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Research Article

Intravenous iron sucrose in the treatment of iron deficiency anaemia in antenatal patients

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ABSTRACT

Background: Amongst medical disorders of pregnancy, iron deficiency anaemia is one of the commonest in developing countries like India. It is one of the major contributory cause of maternal mortality & morbidity. Amongst the treatment options available inj. Iron sucrose therapy appears to be safe and effective especially in government hospitals.

Methods: This study was carried out on 30 antenatal patients diagnosed to have iron deficiency anaemia in 2nd & early 3rd trimesters of pregnancy. After investigations and dose calculation, inj. Iron sucrose was administered as per pre decided protocol with proper monitoring. Patients were evaluated at end of 4 weeks.

Results: The data were compiled and statistically evaluated. Mean rise in Hb was 2.887 (95%CI, p <0.001) which were statistically significant. Minor, side effects were reported, which were treated symptomatically.

Conclusions: This study establishes the safety and efficacy of iron sucrose therapy in antenatal patients.

Keywords: Iron deficiency, Intravenous iron sucrose, Antenatal patients

INTRODUCTION

Iron deficiency anaemia remains the commonest medical disorder in pregnancy in developing countries with the burden of diseases impacting on both mother and the newborn.¹

In severe iron deficiency oral iron therapy although found to be an effective way of supplementation of iron but has its limitations such as it does not stimulate erythropoiesis quickly, requires to be continued for a longer duration of time, has many side effects and poor patient compliance.²

Parenteral iron has shown to be an effective therapy to supply enough iron for erythropoiesis in cases of severe iron deficiency anaemia and thereby reducing the need of blood transfusion.

Intravenous iron sucrose gives rapid and safe reversal of iron deficiency anaemia. In a government hospital setting it is helpful to reduce maternal morbidity and mortality arising due to iron deficiency anaemia.³

This prospective observational study was conducted to assess the efficiency of intravenous iron sucrose in the treatment of iron deficiency anaemia in antenatal patients, to study its side effects and as a pilot study for recommendation as a departmental policy in future for treatment of iron deficiency in pregnancy.

METHODS

This study was carried out on 30 antenatal patients of iron deficiency anaemia in a government medical college hospital after permission from the institutional ethical committee.

Antenatal patients in 2nd and early 3rd trimesters attending ANC OPD were examined clinically and investigated primarily by Hb estimation by Sahli's acid hematin method. The patients having anaemia as per WHO grading were admitted for further investigation and treatment. Patients fulfilling inclusion and exclusion criteria and giving consent were included.

Inclusion criteria

1. Age 18-40 years
2. Singleton pregnancy 20-32 weeks
3. Moderate/severe anaemia Hb:7 to 9.9 gm%, <7gm%
4. Giving consent for study

Exclusion criteria

1. Stool examination reveals parasitic infestation
2. UTI, fever, raised total count
3. H/o allergy to iron
4. H/o allergic condition like asthma
5. H/o Thalassaemia, bleeding tendencies, prior blood transfusion
6. H/o delivery before 36 weeks
7. Any associated complications like DM, cardiac disease, peptic ulcer disease

Investigations done as follows: Hb, Peripheral smear for cell morphology to find out true cases of iron deficiency anaemia, MCH, MCV, MCHC, CBC, urine routine and microscopy, ESR, stool exam for ova, cyst, occult blood.

Total dose was calculated by;

Total iron deficit = Body wt. (in kg) x [target Hb (g/l) - actual Hb (g/l)] x 0.24 + depot iron 500 mg of elemental iron

The amount of iron sucrose was calculated and administered daily inj. Iron sucrose 100mg in 100 ml normal saline over 30 minutes, continuous monitoring and keeping emergency drug cart ready. Patients were evaluated after 4 weeks by Hb and peripheral smear for cell morphology.

RESULTS

The data were compiled and statistical analysis done using student's t test.

As shown in Table 1 mean age group of females is in the reproductive age i.e. 25.46±3.51. Even females from urban region are found to have anaemia which is a cause of concern. Further recurring pregnancies in multipara makes them depleted of iron stores due to increased demand and deficient supply.

Side effects reported were not severe and treated symptomatically (Table 2).

The mean rise in Hb levels after four weeks ranged from 2.28 to 3.75 in moderate and severe anaemia (Table 3).

Statistically significant change in haemoglobin levels as depicted in Table 4 establishes the efficacy of iron sucrose therapy.

Table 1: Demographic profile.

		No. of cases
Age in years	≤20	2
	21-25	12
	26-30	14
	30-35	2
Residence	Urban	19 (63.3%)
	Rural	11 (36.6%)
Parity	Primi	8 (26.6%)
	2 nd gravid	11 (36.6%)
	3 rd gravid	8 (26.6%)
	4 th gravid	1 (3.33%)
	5 th gravid	2 (6.66%)
Degree of anaemia	Severe (<7 gm%)	12 (40%)
	Moderate (7-10gm%)	18 (60%)

Table 2: Side effects reported.

Side effects	No. of cases
Phlebitis	1 (3.33%)
Muscle pain	5 (16.6%)
Headache	6 (19.98%)
Injection site pain	4 (13.32%)
Injection site soreness	1 (3.33%)
Chest pain	1 (3.33%)

Table 3: Rise in Hb levels.

	Pre-treatment Hb gm%	Post treatment Hb gm%	Rise in Hb gm%
	Mean ± SD	Mean ± SD	Mean ± SD
Moderate	7.5 ± 0.30 (SD)	9.8 ± 0.67 (SD)	2.28 ± 0.72 (SD)
Severe	5.95 ± 0.97 (SD)	9.68 ± 0.56 (SD)	3.75 ± 1.30 (SD)

Table 4: Analysis of Hb levels.

	N	Mean	SD	SE	95% CI	Degree of freedom	P value
Baseline Hb (gm%)	30	6.887	1.0	0.1836			
After 4 weeks	30	9.773	0.62	0.1134			
Rise in Hb (gm%)	30	2.887	1.19	0.2187	Lower 2.4395 Upper 3.339	29	0.001

DISCUSSION

In this study mean age of patients is 25 ± 3 yrs, 63% anaemic mothers were multiparae which is an important etiological factor. 33% females were severely anaemic and 66% had moderate anaemia.

The efficacies of iron sucrose therapy in both groups were compared and results show that there is satisfactory rise in haemoglobin levels in both groups.

The rise in Hb gm% ranged from 2-3 gm% increase from baseline up to 6 gm% in three patients.

The mean rise in Hb levels with inj. Iron sucrose is 2.887 (95% CI, p value <0.001) which is statistically significant and thus establish its efficacy in treatment.

In this study minor side effects as shown in Table 2 were reported and treated symptomatically. No serious side effect such as anaphylaxis was reported.

Thus the safety and efficacy of inj. Iron sucrose is well established in our study as reported by other authors.⁴⁻⁶

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Ethical approval: The study was approved by the institutional ethics committee

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