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Comparative Study of Parentral Iron Sucrose Vs Oral Ferrous Ascorbate for Prophylactic Iron Therapy in Pregnancy

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Abstract*: Nutritional requirements increase many fold in pregnancy. Of the nutrients iron supplementation requires special attention to meet the growing demands of pregnancy. Oral iron therapy has poor compliance due to gastric side effects. Iron sucrose has been proved safe and efficacious in pregnancy. The aim of our study is to compare iron sucrose with ferrous ascorbate for prophylactic iron therapy in pregnancy in terms of Hb% rise, side effects, compliance and cost of therapy.*
Methodology: *100 pregnant women fulfilling the inclusion criteria between 20-24 weeks were selected & divided into 2 groups 50 each. Group A was allocated to use 3 doses of Iron sucrose, each dose 200 mg in 100 ml normal saline as infusion over 15 – 20 min at 20 – 27, 28 – 32, & 33 – 36 weeks respectively & Group B was allocated to use oral ferrous ascorbate 100 mg tablet once daily at bed time. All pregnant mothers were followed till 40 weeks.*
Results: *Commonest age distribution was 21 – 25 years & multigravidas were more common in both groups. Mean Hb % rise in Group A was 0.3±0.18 & Group B was 0.12 ± 0.88 with (P 0.13) which was statistically not significant. 4% of cases in Group A had rash and pain at injection site where as 66% had gastric side effects in Group B. 4% lost compliance in group A as compared to 40% in group B.Cost of therapy was comparable in both Groups.*
Conclusion: *Iron sucrose is safe to use in pregnancy.Though oral iron is easy to administer & non invasive it is associated with gastric side effects resulting in poor compliance, therefore parentral iron sucrose is a safe alternative for prophylactic iron therapy in pregnancy.*
Keywords*: Iron sucrose, ferrous ascorbate, prophylactic iron therapy, iron therapy in pregnancy.*

I. Introduction

Pregnancy is a demand state in terms of nutrition, rest and medical care. Of the nutrients required iron intake needs a special attention, the reason being the demands increase drastically in pregnancy.

Total iron requirement in pregnancy is around 800 – 1000 mg[1] of which 200 mg is saved by pregnancy amenorrhoea and partially to an extent by diet. Unlike the westeners most Indian women enter pregnancy with poor iron stores[2]. Therefore there is a need to supplement iron in pregnancy to meet the growing needs. It is a well known fact that there is no ideal iron preparation which is totally effective and devoid of side effects[3]. The gastric side effects of oral iron preparations add up to existing gastritis of pregnancy resulting in poor compliance. Safety issues related to parental iron preparations in terms of anaphylaxis and teratogenicity has limited their use. Therefore there is a need for iron preparation which is tolerated well and has minimal side effects, has good bioavailability & compliance. Iron sucrose has proved beyond doubt about its safety and efficacy in pregnancy[4]. Ferrous ascorbate has best bioavailability (40%)[(5-8)] among oral iron preparations and has least gastric side effects hence used in our study.

AIM:
To compare intravenous iron sucrose and oral ferrous ascorbate in terms of: Clinical efficacy (Hb% rise), side effects, compliance, cost of therapy and
To analyse if iron sucrose can be substituted for oral iron preparations for iron prophylaxis in pregnancy.

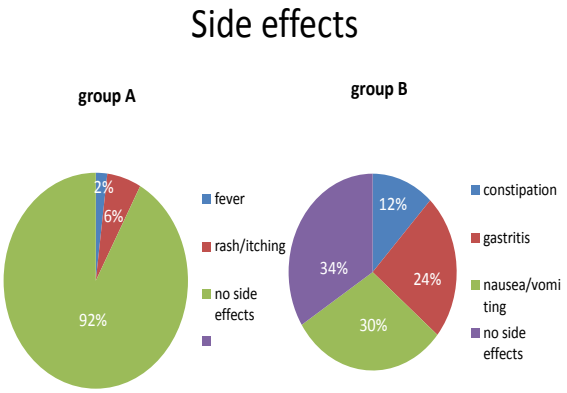
II. Methodology

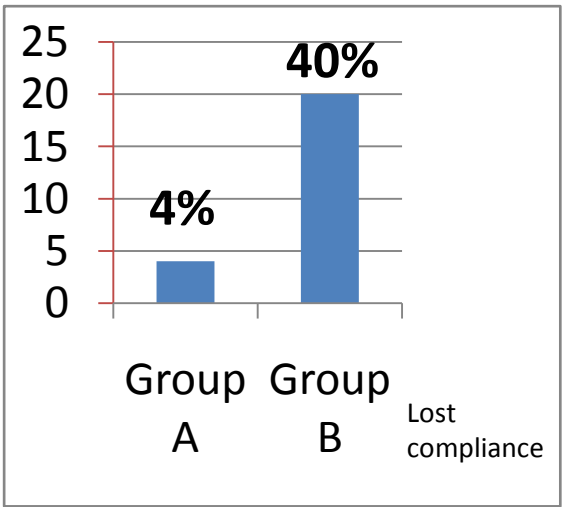
It was a prospective study. Institutional ethical clearance was taken. Study included 100 pregnant women between 20 – 24 wks of gestation who gave consent for study and fulfilled the inclusion criteria of Hb% > 10.5 gm% and ruled out exclusion criteria of multiple pregnancy, medical & pregnancy complications. Pregnant women were divided into two groups by random colour coin method. Tab albendazole 400 mg was given at beginning of study to all pregnant mothers. Group A consisted of 50 women who were allocated to use 3 doses of iron sucrose 200 mg in 100 ml normal saline as infusion over 15 – 20 min at 20 – 27, 28 – 32, 33 – 36

weeks respectively. Group B was allocated to use oral ferrous ascorbate every day 100 mg at bed time one hour prior to food. Hb% was estimated at 28, 32, 36 & 40 weeks. Women who developed pregnancy complications in the course of study were excluded. Pregnant women were given questionnaire related to side effects of respective drugs at 40 wks & analysed. Outcome in terms of Hb% rise, side effects, compliance & cost of treatment were analysed.

III. Results

Age distribution in both Groups were comparable commonest being 21 – 25 yrs. Gravidity was also comparable commonest being multigravidas.Mean Hb% difference in Group A was 0.3 with SD 0.18 as compared to 0.12 with SD of 0.88 in Group B. Mann Whitney U test was used to compare the Hb% rise in both groups. P value obtained was 0.13 which showed that there was no statistically significant difference in both groups in terms of Hb% rise. 6% in Group A developed anaemia as compared to 18% in Group B, both the Groups it was mild anaemia. In Group A, 2% of cases had minor rash following iron sucrose infusion, 6% had pain during infusion. 92% of cases did not experience any significant side effects. In Group B 12% of patients experienced constipation, 24% gastritis, 30% nausea & vomiting, only 34% were symptom free. 4% lost compliance in Group A as compared to 40% loss of compliance in Group B. Cost of therapy in Group A was 1600/- for three doses as compared to 1500/- for Group B which was comparable.





IV. Discussion

Iron supplementation is mandatory in pregnancy In India unlike westerners who have better iron stores and supplementation is optional. Though oral iron preparations are easy to administer & cost effective compliance is a concern due to gastric side effects. There are several studies comparing iron sucrose Vs oral iron for treatment of anaemia in pregnancy[9-13] but very few studies are available for prophylactic iron therapy.

Bencovia G[14] conducted similar study on 260 pregnant women and results were comparable to our study in terms of efficacy. Mean age of recruitment in our study was comparable with other studies[(9-14)]. There was no significant difference in parity & comparable with other studies[10]. There was no statistically significant increase in Hb% in both the Groups (P 0.13), the outcome was similar in other studies[14]. Side effects were seen in 40% of oral iron Group in our study in contrast to 32 – 50% in other studies[14] (chisquare test was used). Compliance was better in iron sucrose Group and results were comparable with other studies[(9-15)]. Ferritin levels were not measured in our study which would be a better parameter to assess iron stores.

V. Conclusion

Iron supplementation is essential to meet the growing needs of pregnancy as most Indian mothers enter pregnancy with poor iron stores. Oral Iron preparation though safe are associated with gastric side effects resulting in poor compliance. More than 50% of pregnant women stop iron intake due to related side effects resulting in anaemia & poor feto maternal outcomes. Several studies have proved the safety & efficacy of iron sucrose in pregnancy. It is tolerated well & has no major side effect, therefore can be used as a substitute for oral preparations. In our study there were no major side effects with iron sucrose & had better compliance so can be safely used in pregnancy. Yet larger trials are required to conclude that parentral preparation can be substituted for oral preparations.

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