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BRIEF COMMUNICATION

Intravenous iron sucrose complex vs. oral ferrous sulfate for postpartum iron deficiency anemia

A. Dede *, D. Uygur, B. Yilmaz, T. Mungan, M. Uğur

Zekai Tahir Burak Women's Health Education and Research Hospital, Division of Perinatology, Atasehir sitesi, Block 2, No. 29, 06450, Cayyolu, Ankara, Turkey

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Anemia is defined by a decrease in hemoglobin concentration, with a consequent decrease in hematocrit. It is the most common medical disorder in pregnancy. The 2 most common causes of anemia are iron deficiency and acute blood loss at delivery [1]. Depending on the severity of the blood loss, anemic postpartum patients can be at increased risk for morbidity and even mortality [2], and anemia due to heavy bleeding during delivery should be corrected without delay.

The absorption of iron from oral supplements is influenced by dose, the patient's iron stores, and time of intake in relation to meal time. Parenteral administration of iron, as an alternative for oral therapy, provides a quick and certain correction of the total iron deficit [3].

The aim of this study was to compare the safety and efficacy of intravenous iron sucrose complex (Venofer; Vifor International Inc., St. Gall, Switzerland) and oral ferrous sulfate (Tardyferon; Pierre Fabre Ilac A.S., Istanbul, Turkey) in the treatment of iron deficiency anemia during the puerperium.

The study population consisted of 75 women older than 18 years whose hemoglobin levels were 9 g/dl or less after delivery, whether vaginal or cesarean. Women with anemia owing to causes other than iron deficiency, e.g., thalassemia, hemolytic anemia, hypersplenism, and folic acid or vitamin B_{12} deficiency, were not enrolled in the study.

The participants were assigned to 2 groups. In the intravenous (IV) group ($n=50$) the total iron-sucrose dose to be administered was calculated as previously reported [4]. Those receiving oral treatment (the per os [PO] group, $n=25$) were given 300-mg tablets of iron sulfate (each tablet containing 60 mg of elemental iron) 1 h before meals, 3 times per day.

Blood samples were taken before the start of therapy and at days 7 and 28 to evaluate levels of hemoglobin (Hb), serum ferritin, serum iron, and C-reactive protein (CRP), as well as hematocrit (Hct), mean corpuscular volume (MCV), and total serum iron-binding capacity (tSIBC).

* Corresponding author. Tel.: +90 312 240 80 13.
E-mail address: mdarzudede@ttnet.net.tr (A. Dede).

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Table 1 Comparison of erythropoiesis and iron status between the 2 groups on treatment days 0, 7, and 28

	Day	IV group ($n=50$)	PO group ($n=25$)	P value
Erythropoiesis				
Hb [12—16 g/dl]	0	8.2 ± 0.6 (6.3—9.0)	8.2 ± 0.5 (7.3—8.7)	0.813
	7	10.9 ± 1.1 (9.0—13.5)	11.2 ± 0.9 (10.2—12.5)	0.125
	28	12.5 ± 1.6 (9.5—15.1)	11.8 ± 0.7 (11.0—13.5)	0.200
Hematocrit [36—50%]	0	24.9 ± 2.4 (20.5—29.6)	25.1 ± 2.54 (21.7—29.8)	0.736
	7	33.8 ± 3.0 (28.3—40.6)	34.7 ± 3.1 (31.2—38.7)	0.349
	28	51.6 ± 7.2 (32.0—42.1)	36.5 ± 2.0 (34.2—40.6)	0.206
MCV [81—99 fl]	0	76.1 ± 12.4 (52.0—97.0)	70.9 ± 9 (56.0—86.9)	<0.01
	7	81.6 ± 9.2 (66.1—95.6)	80.1 ± 2.1 (77.1—81.7)	0.155
	28	84.9 ± 8.8 (63.5—95.5)	81.1 ± 3.6 (77.5—90.2)	0.057
Iron status				
Serum iron [37—145 mg/dl]	0	42.8 ± 29.3 (19.0—159.0)	34.5 ± 12.4 (20.0—54.0)	0.507
	7	72.7 ± 17.9 (27.0—107.0)	67.8 ± 32.2 (27.0—103.0)	0.435
	28	86.2 ± 44.3 (18.0—215.0)	73.5 ± 33.9 (45.0—122.0)	0.166
tSIBC [274—497 mg/dl]	d0	411.0 ± 105.2 (35—564)	436.7 ± 98.1 (267—569)	<0.01
	d7	303.5 ± 63.8 (176—420)	334.2 ± 28.1 (309—374)	<0.01
	d28	287.2 ± 89.1 (93—459)	299.8 ± 83.9 (229—459)	0.820
Ferritin [6—159 ng/dl]	d0	26.7 ± 40.9 (1.5—178.0)	9.9 ± 6.8 (4.4—25.0)	<0.05
	d7	124.0 ± 122.9 (5.9—553)	18.6 ± 9.3 (5.9—32.3)	<0.001
	d28	100.0 ± 79.7 (4.3—252.0)	17.4 ± 14.9 (4.3—34.4)	<0.01
CRP [0—3 mg/l]	d0	4.1 ± 5.7 (0.0—19.0)	2.8 ± 3.8 (0.0—8.5)	0.236
	d7	0.8 ± 1.6 (0.0—4.1)	0.8 ± 1.3 (0.0—2.7)	0.670
	d28	0.1 ± 0.2 (0.0—0.9)	0.1 ± 0.1 (0.0—0.2)	0.626

Values in brackets are the normal range.

The groups did not differ regarding demographic data. Group comparison for outcome measures is shown in Table 1.

In conclusion, compared oral with ferrous sulfate, IV iron therapy with an iron sucrose complex significantly increased serum ferritin level within a short time with fewer adverse effects than PO iron therapy in women with postpartum iron deficiency anemia.

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