

ORIGINAL RESEARCH COMMUNICATION

Effect of the maternal β^E -globin gene on hematologic responses to iron supplementation during pregnancy^{1,2,3}

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Background: It is customary in Southeast Asia to treat pregnant anemic women with iron supplements, but anemia in this region may be complicated by thalassemia and hemoglobinopathies, which lead to an ineffective response.

Objective: The aim was to determine whether routine iron supplementation during pregnancy in this area, which has a high prevalence of thalassemia and hemoglobinopathies, is an effective control strategy for iron deficiency anemia.

Design: A prospective study was conducted. Seventy-six pregnant women, including 43 who were heterozygous for the hemoglobin E (Hb E) gene, 20 who were heterozygous for Hb E and had α -thalassemia, and 13 who were homozygous Hb E, as well as 77 pregnant women who had no thalassemia gene, participated in this investigation. All pregnant women received a daily dose of 120 mg elemental Fe for an average of 133.5 d. Hematologic variables and serum ferritin concentrations were measured before supplementation and after supplementation at the gestational age of 28–32 wk. Differences in hematologic variables and serum ferritin were assessed.

Results: Significant differences in hemoglobin, mean corpuscular volume, and mean corpuscular hemoglobin responses were found between the nonthalassemia group and the 3 groups with the Hb E gene after adjustment for the following baseline values: age, body mass index, duration of iron supplementation, and ferritin concentration. Significant differences in the improvements in mean corpuscular volume and mean corpuscular hemoglobin values between the 3 groups indicate a poorer response at the cellular level in the pregnant women with the Hb E gene. Further analysis showed a significant difference in the hemoglobin response only for women who were homozygous for Hb E.

Conclusion: Iron supplementation during pregnancy is not beneficial for pregnant women who are homozygous for Hb E, but a routine intervention should not cause iron overload, as judged from this short observation period.

Key Words: Hemoglobin E • iron supplementation • thalassemia • serum ferritin • pregnancy • iron deficiency anemia

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