

Study on Efficacy of Oral Iron in Comparison with IV Iron Sucrose in the Treatment of Iron Deficiency Anemia in Pregnant Women in a Rural Scenario

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Received: 15-03-2022 / Revised: 23-04-2022 / Accepted: 15-05-2022

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Conflict of interest: Nil

Abstract

Introduction: In India, the maternal mortality is around 350 -450/100,000 live births, a figure similar to that found in Europe 200 years ago. Anaemia is estimated to contribute to 20 percent of all maternal deaths and nine times higher risk of perinatal mortality. The odds for low birth weight are tripled, while those for preterm delivery more than doubled in association with IDA. Anaemia and iron deficiency in pregnancy are associated with large placental weight and a high ratio of placental weight to birth weight (placental ratio) both of which are predictors of adult hypertension. A vast majority of women in rural India embark upon pregnancy with frank iron deficiency anaemia. Iron deficiency anaemia (IDA) remains the commonest medical disorder in pregnancy in the developing world, with the burden of disease impacting on both the mother and the newborn (and subsequent child and later adult). India is leading in iron-deficiency anaemia in the world. It is very common in rural population due to poverty and an inadequate diet.

Aim: Study on Efficacy of Oral Iron in Comparison with Iv Iron Sucrose in the Treatment of Iron Deficiency Anemia in Pregnant Women in A Rural Scenario

Material and Method: The comparative study was conducted department of gynecology and pharmacology at Dr. Ulhas Patil Medical College and Hospital during the period of November 2021 to Aril 2022. 40 patients who fulfilled the inclusion criteria were randomized into either of the two groups, 20 to the oral are the patients who were given. study with two groups, 20 patients in IV Rx Group, and 20 patients in Oral Rx group was undertaken to study the treatment effect based on outcome such as Hemoglobin (before and after), and side effects.

Result: Comparison between Before and after Sucrose oral and Iv Iron Therapy Hb, Rbc, Are Increased. In After Iv Rx group Treatment Is Statistically Significant (P value<0.0001).

Conclusion: This study was attempted to analyse the safety and efficacy of oral iron in comparison to IV iron on the hematological parameters in pregnant women with iron deficiency anemia. My study confirms that IV iron caused a rapid and effective improvement

in the hematological parameters when compared to oral iron. In our country, with a higher incidence of iron deficiency anemia in pregnancy, specially in a rural scenario, this type of treatment may be helpful in management of these patients in a cost-effective manner.

Keywords: Anemia, Pregnant women, Iv, WHO, IDA, Iron

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Introduction

In the underdeveloped world, iron deficiency anaemia (IDA) is still the most frequent medical problem in pregnancy, affecting both the mother and the infant (and subsequent child and later adult). India is the world leader in iron deficient anaemia. Because of poverty and a poor diet, it is especially frequent in rural areas. It might be short-term or long-term. It varies in severity from moderate to severe. When the implications of anaemia and its preventative and therapeutic treatments are popularised throughout the general public, especially among the rural people, an India free of anaemia is realistically achievable. [1,2]

The maternal death rate in India is roughly 350-450 per 100,000 live births, which is close to the rate in Europe 200 years ago. Anaemia is thought to be responsible for 20% of all maternal fatalities and a ninefold increased risk of perinatal mortality. Low birth weight is more than quadrupled, and premature delivery is more than doubled, when IDA is present. Large placental weight and a high ratio of placental weight to birth weight are linked to anaemia and iron shortage during pregnancy (placental ratio). Both of these factors are risk factors for adult hypertension. In rural India, the great majority of pregnant women have severe iron deficiency anaemia. [3,4]

The majority of rural pregnant women with anaemia had a moderate degree of anaemia (43.5%), whereas the majority of urban pregnant women had a light degree of anaemia (35.7 percent). Anaemia is a neglected tragedy that continues to cause

agony and death in women, as well as the less evident but potentially just as devastating effects on the motor and cerebral development of newborn children, as well as future cardiovascular disease risk. Because the parturient can no longer manage with the physiologic blood losses of birth, let alone those associated with hemorrhagic delivery, anaemia puts women at risk for blood transfusions during the peripartum interval. Conditions that cause continuous bleeding during pregnancy, such as placenta praevia, increase the risk. IDA is linked to poor performance on the Bayley Mental Development Index in newborns. Iron treatment improves poor mental and motor function in iron-deficient babies aged 12-18 months. [5]

While dietary variables may play a role, IDA in infancy and early childhood appears to be primarily caused by maternal iron insufficiency during pregnancy. When compared to the children of non-supplemented mothers, newborns born to iron-supplemented mothers had more than double the iron stores at 2 months of age and beyond. Thus, treating the mother's iron deficiency status is necessary to address the problem of iron deficiency in infancy and early childhood. At first glance, the answer appears to be both easy and inexpensive. [6]

According to the Indian Council for Medical Research's (ICMR) district nutrition survey statistics, 84.2 percent of people had anaemia, with 13.1 percent having severe anaemia. According to the most recent NFHS survey (NFHS-III,

2005-06), prevalence has risen from 49.4 percent to 59.4 percent. As a result, there is little doubt that the frequency of IDA during pregnancy is increasing. We studied the frequency and severity of IDA in rural southern India to determine the present scope of the disease. In France, the issue of iron supplementation during pregnancy has been disputed. [7]

Treatment of iron deficiency anaemia with an iron supplement, on the other hand, is regulated. Long-term oral therapy might cause negative effects, particularly digestive ones, leading to noncompliance. Intramuscular injection of parenteral nutrition is a painful option with varying degrees of success. Iron sucrose intravenous therapy is accessible and is being used in a number of European and other nations. During pregnancy, just one research compared intravenous iron sucrose to oral iron therapy, with the former yielding better benefits. [8, 9]

Aim

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Material and Method

The comparative study was conducted department of gynecology and pharmacology at Dr.Ulhas Patil Medical

College and Hospital Jalgaon Maharashtra during the period of November 2021 to Aril 2022. 40 patients who fulfilled the inclusion criteria were randomized into either of the two groups, 20 to the oral are the patients who were given. study with two groups, 20 patients in IV Rx Group, and 20 patients in Oral Rx group was undertaken to study the treatment effect based on outcome such as Hemoglobin (before and after), and side effects. Group A: Are the patients who were given ferrous sulphate 100 mg tablets three times a day. Tablet containing 100 mg of elemental iron. Group B: Are the patients who were given iron sucrose (2 Ampoules, 100mg) as a bolus injection intravenously over 10mins. Patient was observed for any allergic reactions. If no reaction occurred, the same dose was repeated on alternate days till the total dose was over. Oral iron was withheld during this treatment.

Sample Collection

2ml of each subject's blood sample was taken and separated in tubes EDTA tube. The sample was used to estimate the levels of Rbc and Hb

Biochemical Analysis

EDTA samples were used for the Hb abd Rbc was estimated on 3 parts coulter counter.

Result:

Table 1 Comparison of hemoglobin in two groups of patients studied

Parameters	Oral Rx group (n-20)	IV Rx group (n-20)	P-value
Before Treatment Hb	7.32±0.55	7.85±0.19	P < 0.0001
After Treatment Hb	10.13±0.64	10.99±0.72	P < 0.0001
Before Treatment Rbc	3.26 ± 0.76	4.58 ± 0.12	P < 0.0001
After Treatment Rbc	3.74 ± 0.32	4.88 ± 0.42	P < 0.0001

Table 1 Shows That Comparison Between Before And After Sucrose oral and Iv Iron Therapy Hb, Rbc, Are Increased In After Iv Rx group Treatment Is Statistically Significant (P value<0.0001).

Discussion

The purpose of this study was to compare the safety and efficacy of iron sucrose to oral iron in pregnant women with iron deficiency anaemia, as well as the treatment's influence on haematological markers. The patients in the trial were

divided into two groups at random. Intravenous iron patients got a predetermined dosage of iron sucrose, whereas oral iron patients received 300 mg of elemental iron daily.

Among patients included in my study, anemia was more common in the early second trimester. The similar results were seen in a study conducted by Kapil U, Saxena N, et al. [10] The majority of the patients in my research were from socioeconomic class II. This finding matches that of a research conducted in a rural region of Haryana to determine the incidence of Multiple Micronutrient Deficiencies among Pregnant Women. Priyali Pathak, Umesh Kapil, et al. [10] The research included 283 pregnant women with an average age of 22.9 years. According to the data, 31.8 percent of pregnant women are illiterate, and the majority (81.9 %) is from the lower middle and medium socioeconomic classes. [11]

The similar results were also seen in a study done by Ragip et al. [12] In the treatment of anaemia in pregnancy, 90 women with haemoglobin levels between 8 and 10.5 g/dl and ferritin values less than 13 g/dl received either oral iron polymaltose complex (300 mg elemental iron per day) or intravenous iron sucrose. At each measurement, the IV group had a considerably larger change in Hb from baseline than the oral group, and the changes in subsequent haemoglobin were significantly higher on the 14th and 28th days. Ferritin levels were increased in pregnant women who received intravenous iron. There were no major adverse reactions noted throughout the procedure.

A random, prospective, open study with individual benefit was performed involving 50 patients with hemoglobin levels between 8 and 10 g/dL and a ferritin value of <50 µg/L conducted by Françoise Bayoumeu, MD, a Carole Subiran-Buisset, MD, a Nour-Eddine Baka, MD, a et al. [13] The IV group's haemoglobin increased

from 9.6 0.79 g/dL to 11.11 1.3 g/dL on day 30, whereas the oral group's increased from 9.7 0.5 g/dL to 11 1.25 g/dL on day 30. (not significant). Ferritin levels were greater in the IV group on day 30 (P.0001) and at delivery (P =.01). The IV group had a greater average birth weight of 250 g. (not significant). Iron sucrose appears to be a treatment without major side effects suggested in the correction of pregnant anaemia or iron storage depletion, according to their findings, which are identical to my findings.

In the present study, among the patients included in the intravenous iron group, only a few developed mild side effects and none had any serious anaphylactoid reactions to the drug. This result is comparable to the earlier study done by Van Wyck et al. [14] who looked at 23 anaemic individuals with Hb 7g/dl and IV iron sensitivity. Each patient in the trial got 10 doses of iron sucrose either IV infusion or IV bolus without a test dose. After a total of 223 doses, there were no significant adverse medication responses. The treatment of mild anaemia in pregnant women with intravenous iron sucrose has been found to be effective. In the past, muscle preparations have been linked to local side effects. The Iv Iron Sucrose Complex Treatment Has Serious Side Effects. It has resulted in a significant increase in haemoglobin levels as well as a rapid replenishment of reserves. Long-Term Comparative Studies Are Required When Used At The Boundary Level. [15]

Iron deficiency is a major cause of anaemia, which affects around a quarter of the world's population. Chronic Fatigue, Reduced Mental Function, And Low Well-Being Are All Linked To Anemia. Patients with iron deficiency anaemia are frequently sent to an intestinal surgeon for unknown reasons. Treatment improves quality of life, decreases the need for blood transfusions, and alleviates iron deficiency symptoms. Although oral

contraceptives do not work in other intestinal diseases such as inflammatory bowel disease, celiac disease, or autoimmune gastritis, oral and injectable therapies are effective. A recent study conducted in India in 2010 examined 4,456 medical records, yielding the following findings. 17.9% (798) of the women had anaemia, 2.15 percent (96) of the women had anaemia, and six of the 96 women died from severe anaemia. According to a Cochrane Review published in 2009, the most common kind of anaemia is microcytic hypochromic anaemia caused by iron deficiency (76%) followed by folate deficiency (20%) and iron deficiency plus folate deficiency (20%). (10 percent). (20 percent). [16,17]

Conclusion

The purpose of this study was to compare the safety and effectiveness of oral iron vs IV iron on haematological markers in pregnant women with iron deficiency anaemia. In comparison to oral iron, IV iron generated a speedy and effective improvement in haematological parameters, according to my research. With a higher frequency of iron deficiency anaemia in pregnancy in our nation, particularly in rural areas, this form of medication might be beneficial in the cost-effective care of these patients.

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