

Abstract

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Lipid Peroxidation and Antioxidant Status in Preeclampsia: A Systematic Review.

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BACKGROUND: Preeclampsia is characterized by increased lipid peroxidation and diminished antioxidant capacity; however, there is no consensus as to the extent of these conditions.

OBJECTIVE: To assess the association of lipid peroxidation and antioxidant status with preeclampsia quantitatively using meta-analysis.

DESIGN: Systematic review and meta-analysis.

SEARCH STRATEGY: Studies were identified by performing an extensive search using BIOSIS (1986-2007), EMBASE (1986-2007), Medline (1986-2007), and the Cochrane database.

DATA ANALYSIS: Standardized mean differences (SMD) with 95% confidence intervals (CI) were used in the meta-analysis and sources of heterogeneity were examined.

MAIN RESULTS: In the included studies, the overall SMD was a 1.21 nmol/mL increase in serum malondialdehyde in preeclampsia cases compared to controls (95% CI: 0.76, 1.66). Overall, total serum thiobarbituric acid-reactive substances SMD were 1.62 nmol/mL greater in cases than in controls (95% CI: 0.27, 2.96). The overall estimate SMD for serum vitamin E was 1.12 nmol/mL less in cases than controls (95% CI: -1.77, -0.48) and vitamin C SMD overall estimate was -0.53 (95%CI: -1.03, -0.02), significantly lower in cases compared with controls. The overall SMD for erythrocyte superoxide dismutase was -2.37 (95% CI: -4.76, 0.03), a marginally significant decrease in cases versus controls.

CONCLUSIONS: Established preeclampsia is associated with increased concentrations of oxidative stress markers including lipid peroxidation products, and a reduction in antioxidant concentrations.

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