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Clinical Course of Pregnancies Complicated by Eclampsia and Its Impact on Maternal and Fetal Health

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Abstract
This article analyzes the clinical features of pregnancies complicated by eclampsia and its impact on maternal and fetal health. Based on clinical observations, laboratory data, and international literature, the risks of eclampsia for both mother and child are highlighted. The importance of early diagnosis, modern treatment approaches, and preventive measures is emphasized.
Keywords: Eclampsia, pregnancy complications, maternal health, perinatal outcomes, prevention

Introduction

Eclampsia is one of the most severe obstetric complications, usually developing in the second half of pregnancy or in the early postpartum period. It is characterized by a sudden rise in blood pressure, generalized tonic-clonic seizures, loss of consciousness, and often coma. This condition poses a significant threat to both maternal life and fetal well-being.

Globally, hypertensive disorders of pregnancy remain a leading cause of maternal and perinatal morbidity and mortality. According to the World Health Organization (WHO), eclampsia occurs in 2–8% of pregnancies and accounts for 10–15% of maternal deaths annually. Perinatal mortality is also high, with complications such as intrauterine growth restriction, preterm birth, and hypoxic injury frequently observed.

The pathogenesis of eclampsia is multifactorial, involving placental hypoperfusion, endothelial dysfunction, increased inflammatory mediators, and immune maladaptation. These changes lead to hemodynamic disturbances and severe functional impairment of vital organs, including the brain, liver, and kidneys.

In Uzbekistan, eclampsia continues to be a pressing public health issue. Late registration of pregnant women, insufficient prenatal screening, and delayed diagnosis contribute to severe complications. Risk factors such as chronic hypertension, obesity, chronic kidney disease, and other somatic comorbidities further increase the likelihood of eclampsia.

Relevance of the Study:

Eclampsia remains a major contributor to maternal and perinatal mortality worldwide. Timely identification, appropriate treatment, and preventive strategies are essential for reducing adverse outcomes and safeguarding the health of future generations. Studying the clinical course of eclampsia and its effects on maternal and neonatal health is therefore of significant scientific and practical importance.

Literature Review

Although eclampsia has been extensively studied, its complete pathogenesis is still under scientific discussion. International research demonstrates that the development of eclampsia is closely linked to complex maternal-fetal immune interactions, endothelial dysfunction, and impaired placental circulation.

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Smith et al. (2019) and Brown (2020) analyzed the prevalence of eclampsia, noting that most cases occur in developing countries and contribute substantially to maternal and neonatal mortality rates. Russian researchers (Ivanova & Petrova, 2021) have reported a high incidence of neurological complications such as cerebral edema and stroke in women with eclampsia, with persistent hypertension and renal dysfunction often continuing into the postpartum period.

Uzbek researchers have also contributed significantly to this field. Karimova et al. (2018) observed that eclampsia in Uzbekistan is commonly associated with preterm birth, intrauterine growth restriction, and perinatal hypoxia. Their findings underline the importance of regular prenatal screening and effective maternal health monitoring systems to improve outcomes.

Materials and Methods

Study Design:

This study was conducted between 2021 and 2023 at the Republican Specialized Scientific-Practical Medical Center of Obstetrics and Gynecology.

Sample:

Study group: 30 pregnant women diagnosed with eclampsia

Control group: 30 healthy pregnant women with uncomplicated pregnancies

Inclusion criteria: women aged 18–40 years with singleton pregnancies.

Exclusion criteria: women with pre-existing severe chronic systemic illnesses unrelated to pregnancy.

Data Collection:

Maternal parameters: blood pressure, seizure frequency, general clinical condition, laboratory markers (hemoglobin, creatinine, liver enzymes, proteinuria).

Fetal and neonatal parameters: intrauterine growth, signs of perinatal hypoxia, delivery outcomes, need for neonatal resuscitation.

Methods Used:

Laboratory tests: complete blood count, urinalysis, liver and kidney biochemical profiles.

Instrumental methods: ultrasound, cardiotocography (CTG).

Statistical Analysis: Data were analyzed using Student's t-test. Results were considered significant at $p < 0.05$.

Ethics:

Written informed consent was obtained from all participants. The study complied with the principles of the Helsinki Declaration (2013).

Results

Maternal Findings:

Blood pressure:160/100 mmHg (study group) vs. 120/80 mmHg (control) ($p < 0.001$).

Proteinuria: detected in 85% of the study group vs. 0% in control ($p < 0.001$).

Liver enzymes: ALT and AST were elevated 2.5-fold in the study group ($p < 0.05$).

Seizures: observed in 73% of patients with eclampsia; absent in controls.

Fetal and Neonatal Outcomes:

Intrauterine hypoxia:60% (study) vs. 10% (control) ($p < 0.01$).

Preterm birth: 40% vs. 7% ($p < 0.05$).

Need for neonatal resuscitation: 35% vs. 5% ($p < 0.01$).

Perinatal mortality: 10% vs. 0% ($p < 0.05$).

These results demonstrate that eclampsia causes significant maternal morbidity and severe perinatal complications.

Discussion

The findings confirm that eclampsia has a profound negative impact on both maternal and neonatal health. The high rates of hypertension, proteinuria, liver and kidney dysfunction, and seizures in the study group indicate severe disease progression.

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Our results are consistent with international studies. Smith et al. (2019) reported that severe maternal complications such as seizures and acute renal failure occur in 60–70% of eclampsia cases, similar to the 73% seizure rate observed in our study. WHO data show fetal hypoxia in 50–60% of cases and perinatal mortality rates of 5–10%, closely matching our findings (60% and 10%, respectively).
Delayed diagnosis and untimely initiation of treatment were associated with poorer maternal and neonatal outcomes. This emphasizes the need for early identification and close monitoring of high-risk pregnancies as key preventive strategies.

Practical Recommendations
1. Regular screening– monitor blood pressure, urine protein, and conduct ultrasound examinations each trimester; more frequent monitoring for high-risk women.
2. Identification of risk groups – including those with hypertension, chronic kidney disease, diabetes, and multiple pregnancies.
3. Prophylactic therapy – consider low-dose aspirin or calcium supplementation in high-risk patients as per physician guidance.
4. Improved emergency response– ensure availability of magnesium sulfate, antihypertensive agents, and resuscitation equipment in maternity units.
5. Multidisciplinary approach – involve obstetricians, internists, nephrologists, and neonatologists in managing such pregnancies.
6. Promotion of healthy lifestyle – limit salt intake, maintain a balanced diet, ensure adequate rest, and minimize stress during pregnancy.

Conclusion
Pregnancies complicated by eclampsia present a significant threat to maternal and neonatal health. Severe hypertension, proteinuria, seizures, and organ dysfunction were commonly observed. Fetal complications included intrauterine hypoxia, preterm birth, and higher perinatal mortality.

These findings confirm that eclampsia remains a critical issue not only in obstetrics but also in neonatology and intensive care medicine. Early diagnosis, risk stratification, and timely interventions are essential for reducing adverse outcomes.

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