

Risk Factors for Gestational Hypertension in Women With Polycystic Ovary Syndrome

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Citation: Stevanovic, A., Smiljic, S., Ilic Pasquali, N., & Putnikovic Tomic, B. (2026). Risk factors for gestational hypertension in women with polycystic ovary syndrome. *International Journal of Health Supplements*, 1(Suppl. 3), 330–331. <https://doi.org/10.82051/ijhs-2026-Suppl.3>

Introduction. Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women of reproductive age and is increasingly recognized as a condition associated with increased cardiometabolic risk. This study aimed to identify risk factors for gestational hypertension across different PCOS phenotypes and to assess the potential for predicting gestational hypertension in pregnant women with PCOS.

Methods. This study included 73 primiparous women with PCOS who were evaluated after 20 weeks of gestation because of suspected gestational hypertension. All participants underwent ambulatory blood pressure monitoring (ABPM) and were classified into two groups according to their blood pressure profiles: women with gestational hypertension ($n = 41$) and normotensive women ($n = 32$). Pre-pregnancy cardiometabolic risk factors included obesity, insulin resistance, diabetes, elevated cholesterol levels, family history of hypertension, oral contraceptive use, and long-term smoking history. Laboratory assessments included glycemia, uric acid, total cholesterol, triglycerides, high-density lipoprotein cholesterol (HDL-C), liver enzymes (AST, ALT, and GGT), albumin, and estimated glomerular filtration rate (eGFR). Pre-pregnancy anti-Müllerian hormone levels, routine urinalysis, and liver and kidney function parameters measured during pregnancy were also evaluated. Insulin resistance was assessed using the homeostasis model assessment of insulin resistance (HOMA2-IR).

Results. Women with gestational hypertension were older than normotensive women (40.5 ± 4.6 vs 36.8 ± 4.5 years; $p = 0.001$) and had a higher pre-pregnancy body mass index (BMI) (30.8 ± 4.5 vs 27.3 ± 3.4 kg/m²; $p = 0.001$). They also had higher uric acid levels (338.6 ± 89.0 vs 293.0 ± 71.7 ; $p = 0.021$), HOMA2-IR values (2.90 ± 0.62 vs 2.59 ± 0.46 ; $p = 0.021$), total cholesterol levels (5.2 ± 1.12 vs 5.0 ± 1.14 ; $p = 0.006$), and LDL-C levels (3.7 ± 1.13 vs 3.5 ± 1.25 ; $p = 0.002$), together with lower HDL-C levels (1.11 ± 0.28 vs 1.16 ± 0.43 ; $p = 0.046$). A positive family history of hypertension was more frequent among women with gestational hypertension (27 [67.5%] vs 14 [34.1%]; $p = 0.028$). The hyperandrogenic PCOS phenotype was also more frequently observed in this group (34 [82.9%] vs 7 [17.1%]; $p = 0.005$). Multivariable analysis identified older age (OR = 1.237; 95% CI 1.066–1.437; $p = 0.005$), higher pre-pregnancy BMI (OR = 1.223; 95% CI 1.028–1.454; $p = 0.023$), and PCOS phenotype (OR = 0.139; 95% CI 0.030–0.643; $p = 0.012$) as independent predictors of gestational hypertension. Among women aged 35 years or older, gestational hypertension was significantly more frequent (37 [90.2%] vs 4 [9.8%]; $p = 0.022$).

Discussion. In this cohort of women with PCOS, gestational hypertension was associated with older

maternal age, higher pre-pregnancy BMI, insulin resistance, an adverse lipid profile, elevated uric acid levels, a positive family history of hypertension, and the hyperandrogenic PCOS phenotype. Older age and higher pre-pregnancy BMI were independent predictors in the multivariable analysis. These findings support the importance of preconception cardiometabolic assessment and early identification of women at increased risk of hypertensive disorders during pregnancy. The findings should be interpreted cautiously because of the relatively small sample size and the observational study design. Further studies involving larger cohorts are needed to validate these associations and establish the predictive performance of a risk model..

Keywords: Gestational Hypertension, Polycystic Ovary Syndrome, Cardiometabolic Risk, Hyperandrogenism, Insulin Resistance

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Funding: This research received no external funding. **Conflict of Interest:** The authors declare no conflict of interest.