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Commentary on Iron Deficiency Anemia

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Short Commentary Article

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INTRODUCTION

For years, there has been long lasting effects on Central Nervous system. It is the most common single nutrient disorder from infancy to old people. Iron is very essential component required and involves in metabolism of energy, gene regulation, cell organogenesis, transport of oxygen and storage of oxygen in muscle tissue, enzymatic reactions, neurotransmitter and protein synthesis[1-3].

Anemia is the most common blood disorder affecting about a quarter of people globally. Iron-deficiency anemia affects nearly 1 billion [4]. It is more common in females than males among children, during pregnancy and in the elderly. It decreases the ability to work and increases the cost of medical care. The amount of hemoglobin reduced in the blood is referred as Anemia. It decreases the carrying capacity of oxygen to blood.

Three main types of anemia

1. Blood loss – GI bleeding, trauma, thalassaemia
2. Decrease red blood cell production – iron deficient, lack of vitamin B12 and various co-enzymes.
3. Increase break down of RBC – mutation in genotype of an individual

Deficient of micro and trace nutrients, because of poverty and food insecurity lead to cause iron depletion in blood. A recent study estimated that depletion in nutrients remains a cause of 3.1 million deaths of children and chiefly observed in the areas of Africa and Asia.

A recent review stated that under development of nutrition remains a cause of 3.1 million deaths of children under 5, which is 45 % of total under 5 deaths in 2011 [5]. Deficiencies of Micronutrient ([more than 2.5 billion individuals [6]), having estimation of over 100 million individuals being vitamin A deficient, over 1 billion with some degree of iron deficiency in the major areas of Africa and Asia, and over two billion people with vitamin D insufficiency (based on a cutoff of 50 nmol / L) [7]. In the developed countries, they are not immune to these disorders; deficiencies can be widespread across certain populations [e.g., folate [8] and iodine [9]]. A recent studies have shown, even mild deficiency, during pregnancy can lead to lower verbal IQ and reading comprehension, spelling and grammar in offspring due to iodine inadequacy [10, 11].

Iron is absorbed primarily in the duodenum and upper jejunum, where the acidic environment keeps iron in its soluble form. Beyond these sites, bicarbonate makes iron less soluble. Iron homeostasis in the body remains relatively stable. The iron is majorly bound to hemoglobin of RBC. Deficiency of iron

cause anemia, lead to worsen into fatigue further causes Thrombocytosis, progressive of Platelet count results. People cannot donate blood due to insufficient levels of iron in blood.

The di-iron carboxylate proteins such as ribonucleotide reductase and ferritin [12] are essential requirement for storing and transformation of iron around the body and [13] aconitase which is iron – sulphur proteins are used on preventing metabolic conditions and to treat the diseases like myopathies and exercise intolerance [14], Friedreich's ataxia [15] and some of the side-effects of diabetes [16].

Importance and Functioning of Iron in body

Iron is the central component of hemoglobin [17]. The important component present is mono- or di-ferric transferrin in the plasma. It is obtained from three sources,

[a] Dietary absorption- adequate iron in the diet..

[b] Macrophages -recycling iron from senescent erythrocytes.

[c] Stores in the liver - ferritin.

Human needs approximately 10% of iron in the diet per day. It has even been shown that there is sufficient iron in a strict vegan diet providing there is a sufficiently diverse diet available [18].

Iron deficiency anemia shown long time effects on central nervous system [19]. In 6 month old infants has more adverse effects atleast one aspects of CNS development and suggests studying the processes that are rapidly myelinating during the first 2 yrs of life. Since iron is a needed nutrient which is involved in development of brain, it is recommended by Health Canada that babies' first complementary foods be iron-rich [20].

CONCLUSION

The persistent nature of iron deficiency anemia and its impacts on health and on commercial world make the condition a critical health challenge. Mostly the children and women are exposed to iron deficiency anemia. The government has to take necessary measures and bring awareness among the people by organizing supplementation programs in order to reduce the iron deficiency rate and finding alternative solution to enrich diet with bioavailable iron.

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