

Mechanisms of adverse pregnancy outcomes in women with PCOS and ways to prevent these outcomes by knowing more about these mechanisms

Sedigheh Hantoushzadeh¹, Maasoumeh Saleh¹, Sepehr Aghajanian², and Mahboubeh Saleh³

¹Tehran University of Medical Sciences

²Alborz University of Medical Sciences

³Fasa University of Medical Science

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Sedigheh Hantoushzadeh (1), Maasoumeh Saleh* (2), Sepehr Aghajanian (3), Mahboubeh Saleh (4)

1-Professor of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Maternal-Fetal Neonatal Research Center, Tehran University of medical sciences, Valiasr Hospital, Tehran, Iran.

2-Fellowship of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Tehran University of Medical Sciences, Shariati hospital, Tehran, Iran.

3-Department of Community Medicine, School of Medicine, Alborz University of Medical Sciences, Karaj, Iran.

4-MD, Department of Urogynecology, Fasa University of Medical Sciences, Fars, Iran.

Corresponding author* : Maasoumeh Saleh, E-Mail: salehmaasoumeh@yahoo.com

Dear editor,

We have read the study by Valgeirsdottir et al. (1), and wanted to congratulate the authors for this prosperous article on risk of stillbirth in polycystic ovarian syndrome (PCOS) women and make some minor contributions.

PCOS is a complex disorder with unclear exact etiology. It involves cardiovascular (CV), metabolic, endocrine, and reproductive system. Several studies have reported an increase in adverse maternal and fetal outcomes for women with PCOS, independent of the use of reproductive technology or body mass index (BMI). PCOS is strongly associated with preeclampsia (PE), gestational diabetes mellitus (GDM), very preterm birth (PTB), large for gestational age fetuses (LGA), and asphyxia during labor (2). In the study by Valgeirsdottir et al. (1), PCOS had a 50% increased risk of stillbirth compared to women without PCOS, especially at term. In this study, the mechanisms of stillbirth are well explained, which include the following: 1-Hyperandrogenism and associated insulin resistance 2-Obesity 3-Hypertensive disorders 4-Placental diseases, fetal anomalies and umbilical cord abnormalities 5-Fetal growth restriction (FGR) 6-Gestational diabetes 7-Chronic inflammation, oxidative state and mitochondrial dysfunction.

Serum concentration of homocysteine (Hcy) decreases during pregnancy due to physiologic fall in albumin, as

well as folic acid supplementation (3). High serum Hcy level in PCOS women is an independent risk factor for atherosclerotic vascular disease and thromboembolic disorders (4) and it is associated with insulin resistance (5) and adverse pregnancy outcomes, including PE, PTB, and low birth weight (LBW) (6). Elevated C-reactive protein (CRP) levels indicate a low-grade inflammation in PCOS, it is the most sensitive predictor of CV morbidity (7) and also it is associated with adverse pregnancy outcomes (8). These two important mechanisms, including high Hcy serum level and inflammation can play a role in the adverse pregnancy consequences. So, the measurement of serum Hcy level and CRP may be helpful in PCOS patient's risk stratification for pregnancy complications.

Another important issue is to suggest ways to prevent these adverse pregnancy consequences in PCOS patients. Possible options are: 1-Lifestyle modification 2-pharmacological options: metformin, statins, aspirin and high dose folic acid. The possible mechanisms by which aspirin prevents adverse pregnancy outcomes are: 1-improvement in the placentation 2-inhibition of platelet aggregation and its antithrombotic effect 3-antiinflammatory effects and endothelial stabilization (9). Metformin has beneficial effects on endothelial function and improve insulin resistance (10). Statins reverses the pregnancy-specific angiogenic imbalance and improve endothelial function (11). High dosage of folic acid reduces Hcy concentration (12), and through this mechanism may be effective in reducing pregnancy complications. Various studies have been performed with these goals. But in the future, more extensive studies on methods of preventing adverse pregnancy consequences by focusing on their mechanisms are recommended in PCOS women.

Statements

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

All authors contributed to writing and revising this letter.

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