

The Effect of Maternal Selenium Supplementation on Pregnancy Outcome and the Level of Oxidative Stress in Neonates

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Abstract

Background: Pregnancy is regarded as a condition which is usually accompanied by oxidative stress. This study was undertaken to investigate the effect of maternal selenium supplementation during gestation on the level of oxidative stress in neonates and the pregnancy outcome.

Methods: In this double-blind trial, 179 primigravid pregnant women in the first trimester of pregnancy were randomly assigned to receive 100 µg of selenium (Se group) or a placebo (control group) per day until delivery. The level of oxidative stress and serum selenium concentration was determined in the maternal and umbilical cord sera of the subjects. Oxidative stress was measured by means of a novel assay of prooxidant-antioxidant balance (PAB). The incidence of any pregnancy complications and outcomes was also evaluated in all neonates, being fully examined and followed up until 45 days.

Results: Although maternal selenium concentration was significantly higher in the Se group ($p < 0.001$), there was no statistically significant differences in the umbilical cord selenium content between the two groups. Selenium supplementation was not associated with any significant decrease in PAB values in the Se group. The incidence of neonatal complications and outcomes did not differ significantly between the groups.

Conclusion: Maternal selenium supplementation during pregnancy was safe but was not associated with a significant change in the extent of oxidative stress in neonates.

Keywords: Selenium; Prooxidant-Antioxidant balance; Neonate; Complication; Pregnancy

Introduction

Oxidative stress is defined as an imbalance between the generation of reactive oxygen species (ROS) and

the ability of biological antioxidant systems to neutralize these species.¹ Pregnancy is regarded as a condition which is usually accompanied by oxidative stress.^{2,3} This is due to the physiological changes that occur during pregnancy including the increase in the basal oxygen intake and consumption as well as elevated metabolic demand, finally leading to the overproduction of reactive oxygen species and decreased activity of antioxidant enzymes.^{4,5} On the other

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