ORIGINAL ARTICLE

Comparison The Efficacy of IV Iron Versus Oral Iron Therapy in Anemic Patients

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ABSTRACT

Objective: To compare the efficacy of intravenous iron versus oral iron therapy in anemic patients.
Study Design: Randomized controlled trial
Place and Duration: Conducted in Medical OPD and Medical Unit of District Headquarter Hospital Kohat for the duration of six months from July 2019 to January 2020.
Materials and Methods: Total 100 patients with age23-38 years of patients were included in this study. Patients were equally divided into two groups. Groups A included 50 patients with intravenous iron while in Group B oral iron was given to the 50 patients. Routine follow up performed for 4 weeks to check the efficacy level (hemoglobin levels >3.5g/dl).Patients with any chronic disease, folic acid deficiency, thalassemia and intolerance to iron were excluded in this study.
Results: The mean age of patients included in group A was 27.24±3.75 while in group B it was 27.76±3.45 and majority of the patients 55% were 23-28years of the age. We noticed hemoglobin levels >3.5g/dl after 4weeks of routine follow up, it gave 45 patients from intravenous group and 34 patients in oral iron group. Resulted efficacy in intravenous group was 90% while in oral group it was 68% with p value 0.028.
Conclusions: In this study we concluded that the intravenous iron is more useful than that of the oral iron because of its efficacy level for the treatment of anemia patients.
Keywords: Iron Deficiency, Anemia, IV Iron, Oral Iron, Efficacy

INTRODUCTION

Intravenous iron can be a helpful therapy in a variety of clinical circumstances for anaemia of iron deficiency (even for patients who are intolerant or unable to respond to oral iron)[1], patients undergoing optional operations[2] and those who need a prompt correction of their severity of anaemia[3]. The need for allogeneic blood transfusion may be decreased by intravenous iron therapy[4]. Iron deficiency is the most commonly recorded cause of anaemia in the United Kingdom and world-wide; the 'Better Blood Transfusion' guidelines requires hospitals to include, whenever feasible, alternatives to allogeneic blood transfusion.

Various regular approaches, such as oral iron therapy, IRT, IV iron therapy and blood transfusion have over the past few years been used to treat pregnancy and postpartum anemia[5]. An oral iron replacement therapy that is readily available on all of the peripheral health centres is the first option in the treatment of iron deficiency anaemia in most patients. Iron sulphate is most common among the various iron salts[6]. While standard oral iron therapy, situations like failure of oral iron therapy or increasing demands also involve the parenteral iron therapy of anaemic pregnant women.

Iron saccharose (IS, Venofer, ViforPharma) is used as a 200 mg iron intravenous infusion over two hours and can be given for 48-hour periods up to a desired dose of iron. Intravenous infusion of any dose of up to 2,000 mg of iron (ID, CosmoFer, VitalinePharma), depending on the measured patients iron deficiency is taken, the infusion rate is titrated according to the patient's tolerance and, for instance, a dose of 1000 mg will normally be infused over a period of 5 hours. Ferric carboxymaltosis has become recently available and is administered over 30 minutes as either intravenous (500 mg elemental iron) or intravenous infusion (1 g of elemental iron) (source: British national formularium). Ferric carboxymaltose (FCM, ferinject, vifor pharma).

Even though iron-deficiency anaemia was proved safe and successful in FCM therapy[8], patients also received iron deficiency research that was clinicamente suitable in each case, in conjunction with iron therapy. With no active bleeding, all patients were healthy. When the iron treatment was sent to our department, the choice of iron therapy was based on which iron preparation was available at that time and when more than one preparation was available, the choice was made by the clinician 's choice. In several cases the patient has a deficiency of over 1,000 mg of iron, which will take several months to replace.8 As a result, parenteral iron therapy indicates an increased interest that could result in increased and quicker iron supply supplementation[9]. In addition, the findings of this study will give us a more efficient regime of two to treat postpartum anaemia and allow us to carry out our recommendations in routine practise to minimise postpartum maternal morbidity.

MATERIAL & METHODS

This comparative study was carried out at Conducted in Medical OPD and Medical Unit of District Headquarter Hospital Kohat for the duration of six months from from July 2019 to January 2020and comprised of 100 patients.

Detailed demographics including age, socioeconomic status, residence, education and gravidity were recorded after taking consent.

Patients with severe any complications or diseases like thalassemia, folic acid deficiency, and intolerance to iron were excluded in this study. Patients with age 23-38 years were included in this study. We arranged to divide 100 patients in two equal groups, group A and group B. Intravenous iron was provided to group A and oral iron to group B for period of 1-month.

Our workers injected IV iron equal to 1000mg over 15minutes in a week by using 100 of normal saline 0.9% in group A. patients of group B received oral iron(ferrous sulfate 325mg) three times a day for 1 month. Chi Square test was performed between two groups to know the efficacy level with significant difference p value ≤0.05. Data was analyzed by SPSS 14.0.

RESULTS

Total 100 patients were divided into two groups with mean age of 27.65±3.25 (23-28 years). Results provided 45 patients from intravenous group and 34 patients in oral iron group. Efficacy level of intravenous group was significantly higher 90% than that of the oral iron group 68% with p value 0.028. (Table 1)

Patients were classified in 3 age groups, in which age groups 23-28 years, 29-33 years and age group 34-38 included. Efficacy of treatment was observed 24(92.31%) in group A while in group B it was 17(65.38%) in age group of 23-28 years with significant difference of P value 0.042. In age group 29-33 efficacy level in group A was 12(80%) but in group B it was 10(66.67%) and noted insignificant difference was 0.340. The age group 34-38 provided effective level in group A 8(88.87%) while in group B it was 6(66.67%) and the difference was insignificant with statistical value p 0.700. Difference was observed in both groups insignificantly. (Table 2)

Efficacy with respect to hemoglobin was concluded by divided patients into two groups according to their Hb levels i.e., ≤ 7mg/dl and Hb levels >7-<10mg/dl. In ≤7mg/dl Hb level group, efficacy was noted in 22(84.62%) patients and 15 (57.69%) patients respectively in group and B.But the difference of efficacy between both groups was statistically insignificant with p value 0.091. In >7 -<10 mg/dl Hb level group, efficacy of treatment was noted in 22 (91.67%) patients and 18 (75%) patients of group A and B, but the difference was statistically insignificant with p value 0.91.

Table 1: Differentiation of effective iron between both groups

Groups	Efficacy	Non-Efficacy	Frequency	Count
Intravenous Iron	45	5	90%	50
Oral Iron	34	16	68%	50
Total	79	21	-	100

Table 2: Efficacy with respect to age groups

	Group A		Group B		
Age(Yrs)	Effectiveness	Non-Effectiveness	Effectiveness	Non-Effectiveness	P value
23-28	24(92.31%)	2(7.69%)	17(65.38%)	9(34.62%)	0.042
29-33	12(80%)	3(20%)	10(66.67%)	5(33.33%)	0.34
34-38	8(88.89%)	1(11.11%)	6(66.67%)	3(33.33%)	0.7

Table 3: Efficacy with respect to hemoglobin levels

	Group A		Group B		
Hemoglobin	Effectiveness	Non-Effectiveness	Effectiveness	Non-Effectiveness	P value
≤ 7mg/dl	22(84.62%)	4(16.38%)	15 (57.69%)	11(42.31%)	0.91
>7 -<10 mg/dl	22 (91.67%)	2(8.33%)	18 (75%)	6(25%)	0.91

DISCUSSION

The mean patient age for groupA patients was 27.24±3.75 and group B patients were 27.76±3.45 with a majority of patients being 23-28 years. This analysis was based on the effectiveness of intravenous iron with a contrast with oral iron in patients with anaemia. The results were similar to Rajan SI, James KS, et al. Aggarwal, RS, Mishra VV, etc[10-11], in their preceding analysis

According to our report, haemoglobin levels > 3,5g / dl were up 90% for Group A after 4 weeks, whereas those of Group B 68% showed similar results to the DillonR and al[11] report that haemoglobin levels increased significantly higher than for the ID and IS-treated.

Divided patients into two classes, according with the haemoglobin level > 7-<10mg / dl and > 7mg / dl, were found to be successful. Hamoglobin effectiveness was achieved. Efficacy was observed in 22 (84.62%) patients in ~7 mg / dl Hb and 15 (57.69%) in Group and B patients. However, there was statistically insignificant difference in effectiveness between the two classes with the value p 0.091. Treatment efficacy was reported in > 7 < 10 mg / dl HB level groups in 22 (91.67 percent) patients and in 18 (75percent) in Group A and B patients, but the difference was statistically insignificant, as was the p value of 0.91.

Dede A et al . compared oral to iron sulphate, IV iron therapy with an iron succrose-complex and observed a rise in serum ferritin levels substantially within a brief period of time with less intravenous iron adverse effects than in oral iron treatment in postparty iron-related females[15]. Group B Patients were treated with oral iron (ferrous sulphate 325 mg) three times a day for one month. Chi Square Test was conducted between two groupings to evaluate efficacy levels with a substantial p-value difference between 0.05 Bhandal N and al.

A metaanalysis of over 100 randomised controlled trials with the biggest PIVOTAL and FINDCKD studies confirmed the safety of intravenous iron formulations[17]. Thus, the correction of anaemia with iron deficiency by means of oral iron supplements in an inefficient time frame is not possible. Secure, efficient formulations of parenteral iron in this situation can thus be used as alternatives to therapy by primary care physicians[18]. Bashiri A et al.[19]

conducted a study on anaemia iron supplementation in pregnant women. All in all the findings are that intravenous iron is the preferred route of iron deficiency anaemia treatment for pregnant women since haemoglobin levels are more efficient than intravenous. In their study Chandler et al tested iron sucrose optimally, with the aid of 335 CKD patients, and found intravenous doses of 200-300 mg[20].

CONCLUSION

In this study we concluded that the intravenous iron is more useful than that of the oral iron because of its efficacy level for the treatment of anemia patients. Levels of hemoglobin increased rapidly by intravenous iron as compared to the oral iron. Intravenous iron presented efficacy without any prolonged duration.

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