentration in the study group.

Study group	Number	Hb1	Mean	Hb2	Mean
Male	47	436	9.255	585.5	12.457
female	104	932	8.962	1088	10.462
Total	151	1367	9.058	1 673.5	11.083

The Difference between Hb means

Male	3.315
Female	1.5
Total	2.025

Table(2):- Childhood hemoglobin increase through High Protein diet and age

Age	Number	May2007 1st	May2008 2nd	
		Hb	Hb	D
6 M	6	7.8	11.583	3.683
F	9	10.811	11.83	1.019
T	15	9.073	11.906	2.834
9 M	21	4.625	11.556	1.931
F	23	4.75	11.023	1.273
T	44	4.612	10.978	1.366
12 M	6	9.083	12.5	3.417
F	8	9	11.86	2.86
T	14	8.892	11.785	2.893
15 M	0	0	0	0
F	7	9.428	11.643	2.215
T	7	9.428	11.643	2.215
M				
18	2	6	10.5	1.5
24	3	4	10.66	1.66
Total M	33	8.877	11.999	3.122
F	52	9.108	10.946	1.878
T	85	9.217	11.492	2.275

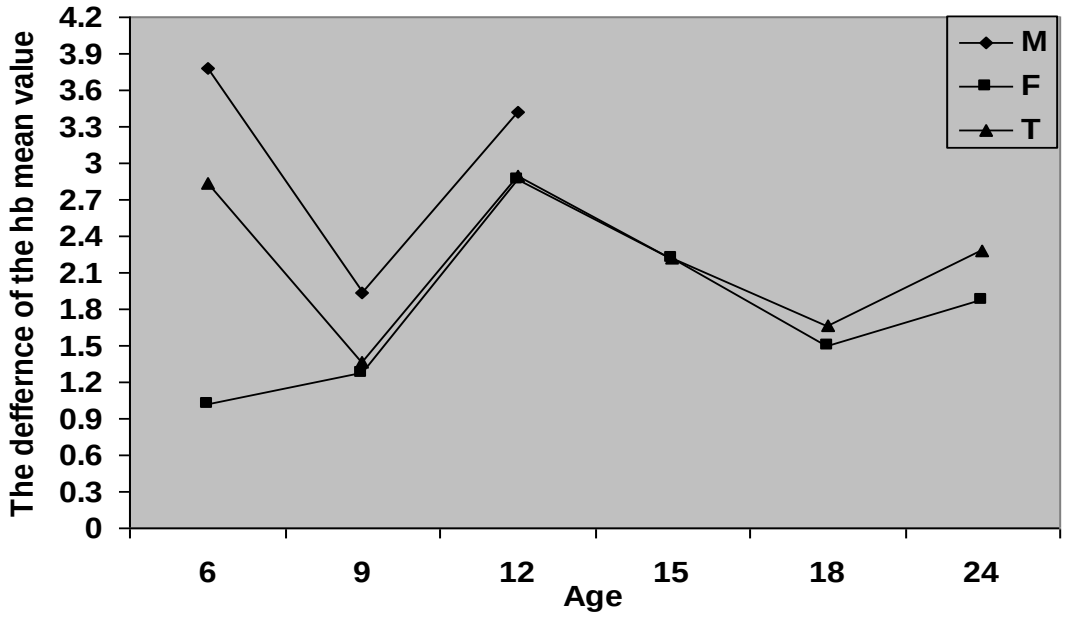

Fig. 1: The mean difference of Hb before feeding and after feeding in relation to age

Table (3):- Hemoglobin concentration not affected by high protein diet concentrate [A]and those undergoes decrease in Hb concentration [B]

		N	1st	2nd	Age Range
A/	Male	3	10.66	10.66	9 – 1
	Female	5	10.2	10.2	6 – 2
	Total	8	10.33	10.33	6 – 27
		N	1st	2nd	Age Range
B/	Male	2	13	11.5	9 – 13
	Female	2	11.5	10.25	9 - 10
	Total	4	12	10.36	9 – 13

Table(4):- The study population grouping as they get benefit from diet or not.

Group	Age	Range	Number	1st	2nd	Cass
Group one	M		42	9.255	12.457	Increase Hb
	F		97	8.962	10.462	thrgh high
	T		139	9.058	11.083	frotcin dict
Group Two	M	9 – 12	3	10.66	10.66	Nochange
	F	9 – 27	5	10.2	10.2	
	T	6 – 27	8	10.33	10.33	
Group Three	M	9 – 13	2	13	11.5	Decreass in Hb
	F	9 – 10	2	11.5	10.25	conc.thovgr H2gh

	T	9 – 13	4	12	10.36	prstew diet

Table (5):- duodenal and Hb% concentration among the study population

No Patients	sex	Agerange years	Hb% range	xv . v.
15	Male	8 – 19	8 – 10	15
26	Female	10 – 21	7 – 11	14

Table (6):- Hemoglobin Reference Normal Values as they compared to values in the study patients .

	Hb Normal Values			
	This Study values		Talib1996 g/dl	Dacie and Lewis2001 g/dl
Birth	B	A	-	18.0±4.0
Days	-	-	-	18.0±3.0
1 month	-	-	-	140.0±2.5
2 months	-	-	-	11.2±1.8
3-6 months	-	-	11± 1.5	12.6±16
1 year	-	-	12. ±1	12.6±1.5
2-6 years	9	12	-	12.5±1.5
6-12 years	8	12	13. ±1.5	13.5±4.0
Men	9	12	15.5±2.5	15.0±2.0
Women	9	11	14.0±2.5	13.5±1.5

Discussion:-

Higher Hb values increase after high protein diet were noted among those of 6 &12 years old males (Fig. -1). This may be attributed to social preference of males on females in rural areas in Babylon province .

The group one of subnormal Hb concentration (Anemia) , such subnormal values can be corrected by feeding with high protein diet .This indicate an acquired state Haemoglobulin deficiency since it was corrected by high protein diet feding (Talib 1988 ; Child Cuttpert 1992 , Dacie and Lewis 2001 ;table 6).

The second group , however , fail to attain normal Hb level , this could be attributed to one or more of the following possibilities :

i- reactance of the subjects to have high protein diet to ensure correction for their state

ii-High Haemoglobin catabolic rate.

iii-Low Haemoglobin catabolic rate due to a gene defect (Child & Cuttpert 1992)

The third group however in which the subjects appeared with rather in the lower border of normal limits for the concentrations they encountered lowering in their Haemoglobin concentration . such finding could be a reflection of one or more of the following :

i-Underlying infectious chronic disease

ii-Acute haemorrhagic blood loss .

iii-Aggravation of the malnutrition state for those patients .(Child & Chuttpert 1992 , Dacie and Lewis 2001).

Thus on conclusion one may state the following

a. Reporting malnutrition subnormal Hb value (anemia).
b. The study patients mostly were correctable by nutritional therapy . Others however , with in an uncorrectable Hb subnormal values .
c. Males showed preference in Hb correctability than females .

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