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Antenatal Correction of Anaemia with Intravenous Iron Sucrose

KEYWORDS: Anaemia, Iron deficiency, iron sucrose, Haemoglobin.

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ABSTRACT *Objectives :- To study the efficacy of Iron sucrose complex in treating iron deficiency anaemia in pregnant women .*

Methods :- A prospective open study consisted of antenatal women conducted in the Department of Obstetrics and Gynaecology Kurnool medical college and Government General Hospital, Kurnool. The pregnant women with mild to moderate anaemia with gestational age of 24weeks to 36weeks were selected and administered intravenous iron sucrose. The results were analysed statistically.

Results :- The pregnant women who received IV iron sucrose showed improvement in haematological parameters. The maternal and foetal outcome were also significantly good .

Conclusion :- Iron sucrose complex is more effective in improving the haemoglobin levels with minimal side effects in shorter period. It's convenient and effective in iron deficiency anaemia who are intolerant to oral iron.

Introduction :-
Anaemia is the most prevalent haematological abnormality in pregnancy. It is most common in underdeveloped countries and developing countries like India. Anaemia is associated with significant maternal and foetal mortality and morbidity. It's the most neglected tragedy that continues to extract a heavy toll, suffering, death in pregnant women and also devastating sequelae in the new born. In our country low socioeconomic conditions, different cultures and customs contribute . Prevalence of anaemia in pregnant women in India is 57%. Iron deficiency anaemia contributing to 95% of it. It is the most commonest nutritional deficiency anaemia in pregnant women. Iron deficiency anaemia contributing to about 19% of maternal deaths. This is due to high iron requirement during pregnancy and poor iron bioavailabilites.

Because of increased prevalence and greater burden of iron deficiency anaemia and to improve maternal and foetal outcome this study was conducted in our institution.

Materials and Methods:
The study was conducted in the antenatal ward in the Government General Hospital, Kurnool. It is a prospective study involving 50 antenatal women with gestational age of 24 weeks to 36 weeks.

Inclusion criteria :
- Pregnant women with mild to moderate anaemia.
- With gestational age 24 weeks to 36 weeks who are intolerant to oral iron.
- With iron deficiency anaemia.

Exlusion criteria:-
- Anaemia other than iron deficiency anaemia.
- Gestational age more than 36 weeks.
- Women with severe anaemia.
- Anaemia due to renal disease and inflammatory bowel disease.
- Hypersensitivity to iron derivatives.
- Women with associated medical and other obstetrical conditions in pregnancy.

Screening of anaemia was done in the pregnant women with 24 weeks to 36 weeks GA attending the antenatal clinic. Women with mild to moderate anaemia who are intolerant to oral iron were selected and admitted in the antenatal ward. The total amount of iron to be given was calculated by formula.

Weight (target haemoglobin - actual haemoglobin) 2.4 + 500 mg.

The intravenous iron sucrose was administered in divided cases. The weight of the woman at first visit in kgs, target haemoglobin in grams (12 grams) actual haemoglobin is patient's haemoglobin at recruitment, 2.4 was a correction factor. Iron deficiency anaemia confirmed by peripheral smear. Haemoglobin, S.ferritin, peripheral smear were done at the time of admission. Intravenous iron sucrose was administered as an infusion of 200 mg in 100 ml of normal saline over 15-20 minutes on alternative days for a period of 2-3 weeks. Hb%, S.Ferritin. P.S. were repeated after 4 weeks. The improvement of anaemia was assessed and followed up till delivery. The maternal and foetal outcomes were also assessed.

Observation and Results:-
In this study the anaemic pregnant women were mostly in the age group 18-22 years (44%), majority of them were multiparous (60%), 50% of them were illiterates and most affected gestational age was 29-32 weeks (50%).

Distribution of study subjects according to HB% (gm) at the time of admission.

Hb% (gm)	Number	Percentage
7 - 7.4 grams	16	32%
7.5 - 7.9 grams	20	40%
>8	14	20%

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Distribution of study subjects according to S.Ferritin at the time of admission.

S Ferritin (ng/dl)	Number	Percentage
9-10	09	18%
10-11	19	38%
11-12	22	44%

All these study subjects were transfused with intravenous iron sucrose complex after dose calculation and the improvement in Hb % and S.Ferritin were noted and analyzed as below.

Hb%:

Before ISC	Percentage	After ISC
7 - 7.4 grms	25%	10-10.9 gm/dl
	75%	>11 gm /dl
7.5 - 7.9 grms	30%	10-10.9 gm/dl
	70%	>11 gm /dl/
8 gm /d/	42.8%	10-10.9 gm/dl
	57.5%	>11 gm /dl/

S.Ferritin:

Before ISC	Percentage	After ISC
9-10 ng /dl	90%	30-33 ng /dl
	10%	34-36 ng /dl
10-11 ng /dl	73%	30-33 ng /dl
	26%	34-36 ng /dl
11-12 ng /dl	47.7%	30-33 ng /dl
	82.3%	34-36 ng /dl

Analysis of efficacy of ISC.

Before treatment	After treatment	P Value
Hb% 7.67 gm /dl	11 .06 gm/dl	< 0.0001
S.Ferritin 10.80 ng/dl	32.40 ng/dl	<0.0001

After ISC administration about 1% suffered with myalgia, 1% complained of nausea and 1% vomiting. No major reactions were observed.

There were 4% pre term deliveries, 78% term deliveries and 18% caesarean deliveries. No post operative and post natal complications. 4% presented with low birth weight babies, no still borns 100% live births.

Discussion :

The study clearly illustrates that IV iron sucrose complex is safe, convenient and effective in pregnant women with no serious side effects in the rapid correction of anaemia and restoring maternal iron stores. If used in time this treatment certainly helps to reduce the risk of blood transfusion. Intramuscular iron therapy need to discouraged because of their adverse effects. Even though so many parentenal iron preparations are there ISC is preferred to them because of minimal side effects. It can be used even in patients with Rheumatoid arthritis. Anaphylaxis is very rare because of low molecular weight.

Conclusion :

The iron sucrose complex has minimal side effects. No test dose is required and can be given on outpatient basis. This drug can be used where there is non availability of rare blood groups like negative blood groups. Use of ISC also avoids the risk of hemotransfutional infections and incompatible transfusions.

From this study I conclude that ISC is more effective in improving hemoglobin in shorter period. ISC not only corrects deficit in Hb% but also restitutes iron stores. Intravenous iron absorption is high because of its low molecular weight. Very effective in treating women in late second trimester and early third trimester who are intolerant to oral iron.

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