



A COMPARATIVE EVALUATION OF ORAL FERROUS SULPHATE AND INTRAMUSCULAR IRON THERAPY IN THE TREATMENT OF MODERATELY ANAEMIC WOMEN IN PREGNANCY

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| Dr. Archana Singh | Associate Professor Department of Obstetrics & Gynaecology Netaji Subhash Chandra Bose Medical College, Jabalpur M. P. |
| Dr. Shweta Sirsikar* | Assistant Professor Department of Obstetrics & Gynaecology Netaji Subhash Chandra Bose Medical College, Jabalpur M. P. *Corresponding Author |
| Dr. Shashi Khare | Prof. Ex- Head of Department & Professor Department of Obstetrics & Gynaecology Netaji Subhash Chandra Bose Medical College, Jabalpur M. P. |

ABSTRACT Iron deficiency anaemia is the most prevalent nutritional deficiency among women in developing countries Objective: Comparison of feasibility, safety and effectiveness of intramuscular iron dextran therapy with those of daily oral iron supplementation in treating pregnancy anaemia. Methods: 100 pregnant women with moderate anaemia were randomly divided into 2 group. One group was given daily oral ferrous sulphate supplementation, while other group received one intramuscular injection of iron dextran daily for 5 days. The Hb level and blood indicators were compared with pre therapy and 4-6 weeks after therapy. Results: Haemoglobin rises by 0.4 to 0.6 gm% by oral therapy in 54% of patients & by 1 to 1.2 gm% by intramuscular therapy in 66% of patients. Conclusion: The administration of 5 intramuscular doses of iron dextran daily is an alternative strategy with good efficacy and compliance for treating pregnancy anemia in women who cannot take iron orally.

KEYWORDS : Anaemia, iron dextran, ferrous sulphate, haemoglobin

Introduction

Anaemia in pregnancy is a global problem. Iron deficiency anaemia is the most prevalent nutritional deficiency among women in developing countries, contribution significantly not only to maternal morbidity, mortality but also affect fetal outcome with increase incidence of perinatal mortality, morbidity, IUGR preterm delivery. WHO (World Health Organization) has estimated that prevalence of anaemia in developed and developing countries in pregnant women is 14% in developed and 51% in developing countries and 65 to 70% in India.¹

Over the past years, various oral, intramuscular and intravenous preparations of iron have been used for correction of Iron Deficiency Anaemia in pregnant patients.² The first choice in the treatment of iron deficiency anaemia for almost all patients is oral iron replacement because of its effectiveness, safety and lower cost.³ The major problem with oral iron therapy in its classic ferrous form is poor tolerability and up to 40% adverse reactions. Daily oral iron supplementation during pregnancy is not so successful in reducing prevalence of anaemia; however intramuscular doses have found to be quite effective.

It was with this aim that we conducted a study for comparison of feasibility, safety and effectiveness of intramuscular iron dextran therapy with those of daily oral iron supplementation in treating pregnancy anaemia.

Materials and Methods

Study Design

A prospective randomized controlled trial study was conducted to demonstrate the difference, if any, in effectiveness of treatment of iron deficiency anaemia in pregnancy with either iron dextran or oral ferrous sulphate. 100 moderately anemic women with gestational age between 20-34 weeks were assigned randomly to either, treated for 6 weeks. The haemoglobin increase according to age and parity, gestational age at onset of treatment in the two groups were comparable. Group A received daily doses of 100 mg elemental iron with 5 mg folic acid. Group B received 5 doses of iron dextran intramuscular for 5 days after sensitivity test.

Study Period: From January 2006 to August 2006.

Inclusion Criteria

1. Pregnant women with age between 19-40 yrs, with consent to participate.
2. Singleton pregnancy of gestational age between 20-34 weeks.
3. Moderately anaemic (Hb % level between 6.5 – 8 gm %).

Procedure

Hundred pregnant women with moderate anaemia were randomly divided into 2 groups. Women in group A were given daily oral ferrous sulphate supplementation which includes 100 mg, single daily dose and 5 mg of folic acid.

Women in group B were given one intramuscular injection daily for 5 days in alternate buttocks of 100 mg elemental iron as iron dextran after test dose with aseptic precautions. Injections were given in gluteal region (upper outer quadrant) deep i/m by 'Z' technique.

Women were monitored for side effects especially for arthralgia, myalgia, and fever. Women were investigated for all indices at time of initiation of therapy and then subjected to above mentioned therapy and then discharged according to gestational age and complains followed up in antenatal clinic after 4 -6 weeks investigated for Hb% and rest blood indices and finally investigated at time of delivery. The Hb level and blood indicators were compared with pre therapy and 4-6 weeks after therapy.

Results

Prevalence of moderate anaemia was mostly seen in pregnant women between 21 – 30 years of age (56%). Prevalence of moderate anaemia was more in primigravida (65%), more commonly during late 2nd trimester of pregnancy. Haemoglobin rises by 0.4 to 0.6 gm% by oral therapy in 54% of patients & by 1 to 1.2 gm% by intramuscular therapy in 66% of patients. Incidence of live birth was high in intramuscular therapy, as compared to high incidence of still birth and low birth weight in oral therapy. The adverse effects with oral therapy in our study were Altered taste (64%), Nausea and vomiting (16%), Diarrhoea (8%), Constipation (6%) and abdominal pain (6%). The adverse effects encountered with intramuscular therapy included Local pain and swelling in 80%, rash itching (2%), staining (10%), fever (4%) and arthralgia (4%).

Discussion

Anemia is the commonest medical disorder in pregnancy. Iron deficiency anemia is the most common, can be corrected by administration of iron. The goal of treatment is to increased haemoglobin and hematocrit level as rapidly as possible and success of therapy depends upon the accessibility of administered iron for haemoglobin synthesis. Iron can be given by oral or injectable form.

With oral iron there is a steady increase in haemoglobin level in initial phase but iron absorption decreases rapidly as Hb level rises. This is explained by mucosal block therapy. Till date, no oral iron preparation is available which would overcome the body's absorption mechanism.

Hence it is very difficult to replenish the body iron stores with oral iron therapy. Secondly with oral iron about 30% women develop gastrointestinal side effects like indigestion, constipation and diarrhoea. Poor compliance of oral iron therapy and slowness of benefits make it less than satisfactory method.

With intramuscular iron therapy, compliance is good and well tolerated by patient. The rise in Hb was maintained till delivery. This proves that intramuscular therapy improves Hb level and builds iron stores. Another advantage is improved compliance as it can be given in out patient department under supervision and if admission is required, the therapy is completed in 5 days.

Maintaining meticulous care standards for intramuscular iron treatment is problematic in countries like India, where standards become lax over time. There is a risk of blood-borne diseases because of the use of recycled syringes and needles, vigilance in ensuring that full resuscitation facilities are available may become compromised, and injected dosage may be reduced if demand exceeds supply; for these reasons, parenteral administration of iron is not a feasible approach at the field level.³

Despite the efforts of the National Nutritional Anemia Prophylaxis Programme in India since 1970 to provide iron and folic acid supplements to all pregnant women, anemia still continues unabated⁴; the number of anemic women is greater than the number targeted, the number of actual beneficiaries is far less than that shown in records, the quality of tablets is poor, and hemoglobin concentrations do not differ between beneficiary and nonbeneficiary groups.⁴ The main problem with oral iron supplementation is poor compliance because of side effects or other reasons. Alternative strategies, such as weekly or twice weekly iron supplementation, have been developed to improve compliance.⁵

However, although the weekly doses are usually high, a patient who fails to take an iron tablet one week should not be expected to still have adequate results. Hallberg⁶ assessed the efficacy of weekly iron administration and advocated daily iron administration. Parenteral iron administration has a role in controlling iron deficiency anemia during pregnancy in developing countries. Most women in India consider injection to be superior to oral medication, and the rate of continuation of treatment is better with injectable iron. Bhatt⁷ achieved adequate results by giving subjects 2 intramuscular injections of iron dextran (250 mg each) separated by a 4–6-wk interval.

However, in a previous study, Bhatt et al⁸ reported a high incidence of injection abscesses with intramuscular administration of iron. Many pregnant women in India do not visit antenatal outpatient departments, and many deliver their infants at home. However, most mothers are aware of the advisability of receiving a tetanus toxoid injection during pregnancy and will make at least one clinic visit to receive that service.⁹ This visit could be used as an opportunity for intramuscular administration of iron. We admit that the number of women in each group in the present study (ie, 100) was not high enough to establish the safety of intramuscular administration of iron, especially with regard to infrequent, serious side effects.

Conclusion

The administration of 5 intramuscular doses of iron dextran daily is an alternative strategy with good efficacy and compliance for treating pregnancy anemia in women who cannot take iron orally. However, to keep the risk of severe side effects within acceptable limits, parenteral iron injections must be given in hospital settings, where resuscitation facilities are available to deal with any adverse events.

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