



THE IMPACT OF LOW BLOOD PRESSURE ON PREGNANCY COURSE AND OUTCOMES

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Abstract The physiological course of pregnancy requires profound hemodynamic adaptation in the mother. While hypertension receives significant clinical attention, arterial hypotension is often overlooked, affecting 2% to 4% of pregnant women worldwide. Low blood pressure is frequently regarded as a variant of the norm, despite evidence linking it to fetal growth restriction (FGR) and preterm birth. In transition economies like Uzbekistan, this issue is exacerbated by the lack of unified monitoring protocols. This study aims to analyze the pathophysiological consequences of hypoperfusion and develop preventive strategies to optimize perinatal outcomes.

Keywords: arterial hypotension, pregnancy, fetal growth restriction, placental perfusion, anemia, Uzbekistan.

Introduction Arterial blood pressure during pregnancy serves as an integral indicator of systemic adaptation. The traditional clinical paradigm focuses on managing hypertension due to the risks of pre-eclampsia. However, hypotension remains in a "gray zone" of medical knowledge, despite its direct impact on the quality of utero-placental blood flow. In the reproductive age group of 18–35 years, the cardiovascular response to gestation determines the long-term health of both mother and child. This review systematizes international evidence to facilitate the development of clinical algorithms.

Methods A narrative literature review was conducted, including systematic reviews and cohort studies from Turkey, Australia, the USA, and Uzbekistan. Searches were performed across PubMed, Scopus, and regional medical databases in Uzbekistan. Analysis focused on blood pressure trends, correlations with neonatal anthropometry, and the efficacy of monitoring methods (Ambulatory Blood Pressure Monitoring [ABPM] vs. office measurement).

Results and Discussion

1. **Epidemiology and Diagnostic Thresholds:** The prevalence of hypotension varies from 1.8% in the USA to 4.1% in Turkey. The primary challenge is the lack of consensus regarding the lower limit of the norm. In Uzbekistan, limited research creates risks for the underdiagnosis of conditions associated with placental hypoperfusion.

2. **Pathophysiological Mechanisms:** During normal gestation, circulating blood volume (CBV) increases by 30–50%, while peripheral resistance decreases. Pathological hypotension occurs when compensatory mechanisms fail. A decrease in Mean Arterial Pressure (MAP) leads to impaired oxygen delivery across the placental barrier, initiating fetal growth restriction.

3. **Impact on Fetal Growth:** Data remain controversial; while some US studies (Zhang & Klebanoff) do not consistently link low pressure to perinatal mortality, prospective studies in Turkey (Sahin et al.) demonstrate a correlation between persistent hypotension and low birth

weight. This discrepancy is attributed to the duration of exposure: chronic hypoperfusion is more critical than episodic drops.

4. **Clinical Symptomatology:** Hypotension is frequently accompanied by fatigue, somnolence, and syncope. Supine Hypotensive Syndrome is of particular importance in the third trimester, where the supine position causes a sharp decline in cardiac output due to compression of the inferior vena cava.

5. **Comorbidity with Anemia:** A synergy exists between low blood pressure and iron deficiency. The reduced blood volume associated with anemia exacerbates hypotension, creating a "vicious cycle" of fetal hypoxia.

6. **Monitoring Methods:** A comprehensive approach is recommended: office measurements, home self-monitoring, and mandatory Doppler flowmetry if blood pressure readings fall below 100/60 mmHg.

Interacting Factors Hypotension rarely acts in isolation. Nutritional deficiencies, stress, and sleep disturbances weaken the adaptive reserves of the vascular system, intensifying the negative impact on fetal development.

Clinical Case Study A 26-year-old pregnant woman (30 weeks gestation) presented with syncope and a blood pressure of 90/55 mmHg. Diagnosis revealed anemia (Hb 92 g/L) and a 1.5-week lag in fetometry. Following dietary correction, hydration management, and iron supplementation, blood pressure stabilized to 105/65 mmHg, and fetal growth rates normalized.

Context in Uzbekistan In Uzbekistan, clinical discourse predominantly focuses on hypertension and pre-eclampsia. However, hypotension is prevalent, with significant disparities between urban and rural settings. While urban women have better access to screening, rural populations face limited medical resources. Consequently, hypotension often goes undetected in rural areas, leading to late diagnosis of growth restrictions and increased complication risks. Strengthening screening in regions with irregular medical supervision is essential.

Practical Recommendations for Clinicians * Do not dismiss complaints of syncope, dizziness, or fatigue.

- Perform multiple blood pressure measurements to record hemodynamic dynamics.
- Utilize ultrasound and Doppler flowmetry if fetal growth restriction is suspected.
- Educate patients on simple preventive measures (hydration, posture).
- Employ a multidisciplinary team approach (obstetrician, physician, neonatologist).

Conclusion Although low blood pressure in pregnancy is less common than hypertension, it is not benign. While some women experience asymptomatic pregnancies, for others, it leads to adverse fetal outcomes. Current research yields varied results, necessitating an individualized approach to each patient. For Uzbekistan, further research is vital to establish precise clinical guidelines and improve perinatal outcomes.

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