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ROLE OF IRON SUCROSE IN ANAEMIA WITH PREGNANCY

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ABSTRACT

anaemia is the commonest haematological disorder of pregnancy .this study was carried out to determine role of IV iron sucrose in management of iron deficiency anaemia during pregnancy and to evaluate the efficacy of IV iron sucrose in the treatment of iron deficiency anaemia during pregnancy by haematological parameters.

Introduction-

Anaemia is the commonest haematological disorder of pregnancy .it affect nearly two thirds of the pregnant women in developing countries. Iron deficiency anaemia is responsible for 95% of the anaemia cases during pregnancy. In India, prevalence ranges between 33-89%1.prevalance of anaemia in India is among the highest in the world2.prevalance of anaemia was highest among pregnant women (50-90%)and that of moderate and severe anaemia was persistently high. other factors responsible for high incidence of anaemia in our country include early marriage , teenage pregnancy, multiple pregnancies, less birth spacing , phtate rich Indian diet, low iron and folic acid intake and high incidence of worm infections in Indian population .

Iron deficiency anaemia is prevalent in Indian female before conception takes place. The reason is combination of poor iron content of the average diet and insufficient iron stores in majority of women during their reproductive age group3. The effect of physiological anaemia of pregnancy in previously malnourished women aggravates and leads to poor outcome.anemia can cause increase in maternal morbidity and mortality[4].

Aims and objectives-

1) To determine the role of IV iron sucrose in management of iron deficiency anaemia during pregnancy.
2) To evaluate the efficacy of IV iron sucrose in the treatment of iron deficiency anaemia during pregnancy by haematological parameters.

Materials and method-

A prospective interventional study was conducted at our hospital over a period extending from July 2015 to march 2017

A total of 100 pregnant women were included in this study .women taking routine ante-natal visit were examined in out-patient department and their Hb estimation was done on OPD basis.

Inclusion criteria:

- Gestational age :26 to 34 weeks
- Hblevel:<9 gm%
- Hb level not improved with oral iron due to any reason
- Consent for parenteral iron therapy

Exclusion criteria:

Rule out other causes of anaemia like

- Haemolytic anaemia e.g. malaria , sideroblastic anaemia , spherocytosis , G6PD deficiency
- Megaloblastic anaemia
- Sickle cell disease
- Thalassemia
- Various other hemoglobinopathies
- Porphyria and related disease
- Bone marrow defect e.g. aplastic anaemia , leukemia

Iron sucrose was given by IV injection on alternate day according to iron deficit calculated for each individual patient, 200mg elemental iron diluted in 100 ml of 0.9 % normal saline infusion given for 15-30 min and patient is monitored for any allergic reaction.

Total iron sucrose dose = body weight (kg)*(target Hb-actual Hb)*0.24+500 mg

Target Hb-11 g/dl

0.24 – correction factor

500mg-quantity of stored iron in adults.

Observation – Table -1

Age distribution

Age(years)	no. of women	%
<20	06	06%
20-24	42	42%
25-29	39	39%
>=30	13	13%
total	100	100

Table 1 shows that occurrence of anaemia during pregnancy was highest among the women aged 21-30 years (81%).women in child bearing age group in India are more susceptible to anaemia during pregnancy.

Table -2 Gravidity:

gravida	No. of patients	%
primi	26	26%
2nd gravida	30	30%
3rd gravida	32	32%
>=4thgravida	12	12%
total	100	100%

Table-2 shows that among 100 women multigravida were 88 % and primigravida were 12%.it is mainly due to repeated pregnancies at small interval .in primigravida, the reason for anaemia could be low socioeconomic status, poor dietary and hygienic environment.

Table -3 Gestational weeks (USG maturity):

USG maturity(weeks)	No. of patients	%
26-28	42	42%
29-31	48	48%
32-34	10	10%
total	100	100%

Table-3 shows that maximum (90%) number of women had gestational age 26-31 weeks. There is marked hemodilutional during pregnancy started from first trimester, expands rapidly

thereafter to maximum in second half at around 30-32 weeks. This results in physiological anemia.if women fails to compensate iron requirement of body during this phase, it can lead to more severe form of anaemia.

Table -4 Rise in haemoglobin level:
Pre treatment haemoglobin

Hb (gm %)	No. of pts	%
6.0-6.9	14	14%
7.0-7.9	30	30%
8.0-8.9	56	56%
total	100	100%

Post treatment haemoglobin:

Hb (gm %)	No. of pts	%
9.0-9.9	34	34%
10.0-10.9	60	60%
11.0-11.9	6	6%
Total	100	100%

Mean Hb Pre treatment	mean Hb post treatment	Rise in Hb
8.08 gm%	10.24 gm%	2.16 gm%

Table 4 shows that mean rise of Hb was 2.16gm% .in our study , we used IV iron sucrose of the same brand in all women that was supplied by the hospital .and the result of our study are comparable to the observations of various other similar studies conducted.

Table -5
Adverse reaction :(n=100)

Adverse reaction *	No. of pts	%
Headache	9	9%
GI symptoms	5	5%
Superficial thrombophlebitis at injection site	4	4%
Skin rashes	3	3%
Major anaphylactic reaction	0	0%

*more than one adverse reaction was present in some women
Table -5 shows that 21 women adverse reactions of parenteral iron therapy. Among adverse reaction, headache was the most common (9%) followed by vomiting, superficial thrombophlebitis at injection site, skin rashes (5%, 4%, 3% respectively).there was no anaphylactic reaction reported in our study.

Discussion

1) Demographic profile:

In the present study, 100 women received required dose of IV iron sucrose as per protocol on alternate day. The average age of present study was 24.7+_3.72 years. Mean gestational age (from Ultrasonography) was 28.83+_2.05 weeks. Parity was important factor, 26% of all women were primigravida and 74% of them were multigravida.

study	Mean age(years)	Mean gestation age (weeks)	Parity
Present study	24.7+_3.72	28.83+_2.05	Primi:26% Multi:74%
Singh shubhdra et al[5]	26.46	24.48	Primi:325 Multi:68%
Sunita V.N et al[6]	24.2+_2.82	27.06+_1.51	Primi:55.5% Multi:44.5%
Kriplani A et al[7]	27.8+_3.9	25.69+_4.82	Mean parity:1.3
huilgolK G et al[8]	23.28+_3.26	-	-
Abhilashini G D et al [9]	20-29 years : 90%	30-34 weeks :78%	-
Parmar M et al[10]	25.58+_3.61	-	primi:23% multi:77%
Neeru S et al[11]	27+_4.09	22+_6.98	Primi:62% Multi:38%

2) Rise in haemoglobin:

In the present study, the mean Hb before starting the treatment was 8.08+_0.72 gm%. all the women were given their required dose and Hb was repeated after 4 weeks .post treatment mean Hb was 10.24+_0.63%.thus, rise in Hb after treatment was 2.16 gm% which was comparable to other studies below.

Study	Pre treatment Hb (Mean gm %)	Post treatment (Mean gm %)	Rise in mean Hb (gm %)
Present study	8.08+_0.72	10.24+_0.63	2.16
Singh shubhdra et al[5]	6.49	10.01	3.52
Sunita V.N et al[6]	8.7+_0.55	10.98+_0.54	2.28
Kriplani A et al[7]	7.63+_0.61	9.90+_0.80	2.37
huilgolK G et al[8]	7.37	10.49	3.12
Abhilashini G D et al [9]	6.89+_0.6	9.48+_0.7	2.59
Parmar M et al[10]	6.33+_1.07	8.82+_0.88	2.58
Neeru S et al[11]	9.18+_0.94	11.24+_0.70	2.06
Masand D et al[12]	7.74+_0.87	9.44+_0.72	1.70

3) Side effect:

In the present study, women were evaluated for side effect of iron sucrose .total 21% women reported adverse effect. The most common was headache (9%) and followed by GI symptoms like nausea, vomiting and diarrheal, skin problems like itching and purities, injection site thrombophlebitis. There is no serious anaphylactic reaction was noted .other side effect like fever, weakness, giddiness and myalgia were not reported in our study but it was noted in other studies below.

Study	Skin problem	headache	GI problems	phlebitis	anaphylaxis	others
Present study	3%	9%	5%	4%	-	-
Singh shubhdra et al[5]	-	-	2%	4%	-	2%
Sunita V.N et al[6]	-	2.3%	-	2.3%	-	4.6%
Kriplani A et al[7]	-	-	8.10 %	0.90 %	-	3.60 %
Abhilashini G D et al [9]	2%	-	-	-	-	2%
Masand D et al[12]	-	-	2.86 %	1.43 %	-	-

Conclusion:

Pregnancy with anaemia can cause serious complication like preeclampsia, intercurrent infections, preterm labour, uterine inertia, post partum haemorrhage, cardiac failure and puerperal sepsis, venous thrombosis and pulmonary embolism increases with severe anaemia. IV iron sucrose therapy is useful in reducing maternal morbidity and mortality arising from iron deficiency anaemia in pregnancy. No serious side effect with IV iron sucrose therapy.

In conclusion our results show that IV iron sucrose therapy is effective to treat moderate to severe anaemia in pregnant women. It has fewer side effects and causes rapid rise in Hb level and the replacement of iron stores.

References:

1. Ezzati M,Lopus AD,Doger A, Vander HS, Murray C. Selected major risk factors and global and regional burden of disease.2002;360:1347-60.
2. Kalaivani K.Prevalence & consequences of anaemia in pregnancy .indian J Med Res.2009;130:627-33.
3. Arias'Practical Guide to HIGH –RISK PREGNANCY & DELIVERY,A South Asian Perspective,3/e Bhide,Arulkumaran, Damania , Daftary.Hematological disorders and Red Cell Alloimmunization on pregnancy;2008:467.
4. Ian Donald's Practical Obstetric problem,7/e:Neerja Bhatla, Asima Mukhopadhyay, reeta Mahey;Anemia;2014:196-206.
5. Singh Shubhadra , Singh Saroj, Singh Punit Kumar.A Study to Comparte the Efficacy and Safety of Intravenous Iron Sucrose and Intramuscular Iron Sorbitol Therapy for Anemia During Pregnancy.the Journal of Obstetrics and Gynecology of India(January –February 2013);63(1):18-21.
6. Dr.Sunita V.N, Dr.Rutuja Kolekar, Dr,shivanandGundalli, Dr.Vikrant Nandurkar. Effectiveness of Intravenous iron sucrose Versus Oral Iron in Iron Deficiency anaemia in Pregnancy.IOSR Journal of Dental and medical sciences(IOSR-JDMS)2015;14(1)Ver2:52-60.
7. Alka Kriplani, Reeta Mahey, Biswas Bhushan Dash, Vidushi Kulshreshta, Nutan Agarwal & Neerja Bhatla.Intravenous Iron Sucrose Therapy for Moderate to severe anaemia in pregnancy. Indian J Med Res 138, July 2013:78-82.
8. Huigol K G, Gowda S, Pairu J , Meera, Gowda V, Sujatha,Anitha.study of Safety and Efficacy of iron sucrose in the treatment of pregnancy with anaemia . J Pub Health Med Res 2014;2(2):32-5.