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FEATURES OF PREGNANCY COURSE AND PERINATAL COMPLICATIONS IN WOMEN WITH ARTERIAL HYPERTENSION

(Review Article)

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Abstract

Arterial hypertension (AH) during pregnancy remains one of the most significant obstetric complications, exerting a serious impact on maternal and perinatal outcomes. This article presents a review of current data on the classification of hypertensive disorders in pregnancy, risk factors, pathophysiological mechanisms, clinical manifestations, and complications. Special attention is given to the role of angiogenic biomarkers (sFlt-1/PlGF), contemporary clinical guidelines, and results of multicenter trials, including CHAP (2022). Preventive and therapeutic approaches are discussed, including aspirin administration, individualized blood pressure control, and management strategies for severe preeclampsia. Emphasis is placed on the importance of multidisciplinary care and prevention of long-term cardiovascular complications in women with a history of hypertensive disorders during pregnancy.

Keywords: arterial hypertension, pregnancy, preeclampsia, eclampsia, angiogenic biomarkers, fetoplacental insufficiency, obstetric complications.

Introduction

Arterial hypertension (AH) during pregnancy represents one of the most clinically significant obstetric complications, exerting a substantial influence on the course of gestation and outcomes for both mother and fetus. According to recent epidemiological data (Magee et al., 2022; Brown et al., 2023), hypertensive disorders of pregnancy remain among the leading causes of maternal mortality and perinatal loss worldwide.

The pathophysiological impact of AH during pregnancy is determined both by hemodynamic disturbances and endothelial dysfunction, as well as systemic inflammatory responses, contributing to the development of severe complications. Among the most dangerous consequences are premature placental abruption accompanied by massive hemorrhage and acute fetal distress; acute ischemic retinopathy and retinal detachment leading to sudden vision loss; eclampsia with generalized seizures, cerebrovascular accidents, ischemic or hemorrhagic stroke, and multiple organ failure; and severe forms of disseminated intravascular coagulation (DIC) syndrome.

Epidemiology and Risk Factors

The prevalence of hypertensive disorders of pregnancy (HDP) is estimated at 5–10%, varying depending on population characteristics and the availability of preconception screening. The most significant risk factors include maternal age ≥35 years, obesity, diabetes mellitus or metabolic syndrome, chronic kidney disease, multiple pregnancy, low calcium intake, family history of preeclampsia or hypertension, early vascular complications, and autoimmune diseases. In the post-pandemic period, the frequency of HDP has increased, linked to lifestyle changes, higher body mass index, and advanced maternal age.

Classification

Arterial hypertension (AH) in pregnancy is a clinical and pathophysiological umbrella term that encompasses a heterogeneous group of conditions characterized by persistent elevation of blood pressure (BP) during gestation. According to the most recent international guidelines (ISSHP 2021, 2023; NICE 2023; USPSTF 2024; AHA/ACC 2020), HDP includes:

- Chronic hypertension — BP ≥140/90 mmHg diagnosed before pregnancy, before the 20th gestational week, or persisting >12 weeks postpartum.
- Gestational hypertension — new-onset hypertension (≥140/90 mmHg) after 20 weeks of pregnancy in the absence of proteinuria or target-organ damage.
- Preeclampsia — a multi-organ syndrome combining hypertension (≥140/90 mmHg) with organ dysfunction (proteinuria ≥300 mg/day or equivalent, thrombocytopenia, elevated liver enzymes, neurological or visual disturbances, pulmonary edema).
- Eclampsia — generalized tonic-clonic seizures on the background of preeclampsia.
- Preeclampsia superimposed on chronic hypertension — development of preeclampsia signs in women with pre-existing chronic hypertension.

Clinical Implications

AH is among the most common pathologies in pregnant women, affecting 34–48% depending on population characteristics. It is recognized as a major risk factor for maternal and perinatal mortality. Patients with AH are categorized as high obstetric risk, requiring special attention and interdisciplinary monitoring. Globally, hypertension affects about 2.73% of women, with prevalence rates of chronic hypertension, preeclampsia, and eclampsia at 0.29%, 2.16%, and 0.28%, respectively.

Biomarkers and Pathogenesis

Recent studies demonstrate that the type of AH in pregnancy directly influences angiogenesis regulation. Patients with preeclampsia and chronic AH complicated by placental dysfunction exhibit significantly elevated concentrations of anti-angiogenic factors (sFlt-1, soluble endoglin) with simultaneous reduction in placental growth factor (PlGF). This imbalance leads to impaired vascular remodeling and placental hypoperfusion, serving as an early predictor of preeclampsia.

Clinical Trials and Guidelines

The CHAP (Chronic Hypertension and Pregnancy) trial (2022) demonstrated that active treatment of mild chronic hypertension (140–159/90–104 mmHg) to targets below 140/90 mmHg reduced the risks of severe preeclampsia, preterm birth, and fetal growth restriction without increasing low birth weight. These findings reshaped clinical practice, now recommending treatment initiation at ≥140/90 mmHg. Guidelines from ISSHP (2021, 2023), NICE (2023), AHA/ACC (2020), and USPSTF (2024) reflect these updates.

Conclusion

Arterial hypertension during pregnancy remains a leading cause of maternal and perinatal morbidity and mortality, requiring a comprehensive approach to management. Current evidence, including CHAP, supports active management even of mild hypertension. Preventive measures such as low-dose aspirin and calcium supplementation (in populations with deficiency) have strong evidence bases. Optimal outcomes are achieved through multidisciplinary care, serial assessment of the fetoplacental unit, timely delivery, and long-term cardiovascular risk prevention.

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