

Comparison between Intravenous Iron and Oral Iron Treatment in Term of Efficacy in cases of Postpartum Anemia

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ABSTRACT

Objective: To compare intravenous iron and oral iron treatment in term of efficacy in cases of postpartum anemia.

Material and methods: Between July 2021 to December 2021, total 90 patients of post-partum anemia having age 20-35 year either primi or multi paras were recruited for this randomized controlled trial. Place of study was Department of Obstetrics & Gynecology, Qazi Hussain Ahmed Medical Complex Nowshera Medical College. Efficacy between IV iron and oral iron was compared.

Results: Total 90 cases of post-partum anemia was recruited for this study. Age of the cases was between 20-35 years with mean age 27.34 ± 4.88 years, in IV iron group (A) and oral iron group (B), mean age was 27.53 ± 4.94 years and 27.16 ± 4.87 years respectively. Study group A (IV iron group) and group B (oral iron group) was compared in term of efficacy by applying chi-square test. After applying chi-square test, significantly ($P = 0.034$) high proportion of efficacy was noted in IV iron group as compared to oral iron group (37/82.22% vs 28/62.22%).

Conclusion: Results of this study showed that IV iron therapy had significantly higher efficacy rate as compared to oral iron in cases of postpartum anemia. Most of the women were between 20-25 years. Primiparas had higher proportion and most of the women belonged to rural area.

Key words: Postpartum anemia, hemoglobin, neonate, morbidity

INTRODUCTION

If haematocrit is <33% and haemoglobin is < 11gm/dl then this condition is called Anemia.¹ Even in developed countries women in their fertile years commonly face iron deficiency.² One of the under-appreciated facts include maternal health burden of postpartum anemia.³ Depression, impaired cognition and fatigue are included in the maternal morbidities of postpartum anemia.⁴⁻⁵ These results can often affect the mother-child bonding having a negative impact on the neonate's care.⁶ Almost 50% women in developed countries face postpartum anemia along with 80% women in developing countries.⁷ During the pregnancy and in period of postpartum, various methods like IM iron therapy, IV iron therapy, blood transfusion and oral iron were used for the treatment of anemia.⁸ The oral iron therapy is easily accessible at health centers of remote areas and it is recommended as first treatment in cases of iron deficiency anemia.⁹ If oral iron therapy has spiked demands or fails in any other way than such condition requires parenteral iron therapy in anemic pregnant women. Intestinal inflammation may be aggravated by ferrous sulfate preparations but still parenteral iron has been proven effective in patients suffering from inflammatory bowel disease.¹⁰ Through the gastrointestinal tract, the body is capable of absorbing 6 mg of iron per day. In plenty of cases it will take up to several months to replace the iron due to the patient having an iron deficit of over 1,000 mg.¹¹ As compared to the oral iron therapy, parental iron therapy is proven to deliver greater and faster iron supply to the patient.¹²

Results of this study may help us to choose best treatment option of postpartum anemia. We may be able to reduce the morbidity of postpartum anemic patients.

MATERIAL AND METHODS

Between July 2021 to December 2021, total 90 females of postpartum anemia having age 20-35 year either primi or multi paras were recruited for this randomized controlled trial. Place of study was Department of Obstetrics & Gynecology, Qazi Hussain Ahmed Medical Complex Nowshera Medical College.

Patients with allergic history or iron intolerance, patients with blood transfusion indications, patients with any chronic disease, patients with deficiency of folic acid and patients of thalassemia were excluded from the study. Study group A and study group B were created randomly. Group A received IV iron ($\leq 1,000$ mg in fifteen minutes with hundred milliliter of 0.9% normal saline and

dose was repeated on weekly basis). Group B received oral iron in form of Ferrous sulfate tablet with dose of 325mg three times a day upto 6 weeks. After 6 weeks of treatment, all the patients assessed for efficacy of the iron therapy. Efficacy is defined as: rise in hemoglobin levels >3.5g/dl after 6 weeks of therapy). This all data was recorded on a specially designed proforma.

Postpartum anemia defined as: Postpartum anemia was considered as positive if Hb <10g/dl and serum ferritin level <15ng/ml within first 48 hours postpartum.

For the purpose of data analysis, SPSS version 20 was used. Age was presented in form of mean and SD while categorical variables were presented in form of frequencies. Difference of efficacy between the groups was compared by using the chi-square test. A p value of 0.05 was taken as significant statistically.

RESULTS

Total 90 cases of post-partum anemia was recruited for this study. Age of females was between 20-35 years with mean age 27.34 ± 4.88 years, in study group A (IV iron group) and B (oral iron group), mean age was 27.53 ± 4.94 years and 27.16 ± 4.87 years respectively. Study group A (IV iron group) and group B (oral iron group) was compared in term of efficacy by applying chi-square test. After applying chi-square test, significantly ($P = 0.034$) high proportion of efficacy was noted in IV iron group as compared to oral iron group (37/82.22% vs 28/62.22%). (Table 1)

Total 3 age groups (age groups 20-25, 26-30 and 31-35 years) were created. In age group 20-25 years, total 19 (42.22%) patients belonged to study group A while 20 (44.44%) patients belonged to study group B. Efficacy of iron therapy was found successful in 16 (84.21%) patients of study group A while in 10 (50%) patients of study group. Difference of treatment efficacy of treatment between the groups was significant ($P = 0.041$). In age group 26-30 years, out of 11 (24.44%) patients of study group A, treatment was found effective in 9 (81.82%) patients. While out of 11 (24.44%) patients of study group B, efficacy was noted in 7 (63.64%) patients. In age group 31-35 years, there were 15 (33.33%) patients in study group A while 14 (31.11%) patients in study group B. Difference of treatment efficacy between the both groups was not significant ($P = 1.000$) (Table 2)

Primiparas were 29 (64.44%) and 32 (71.11%) respectively in group A and B. Treatment was found effective in 24 (82.76%) patients and 19 (59.38%) patients of study group A and B

respectively. Difference was stistically significant (P = 0.055). Among multiparas, total 16 (35.56%) patients belonged to study group A while 13 (28.89%) patients belonged to study group B. Efficacy was noted in 13 (81.25%) patients of study group A and in 9 (69.23%) patients of study group B. Difference of treatment efficacy between IV iron group and oral iron group was not significant (P = 0.667). (Table 3)

Out of 9 (20%) obese patients of study group A, treatment was found effective in 7 (77.78%) patients. Out 12 (26.27%) obese patients of study group B, efficacy was noted in 6 (50%) patients. Difference of treatment efficacy was not significant (P = 0.367). In study group A and B, non-obese patients were 36 (80%) and 33 (73.33%) respectively. Efficacy was noted in 30 (83.33%) patients and 22 (66.67%) patients respectively. Difference was not significant (P = 0.162) (Table 4)

Table 1: Comparison of treatment efficacy between the both groups

Group	Treatment Efficacy		Total	P value
	Yes (%)	No (%)		
A (Intravenous Iron)	37 (82.22%)	8 (17.78%)	45	0.034
B (Oral Iron)	28 (62.22%)	17 (37.38%)	45	

Table 2: Comparison of treatment efficacy between the both groups for age

Group	Treatment Efficacy		Total	P value
	Yes (%)	No (%)		
Age group 20-25 years				
A	16 (84.21%)	3 (15.79%)	19 (42.22%)	0.041
B	10 (50%)	10 (50%)	20 (4.44%)	
Age group 26-30 years				
A	9 (81.82%)	2 (18.18%)	11 (24.44%)	0.635
B	7 (63.64%)	4 (36.36%)	11 (24.44%)	
Age group 31-35 years				
A	12 (80%)	3 (20%)	15 (33.33%)	1.000
B	11 (78.57%)	3 (21.43%)	14 (31.11%)	

Table 3: Comparison of treatment efficacy between the both groups for parity

Group	Treatment Efficacy		Total	P value
	Yes (%)	No (%)		
Primipara				
A	24 (82.76%)	5 (17.24%)	29 (64.44%)	0.055
B	19 (59.38%)	13 (40.63%)	32 (71.11%)	
Multipara				
A	13 (81.25%)	3 (18.75%)	16 (35.56%)	0.667
B	9 (69.23%)	4 (30.77%)	13 (28.89%)	

Table 4: Comparison of treatment efficacy between the both groups for obese

Group	Treatment Efficacy		Total	P value
	Yes (%)	No (%)		
Obese patients				
A	7 (77.78%)	2 (22.22%)	9 (20%)	0.367
B	6 (50%)	6 (50%)	12 (26.27%)	
Non-obese patients				
A	30 (83.33%)	6 (16.67%)	36 (80%)	0.162
B	22 (66.67%)	11 (33.33%)	33 (73.33%)	

Table 5: Comparison of treatment efficacy between the both groups for area of residence

Group	Treatment Efficacy		Total	P value
	Yes (%)	No (%)		
Rural area				
A	21 (77.78%)	6 (22.22%)	27 (60%)	0.162
B	18 (58.06%)	13 (41.94%)	31 (68.89%)	
Urban area				
A	16 (88.89%)	2 (11.11%)	18 (40%)	0.365
B	10 (71.43%)	4 (28.57%)	14 (31.11%)	

Total 27 (60%) patients of study group A and 31 (68.89%) patients of study group B belonged to rural area and treatment was found effective among 21 (77.78%) patients and 18 (58.06%) patients respectively in study group A and B. Difference was not significant (P= 0.162). Out of 18 (40%) patients of urban area of study group A, efficacy was found in 16 (88.89%). While 14 (31.11%) patients of study group B belonged to urban area. Treatment was found effective in 10 (71.43%) patients. But difference of efficacy was not significant (P = 0.365%). (Table 5).

DISCUSSION

Objective of our study was to compare the treatment efficacy of IV iron and oral iron in cases of postpartum anemia. Total 90 cases of post-partum anemia was recruited for this study. Age of females was between 20-35 years with mean age 27.34 ± 4.88 years, in study group A (IV iron group) and B (oral iron group), mean age was 27.53 ± 4.94 years and 27.16 ± 4.87 years respectively. Study group A (IV iron treatment group) and group B (oral iron treatment group) was compared in term of efficacy by applying chi-square test. After applying chi-square test, significantly (P = 0.034) high proportion of efficacy was noted in IV iron treatment group as compared to oral iron treatment group (37/82.22% vs 28/62.22%).

In studies by Breymann et al¹³ and Aggarwal et al¹⁴ mean age of the females of postpartum anemia was 27 years and 28 years respectively. In study of Bhandal N et al¹² mean age of females of postpartum anemia was 29 years while Halimi S et al¹ reported mean age as 24 years.

In one study by Batool et al.¹⁵ 82 patients with postpartum anemia was selected. In IV iron therapy group, mean age was 26.36±4.30 years while in oral iron therapy group was 26.31±4.69 years. IV iron was given to one group while oral iron was given to other group. Efficacy of the treatment was noted in 87.80% patients of IV iron group while in 65.85% patients of oral iron group. Which is comparable with our findings. Breymann C et al¹⁶ selected 60 women with postpartum anemia for their RCT. IV iron was given to one group and oral iron was given other group. They found no difference of efficacy between the both group. In another study, Aggarwal RS et al¹⁴ treated patients of postpartum anemia. One group with IV iron and other group with oral iron. Treatment of postpartum anemia was found effective in 80% patients of IV iron group while in 40% patients of oral iron group. In study of Bayomeu F et al¹⁷, total 50 patients with 6 months gestation were selected. One group was treated with IV iron and second group was treated with oral iron for 4 weeks. Van Wyck DB et al¹⁸ reported efficacy of IV iron and oral iron as 90.5% and 68.6% in postpartum anemia respectively. Halimi S et al¹ also reported that IV iron therapy is better than oral iron therapy in cases of postpartum anemia. Bhandal N et al¹² conducted RCT in UK. They selected 44 patients of postpartum anemia. Half patients receiving IV iron and other half receiving oral iron. They found that IV iron treatment is better than oral iron.

CONCLUSION

Results of this study showed that IV iron therapy had significantly higher efficacy rate as compared to oral iron in cases of postpartum anemia. Most of the women were between 20-25 years. Primiparas had higher proportion and most of the women belonged to rural area.

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