

PREVALENCE AND MANAGEMENT OF POSTPARTUM ANAEMIA: A TERTIARY CARE TEACHING HOSPITAL BASED STUDY

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Abstract

Background: An important global health issue is anaemia, particularly in underdeveloped nations. The health of the mother and the newborn baby is harmed by postpartum anaemia. Although postpartum anaemia has received very little attention in India, anaemia during pregnancy is sufficiently stressed. **Materials and Methods:** A total of 497 women gave birth during this time, 96 of them had postpartum anaemia found. The study included postpartum anaemic women who were 20 years of age or older, had haemoglobin levels of 6 to 9 g/dl, were diagnosed with iron deficiency anaemia, and who were willing to follow the research procedure. **Result:** There was increase in serum ferritin in both the groups but more in I.V. group. In the oral group, mean serum ferritin on 2nd-3rd postpartum day was 8.21 ± 2.32 ug/L which increased to 24.62 ± 4.67 ug/L at 6 weeks postpartum. In I.V. group, mean serum ferritin was 8.37 ± 2.36 ug/L on 2nd-3rd day postpartum which increased to 57.45 ± 7.21 ug/L at 6 weeks postpartum. This indicates iron sucrose not only treats but also corrects iron stores which is not seen with oral iron. This observation is highly significant in our study thus indicating its use in post-partum anaemia (p value < 0.05). **Conclusion:** In postpartum IDA women, intravenous iron sucrose raises haemoglobin levels more quickly than oral ferrous sulphate. Additionally, it replaces iron reserves more quickly.

INTRODUCTION

Post-partum anaemia is a widespread issue around the globe, with prevalence rates in developing nations ranging from 50% to 80%. The post-partum period starts as soon as the placenta is delivered and can last up to 42 days. For the health and survival of the mother and her newborn, it is the most crucial time.^[1] Worldwide, postpartum anaemia is a frequent issue that usually goes away on its own within a week for most mothers. However, for certain women, particularly in countries with limited resources, it is a significant factor in maternal morbidity and mortality.^[2] 10% of new mothers have postpartum haemoglobin (Hb) levels under 8 g/dl. The main factor is iron deficit. This is partially attributed to an iron deficiency during pregnancy, brought on by the fetoplacental unit's higher iron needs as well as the mother's increased red cell mass. Mode of delivery and blood loss are contributing factors, with more than 1L of blood lost in more than 5% of deliveries. It seems to be more prevalent in difficult socioeconomic circumstances.^[3] Depending on the degree of blood

loss and associated anaemia, postpartum anaemia symptoms can vary and include breathlessness, exhaustion, palpitations, dizziness, maternal infections, particularly in the urinary system, failure to produce milk, and extended hospital stays. In the postpartum period, it has also been demonstrated to be closely linked to depression, stress, and cognitive function. It may also make it harder for the mother to care for her child, which could affect the emotional mother-infant attachment. Blood transfusions are only used in more severe or symptomatic instances, and oral iron supplements are the norm for treatment at most institutions.^[4] Since constipation, nausea, and gastric irritation are common adverse effects of high oral iron dosages, noncompliance is widespread. In cases of severe iron shortage, such medication must also be administered for a considerable amount of time. Although postpartum anaemia has been treated with blood transfusions, there are hazards involved. In order to control iron shortage in this situation, intravenous iron has been examined, either alone or in combination with recombinant human erythropoietin. The purpose of this study was to assess the effectiveness of intravenous iron sucrose

vs oral iron in participants with post-partum iron deficiency anaemia, as well as the safety and adverse effects of these two preparations. It also sought to determine the prevalence of postpartum anaemia.

MATERIALS AND METHODS

From September 2020 to October 2021, the department of obstetrics and gynaecology at Venkateshwara Institute of Medical Sciences, Gajraula, conducted the current prospective observational study. A total of 497 women gave birth during this time, 96 of them had postpartum anaemia found. The study included postpartum anaemic women who were 20 years of age or older, had haemoglobin levels of 6 to 9 g/dl, were diagnosed with iron deficiency anaemia, and who were willing to follow the research procedure. Hemoglobin levels between 6 and 9 g/dL, MCV 78 fl, MCH 30 pg, serum ferritin 15 ng/l, and a peripheral smear finding ranging from a microcytic hypochromic to normocytic hypochromic pattern were all used to identify iron deficiency anaemia. The study excluded women with haemoglobin levels greater than 9 g/dl, ferritin levels greater than 15 ng/mL, a history of intolerance to iron derivatives, peripartum blood transfusion, a history of asthma, thromboembolism, seizures, alcohol or drug abuse, infection symptoms, or signs of renal or hepatic dysfunction. All of the ladies gave their written informed consent, meeting the requirements for inclusion. A thorough history was taken before a general physical, systemic, and local examination. Two groups of 48 patients each were divided into the patients using a computer-generated random number sequence. On the second or third postpartum day, baseline tests were performed, including a complete blood count with RBC indices (MCV, MCH, MCHC) for severity and type of anaemia, a peripheral smear for anaemia type, and serum ferritin for iron storage. Regarding these investigations, there was no statistically significant difference between the two groups.

For six weeks, one group received 200 mg of oral ferrous sulphate pills twice a day. The other group received divided IV doses of iron sucrose on alternate days. The following formulas were used to determine the dose: $\text{Weight (in kgs)} \times (\text{Target hemoglobin} - \text{Actual hemoglobin}) \times 0.24 + 500 \text{ mg}$,^[5] Target haemoglobin was set at 110 g/L, real haemoglobin was the patient's haemoglobin level upon inclusion, a correction factor of 0.24 was used, and an adult's amount of stored iron was 500 mg. On alternate days, 100 mg of elemental iron in the form of slow intravenous infusions of iron sucrose was administered (starting from day 2-3 of post-delivery). A test dose wasn't necessary. A five-milligram folic acid supplement was given to each group. Results were compared between the two groups on days 7 through 14 after birth (i.e., one to two weeks after treatment). Hemoglobin levels, RBC indices, and overall patient improvement were used to gauge the rate of improvement. By rerunning all of the baseline examinations at 6 weeks postpartum, the treatment's full impact was assessed.

Analytical statistics: The student-t test was employed to examine the variance in the means of several measures (Hb, serum ferritin, etc.) between two groups over time (on day 3, 7-14, and 42). P-values less than 0.05 were considered statistically significant.

RESULTS

A total of 497 women gave birth during this time, out of them 96 had postpartum anaemia. In our study, the prevalence of postpartum anaemia was 19.31%. Regarding patient age, booked/unbooked/registered status, socioeconomic status, religion, and parity, there was no statistically significant difference between the two groups in [Table 1]. Hemoglobin, hematocrit, RBC indices, and serum ferritin values all increased in both groups. However, there was a statistically significant difference between the two groups' increases, with the oral group showing much higher values than the intravenous group.

Table 1: sociodemographic elements.

Variables group	Sub group	Oral group (n=48)	I/V group (n=48)	P-value
Age in years	20-25	24	18	0.45
	25-30	18	21	
	>30	6	9	
Booking status	Unbooked	18	24	0.56
	Booked	13	9	
	Registered	17	15	
Religion	Hindu	33	29	0.32
	Muslim	15	19	
Socio-economic status	Upper	1	2	0.21
	Middle	9	13	
	Lower	38	33	
Parity	P1	7	8	0.27
	P2	23	14	
	≥ p3	18	26	

Table 2: Mean haemoglobin levels between the oral and I/V groups are compared.

Variables	On 2nd -3rd day (g/dl) (Mean ± S.D.)	At 1-2 weeks (g/dl) (Mean ± S.D.)	At 6 weeks (g/dl) (Mean ± S.D.)
Oral group	7.83 ± 1.25	8.63 ± 2.74	10.21 ± 3.75
I/V group	7.72 ± 1.34	9.76 ± 3.02	10.96 ± 3.62
P-value	0.41	0.01	0.02

Table 3: Comparing the oral and I/V groups' mean serum ferritin levels.

Variables	On 2nd -3rd day (µg/L) (Mean ± S.D.)	At 6 weeks (µg/L) (Mean ± S.D.)
Oral group	8.21 ± 2.32	24.62 ± 4.67
I/V group	8.37 ± 2.36	57.45 ± 7.21
P-value	0.21	0.01

In the oral group, the mean haemoglobin increased from 7.83 ± 1.25 g/dl on day 2-3 of postpartum to 8.63 ± 2.74 g/dl at 1-2 weeks, and to 10.21 ± 3.75 g/dl at 6 weeks postpartum in oral group; whereas from 7.72 ± 1.34 g/dl on day 2-3 of postpartum to 9.76 ± 3.02 g/dl at 1-2 weeks postpartum and to 10.96 ± 3.62 g/dl at 6 weeks postpartum in I/V group (p value < 0.05) in [Table 2]. Similarly, there was increase in serum ferritin in both the groups but more in I.V. group. In the oral group, mean serum ferritin on 2nd-3rd postpartum day was 8.21 ± 2.32 µg/L which increased to 24.62 ± 4.67 µg/L at 6 weeks postpartum. In I.V. group, mean serum ferritin was 8.37 ± 2.36 µg/L on 2nd-3rd day postpartum which increased to 57.45 ± 7.21 µg/L at 6 weeks postpartum. This indicates iron sucrose not only treats but also corrects iron stores which is not seen with oral iron. This observation is highly significant in our study thus indicating its use in post-partum anaemia (p value < 0.05) in [Table 3]. In the current study, the oral group of patients experienced 17% constipation, 11% metallic taste, 5% nausea and vomiting, 3% abdominal pain, and another 3% diarrhoea when compared to the intravenous group. 39 percent of patients reported experiencing gastrointestinal side effects. 5% of patients in the IV group experienced moderate allergic reactions such rash, flushing, and pruritis, and 3% experienced dizziness. Iron sucrose showed no negative effects on 92% of the patients. According to the literature, the present study's I.V. sucrose tolerance appears to be outstanding and free of side effects.

DISCUSSION

Postpartum anaemia is a common occurrence in pregnant women and can be harmful to both the mother and the unborn child. The National Pregnancy Nutrition Surveillance System reports that 29.8% of pregnant women who were not previously anaemic after delivery become anaemic.^[6] Numerous elements, such as maternal characteristics at the beginning of pregnancy, prenatal events, labour and delivery, and the early postpartum period, aggravate postpartum iron status. Our study's sociodemographic characteristics were equivalent to those in prior studies. Because of the increased need for iron during pregnancy, which is

not satisfied by a regular diet, the majority of patients were young and of reproductive age, showing that pregnancy is a significant risk factor for iron deficiency anaemia.^[5,6,7] More than 60% of the women in our study had anaemia because they were from lower socioeconomic classes and consumed diets lacking in vital nutrients and minerals.^[8] Due to the depletion of iron reserves caused by recurrent pregnancies, multiple pregnancies have been a significant risk factor for postpartum anemia.^[7,8] In all trials, the majority of patients had only received an elementary education or were illiterate, which may have been related to their lower socioeconomic level. The patients' lack of education prevented them from understanding the need of prenatal care and a healthy diet.^[8] In the short term (1-2 weeks postpartum), women who received intravenous iron had higher haemoglobin levels, but after 6 weeks, neither oral nor intravenous iron groups showed any statistically significant differences in patient outcomes. This suggests that, if compliance is ensured, iron therapy will have a good response in both groups.^[3,5,6,7,8,9,10] Serum ferritin is a marker of iron reserves; a decline in its levels signifies the depletion of iron reserves. In the current study, serum ferritin levels increased in both groups, but more so in the I.V. group. This shows that unlike oral iron, iron sucrose not only treats but also corrects iron storage. This observation has proven to be highly significant in other studies, and its application to postpartum anaemia is thus indicated.^[3,5,6,7,8,9,10] In the present study, 39% of patients taking oral iron experienced gastrointestinal side effects. In other studies, this percentage ranged from 30% to 43%.² Up to 20% of people receiving ferrous iron salts typically experience GI problems. In the IV group, 3% of patients experienced dizziness, and 5% of patients experienced moderate allergic reactions such rash, flushing, and pruritis. Iron sucrose exhibited no significant adverse effects in 92% of subjects. According to the literature, the I.V. sucrose tolerance in the current investigation appears to be great without any negative consequences. These findings agreed with those of other studies.^[3,5,7,9] According to the research, intravenous iron sucrose is generally well tolerated (35 percent of patients experience minor side effects), and the incidence of major adverse responses is modest (0.03-0.04

percent).^[1] Therefore, it is important to take care while interpreting the study's results. Last but not least, haemoglobin measurements made with the kit employed in this investigation may not accurately reflect the current state of affairs.

CONCLUSION

In conclusion, Iron Deficiency Anaemia is linked to postpartum depression, stress, and lactational failure in females. The use of iron treatment helps these symptoms. In the postpartum period, intravenous iron sucrose is a successful substitute for oral ferrous sulphate in the treatment of iron deficiency anaemia. Compared to oral ferrous sulphate, it has shorter treatment times, no gastrointestinal side effects, and causes a faster rise in haemoglobin concentration and serum ferritin levels. It can also lessen the need for blood transfusions and their associated adverse effects, making it a safe choice for treating anaemia. Rebuilding iron levels during the postpartum period aids in symptom relief from anaemia more quickly and lowers the risk of anaemia in future pregnancies. Safety, effectiveness, compliance, ease of administration in an outpatient setting, and cost effectiveness are major benefits because admission is not always necessary. The necessity for medical supervision in the presence of constrained medical resources is one limitation of intravenous iron supplementation.

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