

## Effects of Iron Sucrose In Antenatal Patients

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**Abstract:** Background and objectives: Anemia during pregnancy is the most common cause of adverse maternal & perinatal outcomes. Anemia during pregnancy can be treated by various routes. This study will evaluate the effects of iron sucrose in antenatal patients and its Feto-Maternal Outcomes. Method: This was a prospective study conducted at the tertiary center. 100 antenatal patients having iron deficiency anemia were selected. After investigations and dose calculation, inj. Iron sucrose was administered with proper monitoring. Patients were evaluated at the end of 3 weeks. Results: The data were compiled and evaluated. Rise in Hb was significant. Minor side effects were reported, which were treated symptomatically. Interpretation and Conclusions: This study establishes the safety and efficacy of iron sucrose therapy in antenatal patients. [T Kansara, Natl J Integr Res Med, 2018; 9(2):68-71]

**Key Words:** Antenatal patients, Efficacy and safety, Intravenous iron sucrose, Iron deficiency.

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Introduction: In world anaemia is major health problem. About 1/3 of population is anaemic throughout the world. According to World Health Organization (WHO) prevalence of anaemia in women is 2-45% in developed countries and relatively high 35-75 % (average 56%) in developing countries.<sup>1</sup>

In India, prevalence of anaemia has been reported to be in the range of 33-89%. Prevalence is 47.4% in preschool-age children, 55% in adolescent girls 50% in women of reproductive age.<sup>2,3</sup> India alone contributes to 50% of global maternal deaths. India contributes to about 80% maternal deaths in South Asia.<sup>4</sup> 40-60% of all maternal deaths by directly and indirectly attributed to anaemia.

Anaemia is a silent killer throughout the women's life. Women with even milder anaemia may experience fatigue and reduced work capacity. Anaemia in pregnancy is not only associated with adverse maternal outcomes like Puerperal Sepsis, Antepartum haemorrhage, postpartum haemorrhage, increased risk of maternal morbidity and mortality but also adverse foetal outcomes like increased incidents of premature births, low birth weight babies and high perinatal mortality.

The high prevalence of anemia among women in India is a burden for them, for their families, and for the economic development and productivity of the country. In India anaemia is very prevalent because most of women are from low socioeconomic class, illiterate, having false dietary habit, low intake and high demand, blood loss due to heavy menstrual cycle and during labour, younger age at marriage, early

pregnancy, less spacing between pregnancies, more number of children, due to less resources in joint families, lesser and infrequent intake of Iron-folic acid Tablets in pregnancy, social negligence, health problems neglected by females.<sup>5</sup>

Parenteral iron seems to be a better alternative to the oral iron in women who are noncompliant or cannot tolerate oral therapy because of the gastrointestinal side effects. It is superior to the oral therapy, as there is no need for constant motivation and the critical time is saved in non-responders in the late pregnancy, decreasing the need for blood transfusion which carries its own risk<sup>6</sup>.

Intravenous iron-sucrose appears to be a treatment of choice with no serious side effects, indicated in the rapid correction of anaemia in pregnancy or restoring maternal iron stores, especially because the total stores can be administered over a short period.<sup>7,8</sup>

**Methods:** This was a prospective study conducted at the tertiary center. 100 antenatal patients having iron deficiency anemia were selected. After investigations and dose calculation, inj. Iron sucrose was administered with proper monitoring. Patients were evaluated at the end of 3 weeks. Approval was taken from AMCMET Institutional Review Board (AMCMETIRB) for publication of this study.

### Inclusion criteria:

- Antepartum single tone pregnancy with anaemia.
- Haemoglobin concentration less than 7 gm%.
- MCV<100 fl and a ferritin level <50microgm/l.

**Exclusion criteria:**

- Patients with haemoglobin more than 7 gm% and with anaemia other than iron deficiency and with history of hypersensitivity reaction to injectable iron sucrose.
- Women with multiple pregnancy.
- Women with Medical disorder and comorbidities other than anaemia like tuberculosis, diabetes, renal and hepatic disorder, Thromboembolism, DVT, Cardiovascular dysfunction, COPD, Asthma, Any infective foci.

**Operational Definition:** 100 antenatal patients with Hb% less than 7 gm% from the maternity ward were selected for the study after taking consent. Investigations involving complete hemogram with blood indices obtained using fresh blood sample, blood smear examination was done by using Leishman's stain to study morphology of RBC'S and serum ferritin at the time of inclusion. Baseline tests for renal function, liver function, urine for routine microscopic examination and culture sensitivity and stool examination for ova and cyst were done.

Deficit of iron was calculated by the following formula:  
 Total iron dose (mg) = weight (kg) x (Target Hb – Present Hb in gm/dl) x 2.4 + 500 mg for replenishment of iron stores.

Calculated dose of iron sucrose was given in divided doses on alternate days. 200mg was mixed in 100ml normal saline solution and given intravenously, the first 10 ml was infused over a period of 15 minutes, if there were no adverse reactions, the remaining portion of the infusion was given over 60 minutes. Patients were closely monitored for adverse drug reactions. Emergency drugs were kept for any anaphylactic reactions.

Effects of iron sucrose was evaluated by improvement in clinical features of patients and monitored by Hb level, reticulocyte count and blood indices. Patients in whom adverse reactions were noted were reported for adverse drug reactions.

**Result:****Table1: According to age**

Age(years)	No. of the patients
≤19	20
20-29	63
30-39	15
≥40	2

**Table2: According to gravidity of patients**

Gravida	No. of patients
Primi	20
2 <sup>ND</sup>	25
3 <sup>RD</sup> and more	55

**Table3: According to weeks of gestation**

Antenatal patients with gestational age	No. of patients
13 – 20 Weeks	24
20 – 28 Weeks	30
28 – 36 Weeks	46

**Table4: Diet and anaemias**

Diet	Patients (%)
Vegetarian	74
Mixed diet	26

**Table5: Type of anaemia**

Type of anaemia	Patients (%)
Microcytic hypochromic	72
Dimorphic anaemia	28

**Table6: Hb before treatment**

Hb (gm)	No. of patients
4 - 4.9	10
5 - 5.9	60
6-7	30

**Table7: Type of reactions**

Type of reactions	Total
Injection site pain	3
Phlebitis	1
Headache	2
Fever with chills	3
Pruritus / urticaria	2
Arthralgia	1
Anaphylactic reaction	1
Total	13

**Table8: Raise in Hb**

Hb (gm %)	Patients (%)
1 – 1.9	13
2 – 2.9	52
3 – 4	31
>4	3

**Discussion:** Among the total 100 patients, 63% patients were between 20 to 29 years. In Pushpa O Lokare study, 87.2% subjects were between 20 to 30

years having anaemia<sup>9</sup>. High prevalence of anaemia were noted in 3<sup>rd</sup> and more gravida due to repeated pregnancies and less spacing between pregnancies. In H.K. Cheema et al study<sup>10</sup>, 90.8% anaemic women had gravidity >3. The current study observed a higher prevalence of anaemia in 3<sup>rd</sup> trimester as compared to 1<sup>st</sup> and 2<sup>nd</sup> trimester. This was because maximum number of pregnant women booked themselves for antenatal check-up in last trimester. This finding collaborates with study by Singh R et al (2015)<sup>11</sup>. Vandana S et al, Among the 25 pregnant women manifested with severe Iron Deficiency Anaemia, 21 (84%) of them were in 30-36 weeks of gestation and 4 (16%) of them were below 30 weeks of gestation at the time of diagnosis<sup>12</sup>. Dietary pattern significantly influences anaemia status. Here 74% were vegetarian and 26% were on mixed diet. H.K. Cheema et al study<sup>10</sup> revealed that 83.3 % anaemic women were following vegetarian pattern of diet. Rammohan A et al (2011)<sup>13</sup> and Singh R et al (2015)<sup>11</sup> in which it was found that diet contributed to anaemia and vegetarians were more anaemic as compared to non-vegetarians. 72% had microcytic hypochromic anaemia and 28% had dimorphic anaemia. 10 patients having 4-4.9 gm% Hb, 60 patients having Hb 5-5.9 gm% Hb, 30 patients having 6-7 gm% of Hb. In Agrawal et study<sup>14</sup> 76% of patients had moderate (7-10.9 g/dL), 14% had severe (4-6.9 g/dL) and 10% had very severe (<4 g/dL) anaemia. Out of 13 patients, 4 patients developed intravenous route related side effects-3 of them developed pain at the injection site, 1 patient developed phlebitis. 9 patients developed generalized type of side effect-2 patients developed headache, 3 patients developed fever with chills, 2 patients developed pruritus, 1 patient developed arthralgia. 1 patient developed anaphylactic reaction. Sahfi D. et al (2012)<sup>15</sup> also conducted study on efficacy and safety of intravenous iron sucrose versus oral iron (ferrous ascorbate) in pregnancy and found that there were no serious adverse drug reactions, no episodes of anaphylaxis or shock. Our study is comparable to Shafil D et al study<sup>15s</sup>. Increase in haemoglobin after treatment of iron sucrose therapy was measured after 3 weeks. Increase in haemoglobin was significantly high around 2 -3 gm% increased. Vandana S et al study<sup>12</sup>, the total rise in the mean Hb status over three weeks following iron sucrose transfusion therapy was found to be 2.5 gm%.

**Conclusion:** Anaemia is serious health problem in India where the pregnant women and her child are

endangered. Anaemia directly proportional to parity, less spacing between pregnancies. Intravenous iron sucrose transfusion is an effective treatment strategy for pregnant patients with anaemia during pregnancy and in patients non-compliant to oral therapy. Intravenous iron sucrose was associated with negligible side effects and is safe. Intravenous iron causes rapid rise in haemoglobin level and replacement of stores was faster. Other advantages of iron sucrose It can be used in peripheral level where blood bank facilities are not available also reduce the burden over blood bank. Calculation, preparation and starting of iron sucrose is very easy. Iron sucrose therapy improves maternal and foetal outcome by correction of anaemia. It decreases maternal and perinatal morbidity and mortality.

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