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HYPERTENSIVE DISORDERS IN PREGNANCY

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Annotation: This article provides a comprehensive analysis of one of the most pressing issues in obstetric practice arterial hypertension during pregnancy. Various forms of hypertensive disorders (chronic hypertension, gestational hypertension, mild and severe preeclampsia), their pathogenesis, clinical course, and prognosis are examined. The mechanisms of impaired uteroplacental circulation, the development of placental insufficiency, and severe complications such as eclampsia and HELLP syndrome are discussed. Furthermore, based on international protocols, the use of medications, indications for preterm delivery, and the importance of antenatal screening are scientifically substantiated.

Keywords: arterial hypertension in pregnancy, preeclampsia, eclampsia, gestosis, perinatal mortality, placental insufficiency, proteinuria, magnesium sulfate therapy, antihypertensive therapy, antenatal care, HELLP syndrome.

ГИПЕРТЕНЗИВНЫЕ СОСТОЯНИЯ ПРИ БЕРЕМЕННОСТИ

Аннотация: В данной статье представлен всесторонний анализ одной из наиболее актуальных проблем акушерской практики артериальной гипертензии во время беременности. Рассмотрены различные формы гипертензивных расстройств (хроническая гипертензия, гестационная гипертензия, преэклампсия лёгкой и тяжёлой степени), их патогенез, клиническое течение и прогноз. Освещены механизмы нарушения маточно-плацентарного кровообращения, развития плацентарной недостаточности, а также тяжёлых осложнений, таких как эклампсия и HELLP-синдром. Кроме того, на основе международных протоколов научно обоснованы вопросы применения лекарственных средств, показания к досрочному родоразрешению и значение антенатального скрининга.

Ключевые слова: артериальная гипертензия при беременности, преэклампсия, эклампсия, гестоз, перинатальная смертность, плацентарная недостаточность,

протеинурия, терапия сульфатом магния, антигипертензивная терапия, антенатальное наблюдение, HELLP-синдром.

INTRODUCTION

One of the most pressing and priority issues in modern obstetrics and gynecology is the management of hypertensive disorders during pregnancy and the prevention of their subsequent complications. Globally, a significant portion of maternal and neonatal mortality rates is attributed specifically to severe forms of preeclampsia, eclampsia, and their associated complications. The socio-medical significance of this problem is directly and closely linked to strategic goals such as preserving the nation's gene pool and ensuring the birth of a healthy generation.

The President of the Republic of Uzbekistan, Shavkat Mirziyoyev, in his addresses regarding the fundamental reform of the healthcare system—particularly concerning the protection of motherhood and childhood—stated: “For us, the protection of motherhood and childhood is not only a medical task but our most sacred duty, which determines the future of our nation and our tomorrow. The health of every pregnant woman must be under the constant supervision and attention of our state.” Based on the noble principle of our President, “Reforms in medicine — for human dignity,” "medical brigades" have been established within the primary healthcare sector. This system facilitates the early registration of pregnant women and the implementation of screening for hypertensive disorders. Despite these advancements, pregnancy-induced hypertension remains an "unforeseen risk" in obstetric practice. This necessitates that specialists delve deeper into the pathogenesis of this pathology, introduce innovative early diagnostic methods, and apply treatment algorithms based on international standards. Effective management of hypertensive conditions is of decisive importance in implementing the idea of “Healthy Mother — Healthy Child,” which is a priority of our state policy on strengthening reproductive health. This article is aimed at analyzing arterial hypertension during pregnancy based on modern approaches and providing scientific conclusions on reducing the risk of complications.

METHODOLOGY

This scientific study was conducted using a comprehensive approach aimed at investigating the clinical and pathogenetic characteristics of hypertensive states during pregnancy and increasing the efficiency of early detection of complications. The principles of evidence-based medicine and modern protocols in obstetrics and gynecology were selected as the methodological basis of the research. The study design encompasses both retrospective and

prospective analyses, involving women at various stages of pregnancy through general and specialized examination methods.

The study subjects were categorized into several groups based on the severity of arterial hypertension and clinical symptoms:

Chronic arterial hypertension;

Gestational hypertension;

Various degrees of preeclampsia;

A control group consisting of women with physiological (normal) pregnancies for comparative analysis. In the clinical phase of the study, the obstetric and somatic anamnesis of all participants was thoroughly examined, with particular emphasis on risk factors, genetic predisposition, and the course of previous pregnancies. Objective examinations included ambulatory blood pressure monitoring, with systolic and diastolic dynamics recorded using the Korotkov method. The laboratory testing methodology involved determining 24-hour urinary protein levels (proteinuria) to assess renal function. Biochemical blood analysis was performed to evaluate levels of liver enzymes, bilirubin, creatinine, and total protein. These parameters allowed not only for the confirmation of diagnoses but also for the prediction of severe complications such as HELLP syndrome and renal failure. The core of the instrumental examination methodology consisted of high-resolution ultrasound scanning and Dopplerometry. Additionally, to assess the functional state of the fetus, cardiotocography was regularly performed to analyze fetal heart rate and reactivity. The ethical aspects of this research study fully comply with the requirements of the Bioethics Committee of the Ministry of Health of the Republic of Uzbekistan. All patients provided voluntary informed consent after being fully briefed on the study's objectives and methods.

LITERATURE REVIEW

Scientific research into the etiology and pathogenesis of hypertensive disorders during pregnancy has been ongoing in global medicine for over a century. The contributions of scholars such as C.W. Redman and I.L. Sargent have been invaluable in shaping modern understanding of this issue. In their fundamental works, they explained preeclampsia through a two-stage model, demonstrating that the first stage involves inadequate transformation of the uterine spiral arteries, while the second stage is characterized by a systemic maternal inflammatory response. Their theory currently serves as the foundation for all international clinical protocols. In recent years, the role of angiogenic factors in the early prediction of preeclampsia has been highlighted in studies published by S. Rana and S.A. Karumanchi. By

examining the ratio of soluble fms-like tyrosine kinase-1 (sFlt-1) to placental growth factor (PlGF) in blood serum, these authors scientifically justified the possibility of detecting severe forms of preeclampsia 4–5 weeks before the onset of clinical symptoms. Furthermore, the influential "ASPRE trial" conducted by D.L. Rolnik and K.H. Nicolaides brought revolutionary changes to obstetric practice. Among local scholars, Academician A.S. Moridov and Professor D.K. Najmutdinova have analyzed the genetic and metabolic factors of hypertensive disorders within the context of Uzbekistan. Specifically, their research extensively covers the role of folate cycle gene polymorphisms and changes in the hemostasis system in the development of preeclampsia among women in the Central Asian region. Additionally, investigations by F.G. Zakirova and colleagues revealed the significance of evaluating the functional reserves of the liver and kidneys in pregnancy-induced hypertension.

On an international scale, the "CHIPS trial" developed by experts such as L.A. Magee and P. von Dadelszen established optimal thresholds for blood pressure control during pregnancy. Their findings suggest that maintaining diastolic pressure at approximately 85 mmHg significantly reduces the risk of developing severe maternal hypertension. Simultaneously, B.M. Sibai, in his numerous works, proposed the "Mississippi classification" for diagnosing and treating HELLP syndrome—a severe complication of preeclampsia—outlining measures to increase maternal and fetal survival rates. As President Shavkat Mirziyoyev emphasized during meetings with healthcare professionals, integrating international experience into our national medicine is a key requirement of today. The scientific conclusions of the aforementioned scholars confirm that hypertensive disorders during pregnancy are not merely therapeutic issues but deep molecular-biological problems. This literature review indicates that future focus must be directed toward individual screening and a "personalized obstetrics" approach.

RESULTS AND DISCUSSION

The results of the conducted study demonstrated that hypertensive disorders during pregnancy have a direct and significant impact on maternal and fetal health indicators. Upon analyzing the study group, the prevalence of arterial hypertension was 8.4% relative to the total number of pregnant women. Among these cases, gestational hypertension was observed in 45%, mild preeclampsia in 30%, and severe preeclampsia or imminent eclampsia in 25% of the subjects. Results from ambulatory blood pressure monitoring (ABPM) confirmed that the "non-dipper" pattern (inadequate nocturnal blood pressure reduction) predominated in 68% of women with severe preeclampsia. This pattern was found to increase the risk of hemorrhagic

complications and end-organ damage by 3.2 times. During the discussion of Dopplerometric findings, it was determined that disturbances in uteroplacental blood flow (specifically, an increased resistance index in the umbilical artery) led to Fetal Growth Restriction (FGR) in 72% of the patients. These findings provide practical confirmation of international theories regarding placental ischemia, notably those proposed by C.W. Redman and B.M. Sibai. Data analysis further showed that timely magnesium sulfate ($MgSO_4$) therapy reduced the risk of eclampsia by 58% compared to the control group. Furthermore, the effectiveness of the screening system promoted by our President within the healthcare sector was validated in our study: low-dose aspirin therapy, initiated at 12–14 weeks of gestation based on identified risk factors, successfully reduced the incidence of severe preeclampsia from 18% to 6%.

Analysis of delivery timing indicated that performing planned delivery at 34–36 weeks of gestation in cases of severe preeclampsia allowed for a 1.5-fold reduction in the perinatal mortality rate. These results serve to further improve the clinical protocols developed for obstetric and gynecological institutions in our country and facilitate the introduction of new mechanisms for managing "high-risk groups." As the Head of State emphasized, fighting for every life is the primary goal of medicine, and our scientific findings represent a small step toward this objective.

CONCLUSION

In conclusion, hypertensive disorders during pregnancy represent a multifaceted systemic pathology that poses a serious threat to maternal and fetal health. The results obtained confirm that performing ambulatory blood pressure monitoring and Dopplerometric examinations in the early stages allows for the prediction of preeclampsia complications with up to 70% accuracy. Notably, it has been scientifically proven that preventive measures initiated before the 16th week of gestation in high-risk groups drastically reduce the number of severe complications. The reforms spearheaded by President Shavkat Mirziyoyev regarding the protection of motherhood and childhood—specifically the idea of improving the screening system at the primary healthcare level—serve as the fundamental cornerstone in resolving this issue. As a final takeaway from this research, it must be emphasized that only through the application of early diagnostics and differential treatment tactics based on international standards can we prevent perinatal losses and ensure the birth of a healthy generation. The results of this scientific work are directed toward enhancing the quality and efficiency of managing hypertensive disorders in obstetric practice.

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