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**Impact of maternal iron deficiency anemia on fetal iron status and placental iron transporters in human pregnancy**

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**Erratum in**

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**Abstract**

Iron deficiency anemia is associated with maternal morbidity and poor pregnancy outcomes. Heme and non-heme iron transport proteins expressed in the placenta help in adequate iron supply from anemic mother to fetus. Here we examined the expression of placental iron trafficking molecules and their association with maternal and neonatal iron status in pregnant women with iron deficiency anemia (IDA). Pregnant women who received prenatal care at Christian Medical College, Vellore, India for childbirth were recruited. Pregnant women who were 18-35 years old with gestational age (GA) of ≥36 weeks were eligible to participate in the study. In a prospective cohort of pregnant women, 22 % were iron deficiency anemia and 42 % were iron replete. Samples were collected (Maternal blood, placental tissue, and cord blood) from pregnant women with a gestational age of ≥38 weeks at the time of delivery. The mean gestational age at the first visit and delivery was 12.8 ± 2.72 weeks and 39 ± 1.65 weeks, respectively. Hemoglobin (9.3 ± 0.9 g/dl) and ferritin (15.4(0.8-28.3) ng/ml) levels at delivery were significantly decreased in IDA as compared to controls. The fetal hemoglobin and ferritin levels were in the normal range in both groups. There was no correlation between maternal and cord blood hepcidin with fetal iron status in IDA. We further analyzed the expression of iron transport genes in the placenta of controls and the IDA group. Under maternal iron insufficiency, the expression of placental iron transporters DMT1, FPN1, and GDF15 was upregulated at the protein level. In IDA, placental GDF15 and ferroportin protein had an association with fetal iron status. These findings confirm that placental iron traffickers respond to maternal iron deficiency by increasing their expression and allowing sufficient iron to pass to the fetus.

**Keywords:**Iron deficiency anemia; Iron regulators; Placenta; Pregnancy.