490 EFFECT OF INTRAVENOUS MAGNESIUM SULFATE ON FREE INTRACELLULAR CALCIUM AND MAGNESIUM MEASURED IN PERIPHERAL BLOOD MONOCYTES OF WOMEN WITH PREECLAMPSIA

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OBJECTIVE: Intracellular calcium and magnesium are responsible for many cellular functions, including vascular tone and arterial blood flow as calcium channels are known to be magnesium-dependent. We investigated the potential ameliorative effects of magnesium sulfate in preeclampsia by measuring its effect on intracellular free calcium and magnesium in peripheral blood mononuclear cells (PBMCs) as a surrogate of maternal smooth muscle.

STUDY DESIGN: After informed consent was obtained, peripheral blood was obtained before and after magnesium sulfate administration to preeclamptic gravidas. Patients were determined to have preeclampsia by ACOG criteria. After Histopaque isolation of PBMCs, intracellular free calcium and magnesium levels were measured ratiometrically using the fluorescent molecular probes Fura-2 and mag Fura-2, respectively.

RESULTS: Six patients were included in the study. Intravenous magnesium sulfate resulted in a significant decrease in free intracellular calcium and a significant increase in free intracellular magnesium levels in PBMCs ($p<0.0313$, $p<0.0126$, respectively).

CONCLUSION: Magnesium sulfate infusion resulted in a lowering of free intracellular calcium and an elevation in free intracellular magnesium levels in PBMCs. Some of the ameliorative effects of intravenous magnesium sulfate may be produced by alterations in intracellular ionic calcium as either a direct effect on contractile proteins or as a secondary messenger for additional processes.

Intracellular free calcium and magnesium in PBMCs

	Before Mg infusion	After Mg infusion	Difference	p-value
Calcium (nmol/L)	64.4 ± 21.7	24.8 ± 4.0	39.6 ± 20.3	0.0313
magnesium (umol/L)	0.614 ± 0.119	0.929 ± 0.227	−0.315 ± 0.203	0.0126

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491 EFFECT OF INTRAVENOUS MAGNESIUM SULFATE ON MARKERS OF OXIDATIVE STRESS IN WOMEN WITH PREELCLAMPSIA

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OBJECTIVE: Lipid markers of oxidative stress have found to be increased in patients with preeclampsia. Little is known concerning the effects of intravenous magnesium sulfate on markers of oxidative stress in patients with preeclampsia. We investigated the potential ameliorative effects of intravenous magnesium sulfate in preeclampsia by measuring its effects on 8-isoprostane and TBARS, both markers of oxidative stress.

STUDY DESIGN: After informed consent was obtained, peripheral blood was obtained before and after magnesium sulfate administration to preeclamptic gravidas. Plasma 8-isoprostane was determined following C-18 solid phase extraction by enzyme immunoassay. Plasma TBARS was measured colorimetrically using malondialdehyde as a standard. Patients were determined to have preeclampsia by ACOG criteria.

RESULTS: Twelve patients were included in the study. Intravenous magnesium sulfate resulted in a significant reduction of plasma 8-isoprostane ($p<0.0085$), while levels of TBARS remained unchanged ($p<0.7872$).

CONCLUSION: Magnesium sulfate infusion resulted in a lowering of serum 8-isoprostane levels. Some of the ameliorative effects of intravenous magnesium sulfate seen in preeclampsia may be due to a decrease in lipoperoxidation.

Compound	Before Mg infusion	After Mg infusion	Difference	p-value
8-isoprostane (pg/mL)	493.5 ± 245.2	244.4 ± 87.6	249.1 ± 253.3	0.0085
TBARS (nmol MDA/mL)	6.5 ± 2.2	6.8 ± 2.8	−3.3	0.7872

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492 ORAL INFLAMMATORY CYTOKINES AS MARKERS OF ACUTE PERIODONTAL DISEASE ARE NOT ASSOCIATED WITH PREECLAMPSIA

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OBJECTIVE: Recent studies have suggested that periodontal disease (PD) may contribute to the pathogenesis of PE by increasing the systemic inflammatory response. Cytokines in the gingival crevicular fluid (GCF) are indicators of the inflammatory response in PD. The objective of this study was to assess the levels of inflammatory cytokines interleukin (IL) -1, IL-2, IL-4, IL-5, IL-6, IL-10, IL-13, interferon (IFN)- and tumor necrosis factor (TNF)- in GCF in preeclamptic (severe and mild) and normotensive pregnant women and to evaluate a possible association between specific cytokines and PE.

STUDY DESIGN: A case-control study was carried out among pregnant women admitted for delivery at four Quebec hospitals between January 2003 and March 2006. The study population consisted of 89 preeclamptic women (32 severe and 57 mild) and 237 normotensive pregnant controls. GCF samples were collected from six sites for each case and control within 48 hours of delivery. The levels of cytokines in GCF were measured by enzyme-linked immunoabsorbant assay (ELISA). The Mann–Whitney U-test was used for statistical analysis.

RESULTS: Most of the cytokine levels were undetectable in GCF and were regarded as 0. There were no significant differences in the levels of IL -1, IL-2, IL-4, IL-5, IL-6, IL-10, IL-13, IFN- and tumor necrosis factor (TNF)- in gingival crevicular fluid (GCF) in preeclampsia compared with normotensive pregnant women. The levels of IL-10, an anti-inflammatory cytokine, were higher in severe preeclamptic women than in normotensive pregnant women ($p < 0.05$).

CONCLUSION: Overall, our findings do not support the hypothesis that inflammatory cytokines in the GCF are associated with PE. The difference observed between PE and controls in levels of IL-10 requires confirmation in further studies.

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493 CHORIONIC VILLUS SAMPLING (CVS) IS NOT ASSOCIATED WITH HYPERTENSIVE DISORDERS OF PREGNANCY

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OBJECTIVE: Recently, we reported an association between CVS and severe hypertensive (HTN) disorders of pregnancy. However, the results of that study were confounded by older maternal age (MA) and higher BMI in the CVS group. The objective of this study is to evaluate the effect of MA, BMI, parity, ethnicity, conception with assisted reproductive technology (ART), number of device insertions, and estimated weight of villi, on subsequent HTN disorders following CVS.

STUDY DESIGN: Patients with singleton gestations, undergoing CVS between 10.0 to 13.9 weeks gestational age (GA), and who delivered at Cedars-Sinai Medical Center (CSMC) were included. The control group consisted of women with singleton gestations having 1st-trimester aneuploidy screening (FTAS) with nuchal translucency and serum biochemistry between 11.0 and 13.9 weeks GA, who also delivered at CSMC. FTAS patients who underwent invasive prenatal diagnosis (CVS or amniocentesis) were excluded from the control group. The diagnosis of HTN was based on established ACOG criteria.

RESULTS: After exclusion criteria were met, there were 1757 women who had CVS and 928 controls. The mean MA in the CVS group was 38.3 ± 3.1 (95% CI=38.2-38.5) and in the FTAS group was 33.5 ± 4.3 (95% CI=33.2–33.8) ($p<0.05$). Using multivariate logistic regression, variables associated with increased risk for HTN included: older MA (OR=1.20, 95% CI=1.02–1.41), higher BMI (OR=1.26, 95%CI=1.14–1.38), nulliparity (OR=2.43, 95% CI=1.62–3.62), and African American ethnicity (OR=2.47 , 95%CI=1.46-4.18). Using logistic regression, Chi-square, and Fisher's exact test, variables not associated with increased risk for HTN included: CVS (OR=0.76, 95%CI=0.47–1.25), ART (2-sided Pr=0.26, p=0.26), villus sample size (t=0.77, p=0.77), and number of device insertions (t=1.00, p=0.9).

CONCLUSION: Factors associated with increased risk of HTN in pregnancy include older MA, higher BMI, nulliparity and African-American ethnicity. CVS does not increase the risk for HTN, regardless of sample size, number of device insertions, or conception with ART.

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