

The Management of Iron Deficiency Anemia in Women

Anemia is an extremely common condition, affecting many persons across the life span, in both developed and developing countries. Data from the WHO Vitamin and Mineral Nutrition Information System for 1993-2005¹ estimated the global anemia prevalence as 24.8 %, affecting 1.62 billion people. Of those affected, 41.8 % occurred in pregnant women and 30.2 % in non-pregnant women. This equates to 56 million pregnant women and 468 million non-pregnant women worldwide.

The consequences of anemia has been shown to significantly affect morbidity and mortality, serving as an independent risk factor in many reports.² Iron deficiency anemia accounts for the greatest proportion of cases with an estimated 50% of all causes of anemia. The most common etiologies of iron deficiency anemia in premenopausal women is related to menstrual blood loss while in post-menopausal women, blood loss from the gastrointestinal tract is the most common etiology.

The consequences of anemia are related to a wide varying clinical spectrum irrespective of gender, or age. In all women, it may be associated with³ decreased cognitive function, concentration and attention. Pregnant women have an increased risk of preterm delivery, intrauterine growth restriction, and disturbed post-partum maternal –infant interaction, with potential for subsequent developmental deficits in childhood. Congdon et al⁴, in a study to determine the long-term effects of iron deficiency on the neural correlates of recognition memory in children concluded that not only do iron deficient neonates have delayed growth and development but a statistically significant increase in the number of cognitive and behavioral abnormalities up to ten years after iron repletion .

Anemia has a significant impact on overall quality of life, including such symptoms of easy fatigability, decreased functional capacity and exercise tolerance, depression and cold intolerance. Restless syndrome and pica especially for ice have also been associated with anemia in particular iron deficiency anemia. Most times women

fail to recognize pica as a problem, leading to missed opportunities to detect anemia earlier. In severe cases of anemia, congestive heart failure and arrhythmias may also be precipitated.

During pregnancy, several physiologic changes occur that lead to hemodilution as a result of plasma volume expansion, estimated to be approximately 40-50% until the 30th week of gestation, in addition to a 20-30% increase in red blood cell mass. Iron deficiency anemia may also occur in pregnancy due to a combination of increased maternal and fetal erythropoiesis. There is preferential transfer of maternal iron to the fetus to meet red blood cell synthesis requirements, leading to the further depletion of iron stores. During delivery blood loss, which may range from 250mls to > 1000mls may further serve to worsen anemia and iron deficiency.

In the postpartum period reversal of the physiologic changes of pregnancy, leads to the correction of anemia. However in some patients anemia may persist due to the co-existence of some of the following factors:^{5,6} multiparity, obesity, anemia during pregnancy, age < 20yrs and unmarried status. Additionally socioeconomic factors have a complex interplay in the development of post-partum anemia as demonstrated in the Special Supplemental Nutrition program for women, infants and children's study.⁵ Of the nearly 60 000 participants 27% overall, 40% of the Hispanic, and 48% of the non – Hispanic African Americans were found to be anemic between 4-26 weeks postpartum, despite these women having normal hemoglobin levels during pregnancy. The impact of anemia may be two fold affecting both maternal and fetal cognition leading to childhood developmental delay, due to the negative impact of maternal cognition, mood and behavior on maternal – fetal interactions.

In premenopausal women, blood loss secondary to menstruation is a common cause of iron deficiency anemia. This becomes problematic when menstrual blood loss exceeds 80 milliliters per cycle or lasts for greater than 7 days. In postmenopausal women, anemia

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prevalence varies widely, due to a combination of multiple factors that include nutritional deficiencies, such as iron, folate or vitamin B12, gastrointestinal losses and anemia due to chronic inflammation.

Irrespective of etiology the recognition of anemia and prompt attempts at correction are key to improving overall quality of life and symptoms associated with this condition. Treatment should be tailored to the clinical scenario and underlying etiology. Iron supplementation should be given to all patients except those with iron overload syndromes, with a goal of replenishing iron stores and correcting hemoglobin and red cell indices to normal.

Oral iron is an acceptable route of administration in those patients who tolerate enteric iron supplementation and when slow correction is clinically acceptable. However in the presence of intolerance or non-responsiveness to an oral regime, or when more rapid correction is needed parenteral iron may be required. Oral iron should be continued for 3 months following the correction of iron deficiency anemia to ensure adequate repletion of all iron stores.

In pregnancy parenteral iron may be required due to failure to meet the increased body demands despite adequate oral therapy, in addition to the side effect profile associated with oral therapy. Side effects that may be unacceptable include nausea, vomiting, colicky abdominal pain, diarrhea and constipation. There are currently six parenteral iron preparations approved for use in the USA these are: high molecular weight iron dextran, low molecular weight iron dextran, sodium ferric gluconate, iron sucrose, ferumoxytol and ferric carboxymaltose.⁷ Ayub et al in a study of a group of 100 pregnant women with gestational age greater than 12 weeks and confirmed diagnosis of iron deficiency anemia concluded that total parenteral iron replacement with low molecular weight iron dextran is an effective and safe method for the treatment of iron deficiency anemia in a selected group of pregnant women.⁸ Auerbach et al supported this in a study that evaluated the safety and efficacy of the rapid administration of 1 gram of low molecular weight iron dextran. In this study a subgroup analysis of 31 infusions in 43 women with pregnancy-

related anemia (second and third trimester, or postpartum), revealed four adverse reactions which were easily managed. This finding supported that of the entire study population that at a dose of 1 gram Intravenous dextran may be safe and efficacious in the management of iron deficiency anemia.

Reveiz et al⁹ in a Cochrane database review of treatment of iron deficiency anemia in pregnancy concluded that parenteral iron administration had a chance of evoking a hematological response, when compared with oral iron, but concerns remain about possible important adverse effects (for intravenous treatment: venous thrombosis and allergic reactions. This brings about the need for the performance of large, good quality trials, assessing clinical outcomes inclusive of adverse effects, as well as the effects of treatment by severity of anemia are required to help guide therapy further.

In conclusion, anemia in particular iron deficiency anemia affects a tremendous number of women across an entire life span, with multiple factors contributing to its development. The consequences of anemia have a significant impact on the quality of life and morbidity and mortality of patients, therefore its early recognition and treatment is important to improve quality of life and decrease serious morbidity for women globally.

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