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CORRESPONDENCE

# Treatment of iron deficiency and iron deficiency anemia with intravenous ferric carboxymaltose in pregnancy

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## Abstract

**Background** Iron deficiency (ID) and iron deficiency anemia (IDA) in pregnancy are global health issues, affecting around 30% of women in high-resourced countries, and increasing to over 50% of women in low-resourced countries.

**Objectives** Froessler et al. study published in Archives of Gynecology and Obstetrics (2018) 298: 75. https://doi.org/10.1007/s00404-018-4782-9, raised many queries and we would like to know the answers of those queries from the authors if possible.

**Results** Diagnosis of IDA should be based on hemoglobin concentration (gm/dl), serum ferritin (ug/l), mean corpuscular volume (MCV) and mean corpuscular hemoglobin (MCH), and the efficacy of the treatment of IDA evaluated by comparing pre-treatment values of hemoglobin, serum ferritin, mean corpuscular volume (MCV), and mean corpuscular hemoglobin (MCH) by the post-treatment values. Parenteral iron dose for correction of IDA calculated according to the formula; total iron needed in mg = 2.4 × pre-pregnancy weight in kg × (target hemoglobin concentration − actual hemoglobin concentration) gm/dl + 500 mg.

**Conclusion** The efficacy of the treatment of IDA evaluated by comparing pre-treatment values of hemoglobin, serum ferritin, MCV, and MCH by the post-treatment values. Parenteral iron dose for correction of IDA calculated according to the formula; total iron needed in mg = 2.4 + pre-pregnancy weight in kg + (target hemoglobin concentration − actual hemoglobin concentration) gm/dl + 500 mg.

**Keywords** Iron · Deficiency · Anemia · Carboxymaltose · Letter

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Dear Respectable Editor

While, we were reading the article; Froessler et al. Arch Gynecol Obstet (2018) 298: 75. https://doi.org/10.1007/s00404-018-4782-9 with great interest, there were many queries raised in our minds. We will be grateful if the authors clarify the answers of the following queries to us and to the readers.

First, Froessler et al. stated that the diagnosis of anemia for iron transfusion was based on the most recent hemoglobin, and in most cases ferritin, results from routine antenatal visits, which prompted the decision for parenteral ferric carboxymaltose (FCM) [1].

While many other authors diagnosed iron deficiency anemia (IDA) using hemoglobin concentration (gm/dl), serum ferritin (ug/l), mean Corpuscular Volume (MCV) and mean corpuscular hemoglobin (MCH) [2–6].

In addition; they checked the efficacy of their treatment for IDA by comparing pre-treatment values of hemoglobin, serum ferritin, MCV, and MCH by the post-treatment values

[2–6], while, Froessler et al., checked the treatment efficacy for IDA using FCM by the post-treatment values of serum ferritin and hemoglobin concentration only [1].

Please, clarify to us and to the readers, the ideal method for diagnosis of IDA, and the ideal method to check the efficacy of the iron preparations given to treat IDA during pregnancy.

Second; Froessler et al. stated that FCM is the institutional intravenous iron formulation of choice, and as per hospital protocol, women were prescribed up to a maximum of 20 mg of FCM per kg bodyweight, and the majority of their studied women received 1000 mg of FCM [1].

While, many other authors stated that the parenteral iron dose for correction of IDA calculated according to the formula; total iron needed in mg = 2.4 × pre-pregnancy weight in kg × (target hemoglobin concentration − actual hemoglobin concentration) gm/dl + 500 mg. Twelve (12) gm/dl was the target hemoglobin concentration, and 2.4 is a correction factor, while the 500 is the amount of stored iron in adult pregnant women [7, 8].

Please, clarify to us and to the readers, the ideal method for calculation of the parenteral iron dose for correction of IDA during pregnancy.

Third; Froessler et al. stated that the limitation in their study is the lack of a control group, and the retrospective nature of the data [1].

Fourth; we are asking if Froessler et al, recommend future studies to compare the FCM with other iron preparations, especially after the introduction of the new oral heme-iron preparations.

Nissenson et al., found that 6 months evaluation after heme iron polypeptide (HIP) in hemodialysis patients who had been on maintenance intravenous iron therapy, the intravenous iron was discontinued, and replaced with oral HIP [9], and Abdelazim et al. found HIP is an effective, safe, well-tolerable oral iron preparation as well as intravenous iron saccharate complex for treatment of iron deficiency during pregnancy; it increases the hemoglobin, and replaces the depleted iron store [5, 6].

## Conclusion

The efficacy of the treatment of IDA evaluated by comparing pre-treatment values of hemoglobin, serum ferritin, MCV, and MCH by the post-treatment values. Parenteral iron dose for correction of IDA calculated according to the formula; total iron needed in mg = 2.4 × pre-pregnancy weight in kg × (target hemoglobin concentration − actual hemoglobin concentration) gm/dl + 500 mg.

**Author's contribution** IAA is responsible for study design, Microsoft editing, and submission for publication. BN is responsible for the idea, Microsoft editing, and update of references. SS is responsible for intellectual content, update of references, and final revision before publication. GZ is responsible for Microsoft processing and final revision before publication.

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## Compliance with ethical standards

**Conflict of interest** The authors have no conflict of interest to declare.

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