

СЕКЦІЯ XXI. МЕДИЧНІ НАУКИ ТА ГРОМАДСЬКЕ ЗДОРОВ'Я

ANALYSIS OF THE IMPACT OF HYPERTENSIVE DISORDERS THAT OCCURRED DURING PREGNANCY ON OBSTETRIC AND PERINATAL OUTCOMES IN NEWBORNS

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Preeclampsia is a polyetiological hypertensive disorder that occurs in pregnant women and is manifested by elevated blood pressure and proteinuria [1]. The International Society for the Study of Hypertension in Pregnancy (ISSHP) defines preeclampsia as a condition that manifests after the 20th week of pregnancy and is characterized by a combination of high blood pressure (SBP/DBP over 140/90 mmHg) and significant proteinuria (over 300 mg/day) [2]. This condition is extremely dangerous for both the mother and the fetus as it can lead to serious complications such as fetal growth retardation, severe fetal-placental hemodynamic disorders, premature labor, severe multi-organ insufficiency, and in severe cases, the development of eclampsia and even the death of the mother and fetus [3]. Despite the existence of a large number of fundamental studies, the pathogenesis of the development of preeclampsia remains ultimately undetermined.

The aim of the study: to analyze the frequency of occurrence and structure of obstetric and perinatal pathology in newborns from women with hypertensive disorders that occurred during pregnancy.

Materials and methods. Clinical-statistical analysis of 48 cases of pregnancy and childbirth based on the Municipal non-profit enterprise "Regional Perinatal Center" of Zaporizhzhia Regional Council, which formed the main and control groups of 24 individuals. The main group consisted of pregnant women who were clinically diagnosed with gestational hypertension or preeclampsia. The diagnosis, management, and delivery were carried out according to the current orders of the Ministry of Health of Ukraine. The control group included pregnant women who were not diagnosed with hypertensive complications during pregnancy and childbirth. The average examination term for the main group was 29.92 ± 0.3 weeks ($\sigma = 1.47$), for the control group – 29.42 ± 0.26 weeks ($\sigma = 1.28$), which had no statistically significant difference ($p > 0.05$). The average age of pregnant women in the main group was 29.67 ± 1.31 years, in the control group – 27.67 ± 0.96 years. It should be noted that the difference in average age between the groups had no statistical significance.

($p > 0.05$). From the anamnesis data, it is known that no statistically significant differences were found in the social and professional status in the main control group ($p > 0.05$). The study meets the modern requirements of moral and ethical norms regarding the rules of ICH / GCP, the Helsinki Declaration (1964), the Council of Europe Conference on Human Rights and Biomedicine, as well as the current provisions of the legislative acts of Ukraine. The decision to participate in the study was based on informed consent. The data were analyzed using licensed standard packages of applied programs of multivariate statistical analysis "STATISTICA 13".

Results and discussion. According to the research results, the severity of gestational hypertensive disorders in the main group was distributed as follows: gestational hypertension without significant proteinuria was registered in 50% of the total group. In 25% of cases, moderate preeclampsia was diagnosed, and in another 25% of cases - severe. Characterizing the course of pregnancies in groups, was established that a threatened miscarriage (at a term of up to 21 full weeks) was registered in 16.67% of women in the main group and in 4.17% in the control group, but this difference did not reach statistical significance ($p > 0.05$). Cervical insufficiency was noted in 8.33% of women in the main group and in 4.17% in the control group, but this difference was also not statistically significant ($p > 0.05$). The threat of preterm labor (at a term of up to 37 full weeks) was observed 2.4 times more often in the main group - 70.83%, compared to the control - 29.17%. This difference was statistically significant ($p < 0.01$). Disorders of the fetoplacental blood flow were registered in 75.5% of cases in the main group. In the control group, such disorders were noted only in 4.17% of cases. This difference between the groups is statistically significant ($p < 0.001$), which may indicate a potential influence of preeclampsia on the state of fetoplacental hemodynamics. Upon more detailed examination of this pathology in the main group, it was found that in patients with gestational hypertension, disorders of the fetoplacental blood flow were not detected in 25% of cases, in 20.83% a slow flow in the umbilical artery was detected, and in 4.17 % cases - terminal forms of fetoplacental hemodynamics. In pregnant women with moderate preeclampsia, either a slowed circulation in the umbilical arteries or terminal forms of fetoplacental hemodynamics were observed in all cases - 12.5% each one. Among patients with severe preeclampsia in 8.33%, cases a slowed blood flow in the umbilical arteries was found, and in 16.67% - terminal forms of fetoplacental hemodynamics. In the control group, in 95.83% of cases, no disorders in fetal hemodynamics were detected, and only in 4.17% of cases was found slowed blood flow in the umbilical arteries. This difference between the groups has statistically significant value ($p < 0.001$). Correlation analysis revealed a positive relationship between the severity of preeclampsia and the degree of disorders of fetoplacental blood flow ($\rho = 0.817$, $p < 0.001$), which may indicate a connection between the severity of hypertensive disorders in pregnant women and more severe disturbances of fetoplacental hemodynamics. Fetal growth restriction according to ultrasound data was observed in 33.33% of pregnant women in the main group and in 4.17% - in the control. This difference is statistically significant ($p < 0.05$). The asymmetric form of fetal growth restriction was established in 29.17% of women in the main group, while there were no such cases in the control group. Analyzing the features of childbirth in the study group, was established that the average period of childbirth in the main group was 36.92 ± 0.59 weeks ($\sigma = 2.87$), and in the control group - 39.29 ± 0.18 weeks ($\sigma = 0.86$), which was statistically significantly higher ($p < 0.001$). The average duration of hospitalization (in bed-days) in the main group was 10.91 ± 1.27 days ($\sigma = 6.08$ days), while in the control group it was significantly shorter and amounted to 4.88 ± 0.36 days ($\sigma = 1.75$ days). This difference was also statistically significant ($p < 0.001$). Correlation analysis showed a positive relationship between the duration of hospitalization and the severity of

PE ($p = 0.684$, $p < 0.01$). Premature childbirths were noted only in the main group in 33.33% of cases. However, it should be noted that 4.17% of them were premature births with spontaneous onset of labor, and 29.16% were premature births by caesarean section, indicated by signs of fetal distress that occurred during pregnancy in all cases. Spontaneous onset of labor occurred in 41.67% of women in the main group and all in the control group. ($p < 0.001$). In the control group, all births occurred at term, while in the main group - in 66.67% of cases. This difference was statistically significant ($p < 0.05$). 33.33% of pregnancies in the main group and 95.83% in the control group resulted in childbirth through the natural birth canal ($p < 0.001$). Operative delivery was completed in 66.67% of pregnancies in the main group and 4.17% in the control group ($p < 0.001$). In the cephalic presentation, 87.5% of deliveries took place in the main group, and 100% in the control group. No statistically significant differences between groups were found ($p > 0.05$). An oblique or transverse position of the fetus in the main group was observed in 4.17% of cases, while there were no such cases in the control group. But this difference is not statistically significant ($p > 0.05$). There were 8.33% cases of breech delivery in the main group only. There are no statistically significant differences between groups in this case either ($p > 0.05$). Indications for caesarean section in the main group in 33.33% of cases were signs of fetal distress during pregnancy. There were no such cases in the control group. This difference is statistically significant ($p < 0.05$). The presence of a scar on the uterus due to a previous caesarean section was an indication for operative delivery in 16.67% of cases in the main group, which was not observed in the control group. Severe preeclampsia not amenable to medical correction, transverse fetal position, clinically narrow pelvis, and fetal distress in the first period of labor were indications for cesarean section in the main group in 4.17% of cases, each one. There were no such cases in the control group. Face presentation of the fetus was an indication for surgical delivery only in the control group in 4.17% of cases. However, despite these differences in indications for caesarean section between groups, they did not reach statistical significance ($p > 0.05$). 45.83% of newborns in the main group and 8.33% in the control group were born with fetal growth restriction (≤ 10 th percentile). This difference has statistical significance ($p < 0.05$), which also indicates the potential influence of preeclampsia on the weight of the newborn. 33.33% of newborns in the main group and 70.83% in the control group were born with normal weight (> 10 th percentile). This difference was also statistically significant ($p < 0.01$). Newborns with normal weight (≥ 50 th percentile) accounted for 20.83% in both groups, each one, and had no statistically significant difference ($p > 0.05$). The following complications were observed among those born in the main group: patent ductus arteriosus in 33.33%, newborn respiratory syndrome in 33.33%, neonatal jaundice associated with premature birth in 25%. These conditions were not observed in the control group. Intrauterine infection was noted in 25% of cases in the main group, in 4.17% in the control group. Neonatal jaundice - 25% in the main, 29.17% - in the control. Transient jaundice - in 8.33% in the main group, in 16.67% - in the control group. It was noted only in the main group: hypoxic-ischemic encephalopathy in 16.67% of cases, asphyxia of the newborn - in 8.33%, anemia of prematurity - in 4.17%.

Conclusions. The research revealed a significant increase in cases of perinatal complications in newborns from mothers with hypertensive disorders that arose during pregnancy, compared to newborns from healthy mothers. In pregnant women with hypertensive disorders, a high frequency of fetoplacental circulation disorders was diagnosed – 75.5% of cases. A dependence of the severity of fetoplacental disorders on the degree of hypertensive disorders was established: in pregnant women with gestational hypertension, the frequency of terminal forms of blood flow was - 4.17%, moderate preeclampsia - 12.5%, and severe preeclampsia - 16.67%, which confirms the correlation

analysis ($p = 0.817$ $p < 0.001$). Moreover, it was established that fetal growth restriction according to ultrasound and fetal distress during pregnancy were observed in pregnant women with hypertensive disorders statistically significantly more often – in 33.33% ($p < 0.05$) of cases respectively. Obstetric and perinatal outcomes of childbirth indicate a statistically higher frequency of premature births in the group of women with manifestations of hypertensive disorders – 33.33% ($p < 0.001$). In 29.16% of cases, pregnancy was completed by cesarean section, and the indications for childbirth were signs of fetal distress that arose during pregnancy. In 4.17% of cases – premature birth with spontaneous onset. Also, in the group of pregnant women with hypertensive disorders, there was a statistically significantly increased frequency of abdominal births – 66.67% of pregnancies were completed by cesarean section ($p < 0.05$). The main indication for cesarean section were signs of fetal distress during pregnancy in 33.33% of cases. Second, the presence of a scar on the uterus because of a previous operation, 16.67% of cases. Severe preeclampsia that does not respond to drug correction, transverse fetal position, clinically narrow pelvis, and fetal distress in the first period of labor were indications for cesarean section in the main group in 4.17% of cases each respectively. In women with hypertensive disorders, perinatal outcomes are characterized by a statistically significantly higher ($p < 0.05$) percentage of children with low birth weight – 45.83%. The most common perinatal complications were patent ductus arteriosus and newborn respiratory distress syndrome (33.33% of cases each one), neonatal jaundice associated with premature birth (25% of cases), hypoxic-ischemic encephalopathy (16.67% of cases), newborn asphyxia (8.33% of cases), preterm anemia (4.17% of cases). These conclusions underline the importance of conducting further research to determine the most effective methods of prevention and treatment of hypertensive disorders during pregnancy with the aim of reducing the risk of obstetric and perinatal pathology.

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