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Pediatrics anemia: an approach towards dietary managements in a child

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ABSTRACT

Around the world, anemia affects up to one-half of children younger than five years. The most well-known reason for anemia is not getting enough iron. A child who is anemic does not have enough Red blood cells or enough hemoglobin. Hemoglobin is a protein that lets red blood cells carry oxygen to other cells in the body. Iron is a mineral that carries oxygen in the blood, and is particularly important for children because of their rapid growth. Here in this study our aim is to analyze a young anemia child with all basic parameters and scrutiny in dietary supervision. In initial stage, the child hemoglobin content had become too low and was advised for a Packet red blood cell transfusion 10ml/kg. The patient was taking liquid diet by rigid thermal foil from central therapeutic kitchen. He was taking 50ml into 4 feed 3 hourly. Apart from the therapeutic kitchen iron rich foods such as carrot/ apple/ sorghum/ beet / pomegranate was suggested. We found the patient improvement in biochemical parameters (hemoglobin), the weight was increased by 2.5kg, and platelet count has also become normal. With World Health Organization, other well-known pediatrics organizations have proposed many recommendations for prevention of iron deficiency which is the most common nutritional deficiency in the whole world. Diets with iron, giving iron-rich formulas when breast milk is insufficient, avoiding cow's milk in the first year of life, screening infants in the 9–12th months in terms of iron deficiency and giving infants iron prophylaxis.

Keywords: Pediatrics anemia, haemoglobin, infants, iron, management.

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INTRODUCTION

Iron lack is the most widely recognized nourishing insufficiency worldwide and a significant general medical issue particularly in agricultural nations. There is no unmistakable information about the number of people are influenced by iron lack around the world, yet it is assessed that ID is available in the vast majority of the pre-younger students and pregnant ladies in agricultural nations and in at any rate 30–40% in created nations when pallor is utilized as a roundabout marker of ID.[1]. Since frailty is the main marker of iron inadequacy, the terms ID and IDA are regularly utilized conversely. However, iron inadequacy may create without weakness and the tissues might be influenced from this condition. Iron inadequacy is showed in various stages. In the event that iron prerequisite is beneath admission, iron stores are diminished fundamentally. After the iron stores are diminished, hemoglobin levels may remain typical for some time which implies that iron lack is seen without pallor. As of now, just plasma ferritin level and plasma transferrin immersion are diminished. Negative iron equilibrium which proceeds after iron stores are depleted is showed with diminished hemoglobin. Indisputably, diminished body iron stores have been characterized as ID and deteriorating of this condition and improvement of paleness is characterized as IDA. In our country, the recurrence of iron inadequacy paleness (IDA) has been accounted for to run somewhere in the range of 15.2% and 62.5% in various examinations directed with kids.[2,3,4,5].

The primary standards in treatment of iron insufficiency frailty incorporate making the conclusion, researching the condition which causes to press lack and disposal of this condition, substitution of inadequacy, improvement of sustenance and training of patients and families. Iron is found in two structures in diet; non-heme iron and heme iron. Non-heme iron is obtained in food items other than meat and heme iron is found in meat and meat items. Ingestion of heme iron is a lot higher, however just 10% of the iron in diet is heme iron. While the retention of heme iron is influenced by environmental factors with a low rate, non-heme iron is influenced by other food substances and pH of the climate. Thusly, expanding utilization of meat and meat items is vital in avoidance and treatment of iron inadequacy. Different food varieties wealthy in iron incorporate egg, all around done vegetables, green vegetables and dry organic

product.[6,7]. So, in this examination we clarified subtleties nourishment and diet like what to be kept away from and food varieties to be incorporated relying upon various biochemical boundary in a pediatrics paleness patient.

MATERIAL AND METHOD

This is an observational analysis carried out at Institute of Medical Sciences and Sum hospital, Bhubaneswar. The patient history was given below. The patient undertook a dietary counseling for 1 month & dietary modification was done according to the patient condition.

Table 1: Patient details

Height	64cm
Weight	6.7kg
Chief complaints	Hydrocephalus head size-63cm, Fever (101-degree F) for 10 days, vomiting.Seizure, Respiratory distress, Irritability & pale skin
Diagnosis	Anemia (Hb-5.4 mg/dl)
Previous operation	VP shunt
Causes behind anaemia of the patient	The patient has been suffering from hydrocephalus for 3 months.

As per the treatment of hydrocephalus, VP shunt was performed twice in accordance to drain out excessive fluid from brain. As a result of which excess bleeding occurred. It might have resulted to low haemoglobin. The high platelet count of the patient could have developed blood clots and bleeding .it might be one of the reasons of the patient to be anemic.

Observation and results

After admission on Dt. 27/1/21 the patient was taking orally liquid diet from therapeutic kitchen. The patient was seen to have 5-6 episodes of loose motion and vomition due to which he was suggested 75ml ORS after each stool by me. Patient was drowsy.On dt.31/1/21 as the haemoglobin content of the patient had become too low, the patient was advised for a PRBC transfusion 10ml/kg.As per advice transfusion of PRBC was held on dt. 2/2/21. After which it was observed that the haemoglobin has increased by 0.9mg/dl.A VP shunt was planned for the patient on dt.3/2/21 for which he was on NPO from midnight. After receiving the report it was seen that the protein content in the brain was too high due to which the planned shunt was cancelled. It was observed from the report that the patient has developed sepsis. Due to which he was suggested to ryles tube feeding instead of orally liquid diet.As per the advice, the patient was taking liquid diet by RTF from central therapeutic kitchen. He was taking 50ml into 4 feed 3 hourly.He was given following items in liquid diet (RTF): 1.dal water2.santula pani3. vegetable khichdi smashed water4.sago water.Apart from the therapeutic kitchen iron rich foods such as carrot/ apple /sorghum /beet /pomegranate was suggested which was provided to him in stewed liquid form 300ml in 3 feed as he was very much prone to infection.He was also taking Easifud (iron fortified cereals)2 scoops in each feed i.e.3og powder in 200ml (2times/day).

After 2 weeks patient was allowed to take same modified liquid diet orally in quite thick consistency.Total liquid intake per day=650 ml, Total calorie intake per day (approx.) =700kcal.From iron rich food juice (300ml) – 93kcal per 100ml * 3=279 kcal.From easifud (150ml) =228kcalTotal iron intake per day (approx.) =11mg/da From easifud (60g):20mg/100g= 6mg/200ml juice (apple+ carrot+ beetroot) =5mg/300ml

Prognosis

The patient undertook a dietary counselling for 1 month & dietary modification was done according to the patient condition.The patient was advised to intake food from the therapeutic kitchen.Apart from this, iron rich food juice and iron fortified cereals i.e. EASIFUD was also provided with maintaining proper hygiene as patient was highly prone to infection.The patient has improvement in biochemical parameters (haemoglobin), weight has increased by 2.5kg, and platelet count has also become normal.The patient has also improvement in behavior (quite active & alert, shows pleasant behavior). Therefore, the prognosis is good.

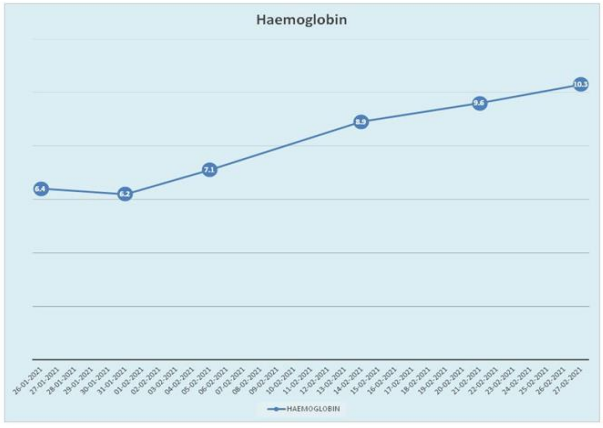
Table 2: Laboratory examination results

date	examination	Haemoglobin (11-15g/dl)	TWBC (4-10)	Platelet count (200-550)
26/1/21	CBC	6.9	25	1131
31/1/21	CBC	6.2	28.1	1148
5/2/21	CBC	7.1	19.6	1080
14/2/21	CBC	8.9	16.7	812
21/2/21	CBC	9.6	12.6	719
27/2/21	CBC	10.3	11.3	652

Table 3**:** Sample menu during discharge

MEAL	MENU
7 AM	Stewed Carrot or apple juice-100ml
9AM	sago water-50ml
11AM	Easifud (iron fortified cereals)-100ml
1 PM	Veg. khichdi smashed water-50ml
3PM	Pomegranate stewed juice-100ml
5PM	Easifud-100ml
7PM	Stewed Beetroot or orange juice-100ml
9PM	Santula pani-50ml

Figure 1: Haemoglobin increment plot



RESULTAND DISCUSSION

The deficiency of all out-body iron in preterm newborn children increments with diminishing gestational age. It is deteriorated by the fast post pregnancy development that numerous

newborn children experience and by successive phlebotomies without sufficient blood substitution. Then again, wiped out preterm babies who get numerous bondings are in danger of iron over-burden. The utilization of recombinant human erythropoietin to forestall bonding treatment in preterm babies will additionally exhaust iron stores if extra supplemental iron isn't given. The exceptionally factor iron status of preterm newborn children, alongside their dangers for ID just as poisonousness, blocks deciding the specific prerequisite, yet it very well may be assessed to be somewhere in the range of 2 and 4 mg/kg each day when given orally.[8,9].

Everyone—especially infants and children—need Iron. Iron is a mineral that carries oxygen in the blood, and is particularly important for children because of their rapid growth. A child who is not getting enough iron can develop iron deficiency anemia. Children with iron deficiency anemia tire easily, look pale and have a poor appetite. [10].

Table 3: Foods to eat and avoid

FOODS TO EAT	FOODS TO AVOID
Iron rich food Iron fortified formula Iron fortified infant cereals High protein food Vitamin C rich food (enhances iron absorption)	Cow's milk Nonveg items as they don't eat meat Babies formula with low iron

Typically, infants and children need 11 milligrams of iron each day. Keep your child on breast milk or iron-fortified formula until age 1. Give your child iron-fortified infant cereals up to age 18 months. Include a variety of foods in your child's diet, including a high protein food (pulses, legumes etc.).

POTENTIAL FOR CONFLICT OF INTEREST

No conflict of interest is declared by the author.

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