UDC: 618.3-008.6-036.87:618.2-084

PREGNANCY OUTCOMES IN WOMEN WITH A HISTORY OF PREECLAMPSIA: A RETROSPECTIVE STUDY IN ANDIJAN REGION

Nasretdinova Dildora Bahtiyarovna, Obidova Visola Lutfullayevna,
Department of 1-Obstetrics and Gynecology,

Andijan State Medical Institute, Andijan, Uzbekistan

Abstract: Background: Women with a history of preeclampsia (PE) are at significantly elevated risk for recurrence in subsequent pregnancies, as well as for long-term cardiovascular complications. This study aims to analyze the recurrence rate of preeclampsia and perinatal outcomes in women who experienced hypertensive disorders in their previous pregnancy within the population of the Andijan region. Methods: A retrospective cohort study was conducted at the Andijan Regional Perinatal Center (2021–2024). The study included 250 multiparous women: Group A (n=120) included women with a history of PE in their first pregnancy, and Group B (n=130) included women with a normotensive first pregnancy. Maternal characteristics, inter-pregnancy intervals, and current pregnancy outcomes were analyzed. Results: The recurrence rate of preeclampsia in Group A was 24.2% (29/120), compared to a new onset rate of 3.1% in Group B (p < 0.001). Women who had early-onset PE (<34 weeks) in their first pregnancy had a significantly higher recurrence risk (45.0%) compared to those with late-onset PE (18.0%). Adverse perinatal outcomes, including preterm birth and low birth weight, were two times more frequent in the recurrence group. Conclusion: A history of preeclampsia is the single strongest predictor of adverse outcomes in subsequent pregnancies. In the Andijan region, the recurrence rate remains high, necessitating targeted preconception counseling and mandatory aspirin prophylaxis for this high-risk demographic.
Keywords: Recurrent preeclampsia, maternal history, inter-pregnancy interval, perinatal outcomes, high-risk pregnancy, aspirin.

PREEKLAMPSIYA KECHIRGAN AYOLLARDA KEYINGI HOMILADORLIK NATIJALARI: ANDIJON VILOYATI BO'YICHA RETROSPEKTIV TADQIQOT

Annotatsiya: Kirish: Anamnezida preeklampsiya (PE) bo'lgan ayollarda keyingi homiladorliklarda kasallikning qaytalanishi (retsidivi) va uzoq muddatli yurak-qon tomir asoratlari xavfi sezilarli darajada yuqori bo'ladi. Ushbu tadqiqot Andijon viloyati aholisi orasida avvalgi homiladorligida gipertenziv holatlarni o'tkazgan ayollarda preeklampsiya qaytalanish darajasi va perinatal natijalarni tahlil qilishga qaratilgan. Usullar: Andijon viloyati perinatal markazida (2021–2024 yillar) retrospektiv kohort tadqiqot o'tkazildi. Tadqiqotga 250 nafar qayta tug'uvchi ayol kiritildi: A guruhi (n=120) birinchi homiladorligida PE kuzatilgan ayollar va B guruhi (n=130) birinchi homiladorligi normotenziv o'tgan ayollar. Onaning xususiyatlari, tug'ruqlar oralig'i va joriy homiladorlik natijalari tahlil qilindi. Natijalar: A guruhida preeklampsiyaning qaytalanish darajasi 24,2 foizni (29/120) tashkil etdi, B guruhida esa yangi paydo bo'lgan PE ko'rsatkichi 3,1 foiz bo'ldi (p < 0.001). Birinchi homiladorligida erta

boshlanuvchi PE (<34 hafta) kuzatilgan ayollarda qaytalanish xavfi kech boshlanuvchi PE ga nisbatan (18,0%) sezilarli darajada yuqori (45,0%) ekanligi aniqlandi. Muddatidan oldin tug'ruq va kam vaznli bola tug'ilishi kabi salbiy perinatal oqibatlar retsidiv guruhida ikki baravar ko'p kuzatildi. Xulosa: Preeklampsiya tarixi keyingi homiladorliklardagi salbiy oqibatlarning eng kuchli prognoz omilidir. Andijon viloyatida qaytalanish darajasi yuqoriligicha qolmoqda, bu esa ushbu yuqori xavf guruhidagi ayollar uchun homiladorlikdan oldingi maqsadli maslahat va majburiy aspirin profilaktikasini talab qiladi.

Kalit so'zlar: Qaytalanuvi preeklampsiya, ona anamnezi, tug'ruqlar oralig'i, perinatal natijalar, yuqori xavfli homiladorlik, aspirin.

ИСХОДЫ БЕРЕМЕННОСТИ У ЖЕНЩИН С ПРЕЭКЛАМПСИЕЙ В АНАМНЕЗЕ: РЕТРОСПЕКТИВНОЕ ИССЛЕДОВАНИЕ В АНДИЖАНСКОЙ ОБЛАСТИ

Аннотация: Введение: Женщины с преэклампсией (ПЭ) в анамнезе имеют значительно повышенный риск рецидива при последующих беременностях, а также риск долгосрочных сердечно-сосудистых осложнений. Данное исследование направлено на анализ частоты рецидивов преэклампсии и перинатальных исходов у женщин, перенесших гипертензивные расстройства при предыдущей беременности, в популяции Андижанской области. Методы: В Андижанском областном перинатальном центре было проведено ретроспективное когортное исследование (2021–2024 гг.). В исследование были включены 250 повторнородящих женщин: группа А (n=120) включала женщин с ПЭ при первой беременности, а группа Б (n=130) — женщин с нормотензивной первой беременностью. Был проведен анализ характеристик матери, интервалов между беременностями и исходов текущей беременности. Результаты: Частота рецидивов преэклампсии в группе А составила 24,2% (29/120) по сравнению с 3,1% новых случаев в группе Б (р < 0.001). У женщин с ранней ПЭ (<34 недель) при первой беременности риск рецидива был значительно выше (45,0%) по сравнению с женщинами с поздней ПЭ (18,0%). Неблагоприятные перинатальные исходы, включая преждевременные роды и низкий вес при рождении, встречались в два раза чаще в группе рецидива. Заключение: Анамнез преэклампсии является самым сильным предиктором неблагоприятных исходов при последующих беременностях. В Андижанской области частота рецидивов остается высокой, что требует целенаправленного преконцепционного консультирования и обязательной профилактики аспирином для этой группы высокого риска.

Ключевые слова: Рецидивирующая преэклампсия, материнский анамнез, интергенетический интервал, перинатальные исходы, беременность высокого риска, аспирин.

INTRODUCTION

Preeclampsia (PE) is a multisystem disorder of pregnancy defined by the new onset of hypertension and proteinuria or end-organ dysfunction after 20 weeks of gestation. It affects approximately 5-8% of all pregnancies globally and remains one of the leading causes of maternal mortality and iatrogenic preterm birth. While PE resolves with the delivery of the placenta, its impact resonates far beyond the index pregnancy. For women who have experienced this hypertensive disorder, subsequent pregnancies carry a heightened sense of anxiety and a

statistically significant risk of recurrence. The concept of "obstetric memory" or "vascular imprinting" suggests that the physiological stress of a previous PE episode may permanently alter maternal endothelial function, making recurrence more likely in future gestations.

In Uzbekistan, particularly in the Andijan region, the birth rate is high, and multiparity is a common demographic feature. Consequently, managing subsequent pregnancies in women with a history of PE is a frequent and complex clinical challenge for obstetricians. The management of these patients is often complicated by inter-pregnancy factors such as weight gain, the development of chronic hypertension, and increasing maternal age.

While international literature cites recurrence rates ranging widely from 10% to 65% depending on the severity and timing of the first episode, local epidemiological data specific to the Fergana Valley region is sparse. Genetic, environmental, and dietary factors unique to this population may influence recurrence patterns. Furthermore, there is often a gap in "inter-conception care"—the critical period between pregnancies where risk factors could potentially be modified.

Understanding the specific risk profile in our population is crucial for developing targeted surveillance protocols. Factors such as the inter-pregnancy interval (IPI), changes in Body Mass Index (BMI) between pregnancies, and the gestational age at the first onset of PE play critical roles in prognostication. At the Andijan Regional Perinatal Center, which serves as a tertiary referral center handling the most complex obstetric cases in the region, we are uniquely positioned to study this phenomenon. This study aims to quantify the recurrence rate of PE in our setting, identify the primary determinants of adverse outcomes in second pregnancies, and evaluate the effectiveness of current prevention strategies employed in the region.

LITERATURE REVIEW

Epidemiology of Recurrence The risk of preeclampsia in a second pregnancy is largely determined by the outcome of the first. According to a landmark systematic review by outcome *Sibai et al.*, the overall risk of recurrent preeclampsia is approximately 15-20% for women with a history of PE, compared to 1-2% for women with a prior uncomplicated pregnancy. However, this risk is not uniform. It skyrockets to nearly 50% if the index pregnancy was complicated by severe, early-onset PE (delivery <34 weeks) or HELLP syndrome. Conversely, women who had a normotensive first pregnancy have a significantly reduced risk of developing PE in subsequent pregnancies, a phenomenon known as the "protective effect of multiparity."

Pathophysiological Mechanisms of Recurrence Two main theories explain recurrence. The "Placental Theory" suggests that recurrence is due to defective trophoblast invasion, often linked to partner-specific immune maladaptation. This explains why the risk might change with a new partner. The "Maternal Constitutional Theory" posits that pregnancy acts as a cardiovascular stress test. Women who "fail" this test (develop PE) likely have underlying, pre-existing endothelial dysfunction or metabolic syndrome traits that persist between pregnancies. Thus, a second pregnancy re-exposes the same vulnerable maternal system to the physiological stress of gestation, leading to recurrence.

Predictors of Recurrence: The Role of IPI and BMI - Inter-Pregnancy Interval (IPI): Research suggests a "J-shaped" curve regarding the interval between pregnancies. Short intervals (<18 months) do not allow the maternal body to recover from the inflammatory state of the previous pregnancy. Conversely, long intervals (>5 years) are associated with a "loss of adaptation" to

paternal antigens, effectively resetting the risk to that of a primigravida. *Mostello et al. (2008)* found that the risk of PE recurrence doubles when the inter-pregnancy interval exceeds 5 years.

Body Mass Index (BMI) - Obesity is a state of chronic low-grade inflammation. Weight gain between pregnancies is a potent modifiable risk factor. Studies indicate that even a modest increase in BMI (1-2 units) between pregnancies significantly increases the risk of recurrent hypertensive disorders, while weight loss in obese women can mitigate this risk.

Prevention Strategies - Evidence and Gaps The *ASPRE trial (2017)* revolutionized prevention by establishing low-dose aspirin (150 mg) as a key prophylactic agent for high-risk women, reducing the rate of preterm PE by 62%. Current guidelines (NICE, ACOG, FIGO) unanimously recommend aspirin prophylaxis for women with a history of PE. However, implementation is often inconsistent. In many low-resource settings, including parts of Central Asia, initiation of aspirin is often delayed beyond the critical 16-week window, or dosages used are suboptimal (<100 mg), reducing efficacy. Additionally, calcium supplementation is recommended by WHO for populations with low dietary calcium intake to prevent PE, a strategy highly relevant to the dietary patterns in Uzbekistan.

MATERIALS AND METHODS

Study Design and Setting A retrospective cohort study was conducted using archival medical records from the Andijan Regional Perinatal Center covering the period from January 2021 to January 2024.

Participants The study analyzed 250 multiparous women carrying singleton pregnancies who delivered at our center. Group A (Study Group, n=120): Women whose immediate previous pregnancy was complicated by preeclampsia (mild or severe). Group B (Control Group, n=130): Women whose immediate previous pregnancy was uncomplicated and normotensive.

Data Collection We extracted data regarding: Maternal demographics (age, BMI at booking). Characteristics of the *previous* pregnancy (gestational age at delivery, severity of PE). Inter-pregnancy interval (time between previous birth and current conception). Outcomes of the *current* pregnancy (incidence of PE, gestational age at delivery, birth weight, APGAR scores).

Statistical Analysis Statistical processing was performed using IBM SPSS v.26. Categorical variables were compared using the Chi-square test, and continuous variables using the Student's t-test. Odds Ratios (OR) with 95% Confidence Intervals (CI) were calculated to assess risk.

RESULTS

Recurrence of Preeclampsia The study confirmed a significantly higher incidence of hypertensive disorders in women with a history of PE.

Table 1: Incidence of Preeclampsia in Current Pregnancy

Outcome	Group A (History of PE) (n=120)	Group B (Normotensive History) (n=130)	Odds Ratio (95% CI)	P-value
No Preeclampsia	91 (75.8%)	126 (96.9%)	-	-
Recurrent/New PE	29 (24.2%)	4 (3.1%)	10.1 (3.4 – 29.8)	< 0.001
-- *Mild PE*	18 (15.0%)	3 (2.3%)	-	-

-- *Severe PE*	11 (9.2%)	1 (0.8%)	-	-

Impact of the First Pregnancy's Severity We analyzed Group A further to see if the timing of the *first* PE episode predicted the *second*.

Women who had Early-onset PE (<34 weeks) in their first pregnancy had a recurrence rate of 45.0%.

Women who had Late-onset PE (≥37 weeks) in their first pregnancy had a recurrence rate of 18.0%.

Perinatal Outcomes The recurrence of PE took a toll on neonatal outcomes. Infants born to mothers in Group A had a lower mean birth weight (2850g ± 450g) compared to Group B (3300g ± 380g). The rate of admission to the Neonatal Intensive Care Unit (NICU) was 18% in Group A versus 4% in Group B.

Risk Factors for Recurrence Within Group A, two factors were strongly associated with recurrence: 1) BMI Increase - Women who gained >5 BMI points between pregnancies had a 2.5x higher risk of recurrence. 2) Long Interval - An inter-pregnancy interval of >6 years was associated with a 30% recurrence rate, compared to 18% for intervals of 2-4 years.

DISCUSSION

Our findings at the Andijan Regional Perinatal Center align with global trends but highlight specific local challenges. The overall recurrence rate of 24.2% indicates that one in four women with a history of PE will face the disease again. This is a staggering statistic that justifies treating "History of PE" as a major risk factor, independent of other variables.

The data underscores the prognostic value of the *first* pregnancy's clinical course. A woman who delivered prematurely due to PE in her first pregnancy is at extremely high risk (45% recurrence). In our practice, these women are often not monitored closely enough in the early stages of their second pregnancy.

The association with BMI gain between pregnancies offers a window for intervention. Inter-conception care—counseling women to lose weight *after* a PE pregnancy and *before* conceiving again—could potentially reduce the recurrence rate.

Furthermore, only 40% of the women in Group A reported taking low-dose aspirin in the first trimester of the current pregnancy. This represents a missed opportunity for prevention, as aspirin is most effective in preventing the recurrent, early-onset type of PE.

CONCLUSION

A history of preeclampsia acts as a "stress test" failure, predicting high vascular risk in future pregnancies.

The risk of PE recurrence in the Andijan region is approximately 24%, rising to 45% if the first episode was severe/early.

Inter-pregnancy weight gain and long birth intervals exacerbate this risk.

Recurrence leads to significantly poorer neonatal outcomes, increasing the burden on NICU services.

Establish a specialized follow-up protocol for women post-delivery to manage cardiovascular risk and plan future pregnancies.

All women with a history of PE should ideally be prescribed Aspirin (150 mg) starting from 12 weeks of gestation in subsequent pregnancies.

Focus on weight management and optimal birth spacing (2-4 years) for this specific demographic.

REFERENCES

1.   Sibai, B. M., et al. (1991). Risk factors for preeclampsia, abruptio placentae, and adverse neonatal outcomes among women with chronic hypertension. *New England Journal of Medicine*, 339(10), 667-671.

2.   Mostello, D., et al. (2008). Recurrence of preeclampsia: effects of inter-pregnancy interval and change in body mass index. *American Journal of Obstetrics and Gynecology*, 199(1), 55.e1-55.e7.

3.   Bramham, K., et al. (2011). Chronic hypertension and pregnancy outcomes: systematic review and meta-analysis. *BMJ*, 348, d2301.

4.   Bartsch, E., et al. (2016). Clinical risk factors for pre-eclampsia determined in early pregnancy: systematic review and meta-analysis of large cohort studies. *BMJ*, 353, i1753.

5.   World Health Organization. (2018). *WHO recommendations for prevention and treatment of pre-eclampsia and eclampsia*. WHO Press.