Injectable Iron Supplementation Instead of Oral Therapy for Antenatal Care

Zutshi *Vijay*, Batra *Swaraj*, Ahmad *Saira Saba*, Khera *Nidhi*, Chauhan *Garima*, Gandhi *Gauri*, Sachdeva *Poonam*

Department of Obstetrics and Gynecology, MAMC and Lok Nayak Hospital, New Delhi – 110 002

OBJECTIVE – To compare the response of intramuscular iron-sorbitol-citrate complex with that of oral iron. **METHODS** – A prospective randomized study was carried out on 200 women with uncomplicated pregnancy enroled at 24-26 weeks of gestation with a hemoglobin of >8 gm% but < 11gm%. Group A (100 women) received injectable iron sorbitol – citrate in three intramuscular doses of 150 mg each at 4 weekly intervals Group B (100 women) were given oral iron having 100 mg elemental iron daily. Hemoglobin levels were measured at enrolment, 4 weekly thereafter and at delivery. **RESULTS** – Mean hemoglobin levels in group A and B were 9.84 ± 1.04 gm% and 9.85 ± 1.20 gm% respectively at enrolment and 10.5 ± 0.84 gm% and 9.96 ± 0.89 gm% respectively at delivery. **CONCLUSION** – Hemoglobin rise was better in the injectable group.

Key words : injectable iron, anemia

Introduction

Anemia is the commonest medical disorder in pregnancy. Its prevalence may be as high as 88% in some parts of India[1]. Anemia especially if severe is directly or indirectly responsible for 40% of maternal deaths[2].

WHO defines anemia as hemoglobin concentration of less than 11 gm% but ICMR cut off is 10 gm%. The gross iron requirement in pregnancy is about 1240 mg elemental iron that includes obligate losses (230 mg), red cell mass expansion (450 mg), fetal requirement (270 mg), placental tissue (90 mg) and loss at delivery (200 mg). A healthy pregnant woman can obtain half of this requirement from her balanced diet especially as iron absorption increases in pregnancy and about 150mg is saved because of amenorrhoea that leaves a net requirement of about 500 mg, which can be obtained, from presumably adequate iron stores of a healthy woman.

But most of our women are already anemic, with deficient iron stores and poor dietary habits. As a result, pregnancy worsens the anemia and causes unwanted complications.

The Government of India in the National Nutritional Anemia Control Program has recommended daily intake of 100 mg elemental iron with 500 micrograms of folic acid in the second half of pregnancy for at least 100 days. Oral iron therapy has poor patient compliance either due to side effects or forgetfulness and is not effective in practice. In a recent study it was seen that injectable iron in two divided doses has better compliance and good results[3].

In this study we studied the hemoglobin rise in two groups, one receiving three intramuscular injections of 150 mg iron in the second half of pregnancy (Group A) and the other receiving 100 mg oral iron daily (Group B).

Material and Methods

Thiswas a prospective study carried out on 200 women attending antenatal clinic. Inclusion criteria were –

1) normal singleton pregnancy,
2) no complicating factors,
3) gestational age of 24-26 weeks,
4) hemoglobin concentration of more than 8 gm%, but not more than 11 gm%,

and 5) woman's consent for inclusion in the study.

Exclusion criteria were –

1) any medical disorder like tuberculosis or diabetes,
2) any obstetrical complicating factors like PIH,
3) any patient with hemoglobin of less than 8 gm% or more than 11 gm%.

and 4) patients with history of antepartum hemorrhage.

After selection, the women were randomly divided into

Paper received on 01/03/03 ; accepted on 29/09/03

Correspondence :
Dr. Vijay Zutshi
121-A, Pocket-B, Phase II, Mayur Vihar, Delhi - 91.

two groups. Group A had 100 women who received three intramuscular injections of iron sorbital citrate complex containing 150mg of elemental iron, at four weekly intervals. The injectable iron was given by Z track technique after a test dose. Group B had 100 women who were prescribed 100 mg of elemental iron orally for at least 100 days.

Hemoglobin levels were done in all the women at the time of inclusion into the study, four weekly thereafter and at delivery. If at any time the hemoglobin level fell below 8 gm% or the patient developed severe pregnancy related complication she was dropped from the study.

Results

The mean hemoglobin levels in the two groups at inclusion in the study were almost identical viz 9.84 ± 1.04 gm% in Group A and 9.85 ± 1.20 gm in Group B and so were the hematocrit levels viz 29.1 ± 3.2 in Group A and 28.6 ± 3.4 in Group B ($p<0.05$). The mean hemoglobin and hematocrit levels at delivery were 10.5 ± 0.84 gm% and 31.2 ± 2.6% in Group A and 9.96 ± 0.89 gm% and 29.8 ± 2.7% in Group B ($p<0.05$). The rise in hemoglobin and hematocrit levels was significantly greater in the injectable group. ($p<0.05$).

Women on oral iron had a higher percentage of anemias at delivery ($p<0.05$) than those on injectable iron (Table I).

Table I : Percentage of Anemic Women

	Group A Number	Group B Number
At inclusion	48 / 100	48 / 100
At delivery	24 / 100	38 / 100

The percentage of anemic women undergoing cesarean delivery in Group B-was higher than that in Group A (Table II). However, this was only an incidental finding.

Table II : Percentage of Anaemic Women with Caeserean Delivery

	Group A	Group B
Caeserean delivery	24	22
Number of anemic women	7 / 24	10 / 22
Anemic women (Percentage)	29.2	45.5

Amongst women who delivered vaginally the percentage of anemic women was higher in Group B (Table III).

Table III : Percentage of Anemic Women with Vaginal Delivery in the two Groups

	Group A	Group B
Vaginal Delivery	76	78
Anaemic Women	14 / 76	28 / 78
Anaemic Women (Percentage)	18.42	35.90

Discussion

Several studies have proved that iron supplementation improves maternal and neonatal outcome[4]. But when iron supplementation is given in the form of daily oral doses we can never be sure of the compliance. This may be because the woman forgets to take the tablet or stops it because of side effects. To overcome this problem, weekly iron supplementation has been tried and has shown to have similar effects as that of daily doses[5]. Even with this, compliance could not be ensured. So it was thought that only parenteral form of iron administration given by health worker could provide 100% compliance. In the parenteral form both intravenous as well as intramuscular route have been tried [3,6]. In the study by Bhatt[3], two doses of iron dextran (250 mg) each was given intramuscularly at interval of four weeks and showed better compliance and good results.

We used iron sorbital citrate in three 4 weekly doses and our patients had no side effects. The hemoglobin rise with injectable iron was better than the one with oral iron. We can recommend intramuscular form of therapy, for prevention of anemia especially in rural set up where it can be clubbed with tetanus toxoid immunization.

There was a rise in hemoglobin concentration in both groups. There was significantly greater rise in hemoglobin concentration in the injectable group as compared to that in the oral iron. The percentage of anemic women in both the groups was same at inclusion into the study. The percentage of anemic women, in the injectable group, was lesser than in the oral group at delivery.

References

1. ICMR. Evaluation of National Nutritional Anaemia Prophylaxis Programme. *An ICMR Task Study. ICMR. New Delhi 1989.*
2. Bhatt RV. Maternal Mortality in India. FOGSI, WHO study. *J Obstet Gynec of Ind 1997; 47:201-14.*
3. Bhatt RV. Poor iron compliance – the way out. *J Obstet Gynec of Ind 1997; 47 : 185-90.*
4. Preziosi P, Prual A, Galan P et al. Effect of iron supplementation on the iron status of pregnant women: consequences for newborns. *Am J Clin Nut 1997; 66: 1178-82.*
5. Ridwan E, Schultink W, Dillon D et al. Effects of weekly iron supplementation on pregnant Indonesian women are similar to those of daily supplementation. *Am J Clin Nut 1996; 63: 884-90.*
6. Singh K, Fong Y F, Kuperan P. A comparision between intravenous iron polymaltose complex (Ferrum Hausmann®) and oral ferrous fumarate in the treatment of iron deficiency anaemia in pregnancy. *Eur J Hematol 1998; 60:119-24.*