Managing anaemia: Focus on sodium feredetate + folic acid + vit. B₁₂

ANAEMIA AMONG PREGNANT AND ADOLESCENT GIRLS IN INDIA

Iron deficiency anaemia is a major health problem in India especially in women of reproductive age group. The World Health Organization recommends that the haemoglobin concentration should not fall below 11.0 g/dl at any time during pregnancy. The prevalence of anaemia ranges from 33% to 89% among pregnant women and is more than 60% among adolescent girls. To assess the status of anaemia among pregnant women and adolescent girls from 16 districts of 11 states of India, a two-stage random sampling method was used to select 30 clusters on the basis of probability proportional to size. Anaemia was diagnosed by estimating the hemoglobin concentration in the blood with the use of the indirect cyanmethemoglobin method.

The survey data showed that 84.9% of pregnant women (n = 6,923) were anaemic (hemoglobin < 110 g/L); 13.1% had severe anaemia (hemoglobin < 70 g/L), and 60.1% had moderate anaemia (hemoglobin ≥70 to 100 g/L). Among adolescent girls (n = 4,337) from 16 districts, the overall prevalence of anaemia (defined as hemoglobin < 120 g/L) was 90.1%, with 7.1% having severe anaemia (hemoglobin < 70 g/L).

Any intervention strategy for this population must address not only the problem of iron deficiency, but also deficiencies of other micronutrients, such as B12 and folic acid and other possible causal factors.

NUTRITION IN FETAL GROWTH-THE PUNE MATERNAL NUTRITION STUDY

Maternal micronutrient nutrition is an important determinant of size and body composition of the fetus. Maternal iron, iodine, calcium, folate, vitamin A, and vitamin C nutrition all influence...
Iron alone did not produce as good results as iron plus vitamin B12 and folate. The supplementation had no detectable effect on the birth weight of the children, nor on the haemoglobin concentration of the infants at three months of age. The daily absorption of iron in the pregnant women, as judged from the increase in haemoglobin mass, was not as satisfactory as expected.

It was concluded that to provide these women with adequate iron, a daily oral supplementation of 120 mg of elemental iron or more was needed. This could only be achieved by medicinal means. Before supplementation can be recommended on a public health scale, further information regarding the cost and expected benefits of such measures must be obtained.

**THE MULTIPLE VITAMIN STATUS OF WOMEN IN THE LAST TRIMESTER**

This cross-sectional study was carried out to observe the association between iron status and multiple vitamin levels of Chinese pregnant women in the third trimester. Based on hemoglobin concentrations (Hb), the subjects were divided into an anaemia group with Hb < 110 g/L or severe anaemia group with Hb ≤100 g/L, and non–anaemia group with Hb ≥110 g/L.

Results showed that 41.58% of the population with serum iron < 700 microg/L and 51.04% of the population with ferritin < 12 microg/L were in the anaemia group, percentages that were much higher than those in the non–anaemia group. It was concluded that multiple vitamin deficiencies, especially ascorbic acid, retinol and folic acid, may be associated with anaemia or iron deficiency in pregnant women in the last trimester. The study suggested that

<table>
<thead>
<tr>
<th>Drug</th>
<th>Composition</th>
<th>Packing</th>
<th>Administration</th>
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<tbody>
<tr>
<td>NAfER</td>
<td>Sodium Feredetate BP 231mg, Folic Acid IP 1.5mg, Vitamin B12 IP 15 mcg</td>
<td>10 Tablets</td>
<td>1 OD</td>
</tr>
</tbody>
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**Comparison of four different sources of elementary iron and their properties**

<table>
<thead>
<tr>
<th>Source</th>
<th>Properties</th>
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<tbody>
<tr>
<td>Ferrous sulfate</td>
<td>Ferrous sulfate is the most common and cheapest form of iron utilized. Gastrointestinal toxicity is high. Calcium supplementation decreases bioavailability of iron when ingested simultaneously; absorption is enhanced by ascorbic acid; interferes with tetracycline absorption; food and antacids impair absorption. Pregnancy category B - Usually safe but benefits must outweigh the risks.</td>
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<tr>
<td>Carbonyl iron</td>
<td>Used as a substitute for ferrous sulfate. Has a slower release of iron and is more expensive than ferrous sulfate. Slower release affords the agent greater safety if ingested by children. On a mg basis, it is 70% as efficacious as ferrous sulfate. Claims are made that there is less gastrointestinal toxicity, prompting use when ferrous salts are producing intestinal symptoms and in patients with peptic ulcers and gastritis. Calcium supplementation decreases bioavailability of iron when metals are ingested simultaneously.</td>
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<tr>
<td>Dextran-iron (INFeD)</td>
<td>Replenishes depleted iron stores in the bone marrow where it is incorporated into hemoglobin. Parenteral use of iron-carbohydrate complexes has caused anaphylactic reactions, and its use should be restricted to patients with an established diagnosis of iron deficiency anaemia whose anaemia is not corrected with oral therapy. Absorption is enhanced by ascorbic acid; interferes with tetracycline absorption; food and antacids impair absorption. Pregnancy category C - Safety for use during pregnancy has not been established.</td>
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<tr>
<td>Fe(III)-EDTA</td>
<td>The iron absorption data from this salt tested, compared with the absorption of ferrous sulfate, varies from 2 to 30% according to the food vehicle mixed with the salt, the absorption from Fe(III)-EDTA remains practically the same. Apparently, the iron absorption from Fe(III)-EDTA complex is slightly or not affected by the presence of vegetable foods or milk. Data suggest that only a small amount of iron from this salt, about 10 mg/day, would be necessary to prevent iron deficiency anaemia even in those populations relying for their subsistence on vegetable food only.</td>
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**WHO SPONSORED STUDIES ON NUTRITIONAL ANAEMIA IN INDIA**

A W.H.O. sponsored collaborative study of the effects of iron supplementation to pregnant women was carried out in Delhi (northern India) and Vellore (southern India). Supplementation was given under supervision from the 26th to the 36th or 38th week of pregnancy.

A control group received only placebo; one group received vitamin B12 and folate alone; four groups received vitamin B12, folate and a daily iron supplement ranging from 30 to 240 mg of elemental iron as ferrous fumerate, and one further group received 120 mg of iron without B12 or folate. Groups receiving no iron showed a fall in mean hct concentration.

Those receiving iron showed a rise in haemoglobin, the best results being in the groups receiving 120 and 240 mg of iron together with vitamin B12 and folate. Even in these groups however, there was still a high prevalence of anaemia and iron deficiency at the end of the trial period.

Offspring size.

The Pune Maternal Nutrition Study was designed to study the relationship between maternal nutrition and fetal growth, size at birth, and postnatal growth. Maternal circulating folate and vitamin C concentrations predicted larger offspring size, while higher ferritin levels predicted smaller-sized babies. Subclinical vitamin B12 deficiency is common in India, especially in vegetarians, and children born to mothers with the lowest vitamin B12 but the highest folate deficiency are the most adipose and the most insulin resistant.2
anaemic pregnant women should be supplemented with iron and multiple vitamins simultaneously.4

MEGALOBLASTIC ANAEMIA SECONDARY TO FOLIC ACID DEFICIENCY

Folic acid deficiency is the second most common cause of anaemia in our environment, after anaemia secondary to iron deficiency. Folates are essential components of human and animal diet. Folic acid is mainly in polyglutamate form, and it is hydrolyzed in the proximal jejunum. It is important to identify adequately the exact vitamin deficiency that causes megaloblastic anaemia, because vitamin B12 administration in folate deficiency may correct partially megaloblastic alterations, but administration of folic acid in cobalamin deficient patients improves haematological parameters but deteriorates the neurological syndrome. Main causes of anemia secondary to folate deficiency are inadequate dietetic administration, increased requirements, impaired absorption and pharmacologic interactions. Folates are altered by light, high temperature and by water affinity, which facilitates its elimination by washing or cooking.5

IRON PLUS FOLATE VS IRON ALONE

To evaluate whether folate supplementation to iron is able to accelerate solving of iron deficiency anaemia in pregnancy, a multicentre, double blind, randomized clinical trial was done. Combined iron and folate therapy showed a better therapeutic response: the increase in haemoglobin levels from baseline was 1.42 (0.125) g/dL for those given iron only (P < 0.001). A multivariable regression analysis showed that this effect was independent of basal levels of blood iron, ferritin and serum folate and was more evident in women with more severe anaemia. Folate supplementation is recommended in pregnant women with iron deficiency anaemia irrespective of the serum levels of folate.6

SODIUM FEREDETATE VS FERROUS FUMARATE

The aim of a study was to compare the efficacy and safety of two doses of sodium feredetate with ferrous fumarate in improving hemoglobin profile in pregnant anaemic women. Pregnant women with gestation period between 12 and 26 weeks having serum hemoglobin < 10 g/dl, and serum ferritin levels less than 12 microg/l were included in the study.

Patients were divided into 3 groups and drugs administered accordingly. A total of 48 patients were available for analysis which included 37 patients who had completed all the visits up to 75 days follow-up and 11 patients who were treatment failures. Low doses of sodium feredetate (33 mg and 66 mg of elemental iron given twice daily) produce comparable results as higher dose of ferrous fumarate (100 mg elemental iron given twice daily). As there were no adverse effects reported with sodium feredetate, it can be concluded from this study that this new formulation appears to be effective in improving hemoglobin profile in pregnant anaemic women and is tolerated well.7

REFERENCES

NAFER
Sodium Feredetate 231 mg. + Folic Acid 1.5 mg.
Vitamin B₁₂, 15 mcg. Tablets

Therapeutic Milestone in the Management of Anaemia

• Higher relative bioavailability
• No risk of iron overload
• Minimal G.I. disturbances
• No metallic taste

In Nutritional Iron Deficiency Anaemia
• Pregnancy & Lactation
• Generalised Weakness
• Debility & Rundown Conditions
• Devoid of Gastric Irritation

Also available Nafer Syrup
Sodium Feredetate 77mg/5ml. in a flavoured syrupy base

FINECURE PHARMACEUTICALS LIMITED
Fax: 079-30615693 email: sales@finecurepharma.com
website: www.finecurepharma.com