PREECLAMPSIA: FROM EMERGENCY CARE TO STAGES OF REHABILITATION

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Abstract. *Objective. To summarize current evidence on the diagnosis of preeclampsia, principles of emergency care, obstetric management, and postpartum rehabilitation, with emphasis on long-term cardiovascular and renal prevention. Materials and methods. A narrative review of current international guidance and analytical publications was performed, including recommendations from the American College of Obstetricians and Gynecologists (ACOG), the National Institute for Health and Care Excellence (NICE), the World Health Organization (WHO), and recent reviews on postpartum care and long-term cardiovascular and renal outcomes after preeclampsia. Results. Preeclampsia remains one of the leading causes of maternal and perinatal morbidity and mortality worldwide. Contemporary management requires early recognition of the disease, timely administration of magnesium sulfate for seizure prophylaxis and treatment, prompt control of severe hypertension, continuous assessment of maternal and fetal status, and determination of the optimal timing of delivery. Postpartum care should not end with hospital discharge. Women with a history of preeclampsia require blood pressure monitoring, laboratory reassessment, evaluation of renal function, and subsequent referral for long-term cardiometabolic risk reduction. Conclusion. Preeclampsia should be regarded not only as an acute obstetric complication but also as a marker of future cardiovascular and renal disease. Effective care is based on a continuum that starts with emergency stabilization and timely delivery and continues through structured postpartum follow-up, long-term prevention, and preconception counseling before future pregnancies.*

Keywords: *preeclampsia, eclampsia, magnesium sulfate, postpartum follow-up, cardiovascular risk, chronic kidney disease, obstetric rehabilitation.*

Introduction

Preeclampsia is a multisystem hypertensive disorder of pregnancy that develops after 20 weeks of gestation and is characterized by new-onset hypertension in combination with proteinuria and/or signs of maternal organ dysfunction. According to contemporary diagnostic criteria, the diagnosis is established when blood pressure is ≥140/90 mm Hg after 20 weeks in a previously normotensive woman together with proteinuria of at least 300 mg per 24 hours, a protein-to-creatinine ratio of at least 0.3, or, in the absence of proteinuria, thrombocytopenia, renal insufficiency, elevated liver enzymes, pulmonary edema, persistent headache, or visual symptoms. The clinical importance of preeclampsia is determined not only by its contribution to acute maternal and perinatal complications, but also by the fact that it serves as an early marker of future cardiovascular and renal

disease. Therefore, modern clinical management must embrace the entire patient pathway, from emergency stabilization to long-term postpartum surveillance and prevention.

Materials and Methods

This article is a narrative review based on evidence from international clinical guidelines and contemporary analytical publications. The review incorporated ACOG recommendations on gestational hypertension and preeclampsia, the NICE guideline on hypertension in pregnancy, WHO recommendations for the prevention and treatment of preeclampsia and eclampsia, and recent reviews addressing postpartum management as well as long-term cardiovascular and renal outcomes after hypertensive disorders of pregnancy.

Pathophysiological Basis and Risk Factors

Current concepts describe preeclampsia as a two-stage disorder. The first stage involves impaired placentation and abnormal remodeling of the spiral arteries, resulting in placental hypoperfusion. The second stage is characterized by generalized endothelial dysfunction, systemic inflammation, oxidative stress, and antiangiogenic imbalance, which together lead to hypertension, proteinuria, and multiorgan involvement. Endothelial injury is the central link between acute obstetric complications and long-term vascular sequelae.

Major risk factors include a history of preeclampsia, chronic hypertension, chronic kidney disease, pregestational diabetes mellitus, autoimmune disorders, multifetal gestation, obesity, nulliparity, advanced maternal age, and a long interpregnancy interval. Women with these factors require individualized surveillance from early pregnancy and should be considered for preventive strategies.

Emergency Care for Preeclampsia

The main goals of emergency care are to prevent maternal complications such as eclampsia, stroke, pulmonary edema, progressive renal or hepatic dysfunction, and placental abruption while simultaneously assessing fetal well-being. Women with persistent severe hypertension, neurological symptoms, worsening laboratory indices, signs of impending eclampsia, pulmonary edema, or fetal compromise should be managed in hospital. Outpatient management is acceptable only in carefully selected cases without severe features and with reliable access to frequent monitoring.

Magnesium sulfate remains the drug of choice for seizure prophylaxis and treatment in women with preeclampsia with severe features and in those with eclampsia. Its value lies in reducing the risk of recurrent seizures and maternal mortality rather than in lowering blood pressure. Severe hypertension requires immediate treatment; rapidly acting antihypertensive agents such as intravenous labetalol, intravenous hydralazine, or oral immediate-release nifedipine are used according to local protocol and the clinical scenario.

If eclampsia develops, the first priorities are airway protection, prevention of aspiration and trauma, oxygen support, hemodynamic monitoring, and administration of magnesium sulfate. Eclampsia alone is not an automatic indication for cesarean section. Delivery

should be undertaken after maternal stabilization, taking into account gestational age, fetal condition, cervical status, and the overall obstetric situation.

Obstetric Management and Timing of Delivery

Delivery remains the definitive treatment for preeclampsia; however, timing must be based on a balance between maternal and fetal risks. In preeclampsia without severe features, pregnancy may be continued under close surveillance until 37 weeks of gestation. Once the diagnosis is established at or beyond 37 weeks, delivery is generally recommended.

In preeclampsia with severe features at or beyond 34 weeks, delivery is recommended after maternal stabilization. Before 34 weeks, expectant management may be considered only in carefully selected patients in tertiary-level centers where intensive maternal monitoring and advanced neonatal care are available. Any maternal or fetal deterioration is an indication for immediate delivery.

The Postpartum Period: Continuation Rather Than Completion of Care

Postpartum preeclampsia and postpartum hypertension may represent either continuation of antenatal disease or a de novo condition. Blood pressure often reaches its postpartum peak during the first week after birth, which explains why delayed complications may occur after discharge. For this reason, postpartum care must include not only symptom counseling but also structured blood pressure and laboratory follow-up.

Women with preeclampsia require repeated inpatient blood pressure measurement, early review after discharge, adjustment of antihypertensive therapy, and laboratory reassessment of platelet count, liver enzymes, serum creatinine, and urine protein when indicated. Persistent hypertension, ongoing proteinuria, or abnormal renal function after delivery should not be regarded as benign residual findings; these patients require further evaluation and, when necessary, referral to internal medicine, cardiology, or nephrology specialists.

An important practical principle is patient education at discharge. Women should be informed about warning symptoms such as severe headache, visual disturbances, epigastric pain, dyspnea, chest pain, and markedly elevated blood pressure, as timely recognition of these signs may prevent delayed eclampsia, stroke, and readmission.

Stages of Rehabilitation After Preeclampsia

A structured rehabilitation model after preeclampsia may be divided into four consecutive stages.

The first stage is the inpatient period of intensive postpartum observation during the first 48–72 hours. Its objectives are completion of anticonvulsant and antihypertensive therapy, reassessment of hepatic and renal function, fluid balance control, prevention of pulmonary edema, and formulation of an individualized discharge plan.

The second stage is early outpatient follow-up from the first days after discharge to 6–8 weeks postpartum. This stage includes home or clinic blood pressure monitoring, titration of antihypertensive treatment, reassessment of laboratory parameters, and screening for

persistent proteinuria or other signs of unresolved organ dysfunction. It is the key period for detecting delayed postpartum hypertension and late complications.

The third stage is long-term cardio-renal prevention beginning approximately 3 months after delivery. A history of preeclampsia is associated with a significantly increased risk of chronic hypertension, ischemic heart disease, stroke, heart failure, chronic kidney disease, and end-stage kidney disease later in life. Therefore, these women should be considered a high-risk group for long-term surveillance, including regular assessment of blood pressure, body weight, glucose metabolism, lipid profile, and renal function.

The fourth stage is preconception counseling before a subsequent pregnancy. At this stage, chronic hypertension, obesity, metabolic abnormalities, and kidney disease should be identified and corrected when possible. Women with prior preeclampsia should be classified as high-risk in a future pregnancy and receive evidence-based prevention, including low-dose aspirin beginning in early pregnancy and calcium supplementation in populations with low dietary calcium intake.

Discussion

The traditional view that preeclampsia ends with placental delivery is no longer adequate. Contemporary evidence indicates that a pregnancy complicated by preeclampsia either unmasks an underlying vascular and metabolic vulnerability or initiates persistent endothelial injury with long-term consequences. This understanding supports a shift from episodic obstetric treatment to a continuity-of-care model that links obstetricians, primary care physicians, cardiologists, and nephrologists.

Such an approach is particularly important in settings where maternal mortality remains closely related to delayed diagnosis and underestimation of postpartum complications. Standardized pathways with mandatory blood pressure surveillance, laboratory reassessment, renal evaluation, and later cardiovascular prevention can reduce both short-term obstetric complications and the long-term burden of chronic noncommunicable disease in women of reproductive age.

Conclusion

Preeclampsia is not only an emergency obstetric condition but also an important marker of future women's vascular health. High-quality care requires four interconnected components: early diagnosis, timely stabilization, rational delivery planning, and long-term staged rehabilitation. Magnesium sulfate, prompt treatment of severe hypertension, structured postpartum monitoring, and subsequent cardio-nephrological prevention form the basis of current best practice. Continuity of care between the obstetrician-gynecologist, primary care physician, cardiologist, and nephrologist is essential for truly complete management of these patients.

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