

Sodium Imbalance in Preeclampsia

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Abstract

Background: Preeclampsia is a form of high blood pressure manifested during pregnancy. It is a common major complication causing significant morbidity and mortality; however, its etiology is unknown. Moreover, data on cation pattern during pregnancy are conflicting, and its relation with endothelial derived nitric-oxide and sex hormones have not been described adequately.

Objective: to demonstrate the pattern of sodium during preeclampsia with respect to normal pregnancy, and the correlation of the above parameter with nitric-oxide pathway.

Subject and methods: the present study is a cross-sectional case-control study includes measurement of nitric oxide (NO), nitric oxide synthase (NOS), serum and urinary sodium in 60 patients with preeclampsia. They were classified into two groups according to the gestational age:

- Preeclampsia in the second trimester G1: (n=30).
- Preeclampsia in the third trimester G2: (n=30).

The results were compared with 60 apparently healthy pregnant women (as controls). They

were classified according to the gestational age into two groups:

- Pregnants in the second trimester G3: (n=30).
- Pregnants in the third trimester G4: (n=30).

Results: showed a significant reduction in serum NO and NOS in the preeclampsia with significant increase in serum sodium accompanied by urinary retention of this cation (expressed as urinary sodium per urinary creatinine), as compared to the controls.

The regulatory effect of NO on fluid balance is supported by the positive correlation between NO and urinary sodium excretion indicating that NO had different effects on renal tubular reabsorption of sodium.

Conclusion: preeclampsia (in different gestational age groups) experienced vasospasm (manifested by low s.nitrite) and altered sodium status when compared with healthy pregnant women matched with their age and gestational age.

Keywords: preeclampsia, nitric oxide, Sodium.

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Introduction

Preeclampsia is defined as the onset of hypertension and the presence of proteinuria during pregnancy, usually occurring after the 20th week of gestation in a previously normotensive woman and resolving completely by the sixth week after delivery of fetus^(1, 2).

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The pathophysiology of preeclampsia is thought to represent a defective response to the physiologic demands of normal pregnancy^(2, 3). Normal pregnancy is associated with profound changes in maternal homeostasis⁽⁴⁾. The endpoint of these changes is to provide the fetus with the necessary environment for growth and the mother with adequate protection against pregnancy complication⁽⁴⁾.

Early modifications in the regulation of arginine-vasopressin and the rennin-angiotensin-aldosterone system are responsible for the increase in maternal plasma volume to the extent of 50% near term⁽⁴⁾. The mechanisms responsible for these important changes are still