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Clinical Pharmacological Approach To The Treatment Of Eclampsia In Pregnant Women With Antihypertensive Drugs

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Abstract. The review considers the possibilities of predicting preeclampsia (PE) and its complications, modern criteria for diagnosing hypertensive gestational disorders, as well as the tactics of their intensive therapy. Particular attention is paid to providing anesthetic support during operative delivery in patients with PE and its complications.
Keywords: hypertensive gestational disorders, preeclampsia, complications of preeclampsia.

Introduction

The "gold standard" for diagnosing proteinuria is quantitative determination of protein in a daily portion. The normal limit of daily proteinuria during pregnancy is defined as 0.3 g/l [1].

Severe proteinuria is a protein level of > 5 g/24 h or > 3 g/l in two urine portions taken at an interval of 6 h, or a value of "3+" on a test strip.

In the presence of symptoms of a critical condition (severe hypertension, thrombocytopenia, cerebral, renal, hepatic dysfunction, pulmonary edema), the presence of proteinuria is not necessary for making a diagnosis of "severe preeclampsia" [2].

However, in many cases, proteinuria levels, along with other markers such as uric acid, correlate with a high risk of developing PE, eclampsia, and HELLP syndrome (H - hemolysis; EL - elevated liver enzymes: increased activity of liver enzymes; LP - one platelet count: thrombocytopenia) [2], as well as perinatal losses [3]. Moreover, severe proteinuria accompanying PE is significantly more often accompanied by such maternal complications as HELLP syndrome, headache, generalized edema, and increased aminotransferase levels than moderate proteinuria. It is important that the risk of developing respiratory disorders among newborns is also significantly higher in pregnant women with severe proteinuria [4]. Edema is currently not a diagnostic sign of PE and in the vast majority of cases does not reflect the degree of severity [5]. However, sudden, rapidly increasing generalized edema should be considered as a prodrome or manifestation of severe PE [2].

Materials And Methods

Eclamptic seizures are associated with high rates of maternal morbidity due to developing placental abruption, disseminated intravascular coagulation, acute renal failure, pulmonary edema, aspiration pneumonia, and acute cardiopulmonary failure [1]. If a seizure develops during pregnancy, it is necessary to conduct a differential diagnosis with the following diseases [2]: vascular diseases of the central nervous system (CNS), ischemic/hemorrhagic stroke, intracerebral hemorrhage/aneurysm, thrombosis of venous vessels of the brain, brain tumors, brain abscesses, arteriovenous malformations, infections (encephalitis, meningitis), epilepsy, drug effects (amphetamine, cocaine, theophylline, clozapine), hyponatremia, hypokalemia, hyperglycemia, thrombotic thrombocytopenic purpura, post-puncture syndrome, acute intoxication. Seizures can occur during pregnancy, childbirth and in the postpartum period. Almost half of all cases of eclampsia occur during pregnancy, more than 1/5 of cases - before the 31st week of pregnancy. In full-term pregnancy, eclampsia occurs during labor or within 6 hours after delivery in 75% of cases. In 16% of cases, eclampsia occurs in the interval from 48 hours to 4 weeks of the postpartum period [3]. Up to 44% of cases of eclampsia occur in the postpartum period, especially in full-term pregnancy. In this regard, women with symptoms and signs indicating PE deserve special monitoring [4]. To assess the neurological status of a patient on prolonged artificial ventilation (ALV), muscle relaxants, narcotic and sedative drugs are discontinued from the first hours after delivery and the time of recovery of consciousness is assessed.

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The anticonvulsant effect is provided in these conditions by the administration of magnesium sulfate. It is unacceptable to plan extended mechanical ventilation for several days under conditions of deep sedation, since under these conditions, assessing the state of the central nervous system without additional research methods is extremely difficult [5].

Results And Discussion

One of the effective modern methods of early diagnostics of gestational hypertensive disorders is echocardiography. When interpreting the results obtained in this study, it is necessary to take into account the structural and anatomical features characteristic of pregnancy. These include moderate dilation of all four chambers of the heart, thickening of the left ventricular wall, an increase in the mass of the right and left ventricles associated with an increase in stroke volume and cardiac output during pregnancy. Also, for the echocardiographic picture of both healthy pregnant women and pregnant women with PE, such changes as initial, first degree, regurgitation of the mitral, tricuspid and pulmonary valves of the heart are typical [1]. In addition, during an echocardiographic examination of 40% of healthy pregnant women, transient effusion into the pericardial cavity can be detected, disappearing in the postpartum period [2]. In the development of PE, changes characteristic of a normal pregnancy may manifest themselves to a greater extent due to an increase in afterload inherent in gestational hypertensive disorders [3]. In this case, signs of subclinical myocardial dysfunction are observed, determined by deterioration of longitudinal, circumferential and radial stress, as well as manifestations of diastolic myocardial dysfunction with an unchanged value of the left ventricular ejection fraction [4]. Echocardiography is also a promising method for predicting early PE. Thus, in women with placental insufficiency and impaired left ventricular function, detected during an echocardiographic study, the probability of developing PE was higher than in women with normal functioning of this heart chamber [2]. However, additional studies are required for a final assessment of the prognostic value of echocardiography. In addition to echocardiography, other ultrasound methods for assessing the condition of obstetric patients are currently increasingly used to determine the tactics of further therapy. Thus, one of the modern literature sources [3] demonstrates a description of the increasing role of ultrasound examination for obstetric anesthesiology, including:

a) diagnosis of a difficult airway, taking into account the difficulties of intubation and ventilation typical of pregnancy. At the same time, timely detection of patients with respiratory tract features allows for preparation according to the appropriate protocol or, if possible, selection of an alternative method of anesthesia;

b) determination of the volume and presence of stomach contents (to identify patients with a high risk of regurgitation and aspiration);

c) diagnosis of intracranial hypertension - by an increase in the diameter of the optic nerve sheath, typical of PE;

d) ensuring vascular access, which is a difficult task against the background of tissue hyperhydration during pregnancy;

d) performing neuraxial blocks and transverse abdominal block;

e) determining the volume of infusion therapy, an extremely important stage of intensive care for severe hypertensive disorders [4].

It is important to note that the use of ultrasound diagnostic methods ensures early detection of signs of interstitial pulmonary edema in PE, which occurs without a clear clinical picture, but has ultrasound signs of compaction of lung tissue (“B-lines”), and an increase in end-diastolic pressure in the left ventricle [5].

Postpartum cerebral angiopathy

- Reversible spasm of cerebral vessels.
- Uncomplicated pregnancy and childbirth.

Differentiate with: subarachnoid hemorrhage, dissection of the carotid or vertebral arteries, cerebral vasculitis, thrombosis of the venous sinus, neuroinfection, hemorrhage into the pituitary gland, PRES syndrome (Posterior Reversible Encephalopathy Syndrome).

- PRES syndrome is a syndrome of posterior reversible encephalopathy, can complicate the course of gestational hypertensive disorders, characterized by an association of neurological symptoms with potentially reversible edema, mainly in the parietal-occipital regions of the brain [3]. The clinical picture includes headache, impaired consciousness, seizures, visual impairment and loss, variable focal symptoms

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(paraparesis and symptoms of brainstem or cerebellar damage), and neuroimaging shows symmetrical swelling of the posterior white matter of both hemispheres of the brain, especially in the parietal-occipital region. It is important that PRES syndrome is a treatable clinical and radiological syndrome, with adequate therapy of which a favorable outcome can be expected in the vast majority of cases [5]. A delay in diagnosis and treatment can lead to irreversible damage to the affected brain tissue with high mortality rates. Timely MRI of the brain is key to diagnosing PRES syndrome [4]. Patients with eclampsia who have focal neurological symptoms or decreased level of consciousness are recommended to undergo CT of the brain to exclude intracranial hemorrhage, PRES syndrome. Patients with normal CT results and persistent neurological symptoms and visual impairment should also undergo MRI of the brain.

Despite the data from numerous studies on the properties of other potential predictors of PE complications, the search for its universal specific markers currently seems unjustified. Considering the pathogenetic heterogeneity of this pathology, it can be assumed that attention should be shifted to the use of "systemic approaches" in the early stages of gestation to create "multidimensional models" combining new promising markers with already well-established predictors of PE [2].

Conclusion

In summary, it is important to say that hypertensive gestational disorders remain a pressing problem in modern medicine, causing severe morbidity and disability in mothers and their children. However, the modern diagnostic criteria for hypertensive gestational disorders and their treatment tactics proposed in this review open up new opportunities for improving therapeutic outcomes. A particularly promising area of interdisciplinary management of PE and eclampsia is the study and application of new markers and diagnostic models for predicting life-threatening complications of hypertensive gestational disorders.

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