



ROLE OF PLACENTAL DYSFUNCTION IN THE DEVELOPMENT OF PRE-ECLAMPSIA

Tishabayeva N.A

Fergana Medical Institute of Public Health.

Article history:

Received: February 20th 2024

Accepted: March 24th 2024

Abstract:

Placenta-associated complication of pregnancy (fetal growth retardation, preeclampsia/eclampsia) are major causes of maternal and perinatal morbidity and mortality. A comparative assessment of the outcomes of pregnancy and childbirth in women with preeclampsia, diagnosed on the basis of various criteria for preeclampsia. A retrospective cohort study of pregnancy and childbirth outcomes was performed in 124 women with preeclampsia. The patients were divided into 3 groups depending on the preeclampsia criteria: in group 1 (58 women) there were women with preeclampsia, where hypertension + proteinuria was noted, in group 2 there were women (34 women) with preeclampsia, where there was hypertension + organ dysfunction, group 3 included women diagnosed with hypertension + uteroplacental dysfunction (32 women).

Keywords: preeclampsia, fetal growth retardation syndrome, placental dysfunction, preterm birth, low-weight newborns for gestational age.

INTRODUCTION

Placenta-associated pregnancy complications (fetal growth restriction, preeclampsia/eclampsia) are major causes of maternal and perinatal morbidity and mortality. According to the national clinical guidelines[1], preeclampsia (PE) is a complication of pregnancy, childbirth, and the postpartum period, characterized by an increase in SBP > 140 mmHg after the 20th week of pregnancy. and/or DBP > 90 mmHg, regardless of the level of blood pressure in the history in combination with proteinuria or at least one other parameter indicating the addition of multiple organ failure.

In 2018, the International Society for the Study of Hypertension in Pregnancy[4] (ISSHP) adopted a new definition of PE, according to which PE is hypertension in pregnancy accompanied by > 1 of the following new conditions at 20 weeks of gestation or later: proteinuria (> 30 mg/mol) protein to creatinine level: > 300 mg/day; or indicator strip reading > 2+; other maternal organ dysfunction, including: kidney damage (creatinine > 90 μmol/L), liver damage (increased transaminase levels, for example, ALT or AST > 40 IU/L) with or without pain in the right hypochondrium or epigastric region; neurological disorders (severe headaches, blurred vision); platelet count <150,000/μl, disseminated intravascular coagulation; uteroplacental dysfunction.

Purpose of the study: Comparative assessment of pregnancy and childbirth outcomes in women with preeclampsia diagnosed based on various criteria.

MATERIALS AND METHODS.

A retrospective cohort study of the outcomes of pregnancy and childbirth was carried out in 124 women with PE who gave birth in the Republican Perinatal Center and the Fergana Perinatal Center in 2020-2022. The diagnosis of PE was made according to the classification according to the national guidelines [2], patients were divided into 3 groups depending on the criteria PE: in the 1st group there were 58 women with PE, where hypertension + proteinuria was noted, in the 2nd group there were 34 women with PE, where hypertension + organ dysfunction occurred; The 3rd group consisted of 32 women, who were diagnosed with hypertension + uteroplacental dysfunction. Fetometry, measurement of amniotic fluid index and study of uteroplacental-fetal blood flow were performed using ultrasound devices GE Voluson S6 (GE Healthcare, USA) and Mindray DC-70 (China), cardiotographic (CTG) study was performed using Student's t-tests, odds ratios (OR) with 95% confidence intervals (95% CI) were also calculated. P values <0.05 were considered significant.

RESEARCH RESULTS AND DISCUSSION.

The analysis showed that women by age (24.6 + 3.7 years, 29.2 + 3.6 years and 31.5 + 4.5 years, respectively, groups) did not differ statistically significantly from each other. There were more primigravidas in group 1 (58.6%) compared to groups 2 (47.1%) and 3 (43.7%), but no statistical differences were found. Indications for early delivery on the part of the mother prevailed in the 2nd group (72.4%, 85.3% and 28.1, respectively), indications for early delivery on the part of the fetus were significantly higher in the 3rd



group (27.6 %,14.7% and 71.9%, respectively, groups) - OR 2.132.95% CI - 1.573-9.281. Caesarean section was performed in the first group - in 65.5% (38) of women, in the 2nd group - in 70.5% (24) and in the 3rd group - in 84.3% (27). Preterm birth occurred in the 1st group in 41.4% (24) of cases, in the 2nd group - in 64.7% (22) cases, and in the 3rd group - significantly more than in the first and second groups: in 81.2% (26) cases (OR 3.41.95% CI 1.362-11.743). The gestational age of delivery in group 3 was less than in groups 1 and 2 and amounted to 32.2 + 3.5 weeks, whereas in the 2nd group - 34.9 + 2.8 weeks and in the 1st group - 36.6 + 2.2 weeks. Fetal growth retardation syndrome in the 1st group was diagnosed in 12.1%(7) of cases, in the 2nd group - in 14.7%(5), in the 3rd group - in 100% of cases ($p < 0.01$). Most cases of critical "zero" blood flow (absence of end-diastolic blood flow) in the artery of the fetal umbilical cord were detected in the 3rd group - 59.3% (19 cases), while in the 1st group 18.9% (11) were diagnosed, in the 2nd - 26.4%(9) of cases ($p < 0.05$). Pregnancy in women with PE was complicated by premature placental abruption in the 1st group of pregnant women with proteinuria in 3.4% (2) cases, in the 2nd group with organ dysfunction in 2 cases (5.8%) and in the 3rd group with uteroplacental dysfunction - in 9.3% (3) of cases, but due to the small number of cases, it was statistically insignificant. The weight of newborns in group 3 was significantly lower than in groups 1 ($p < 0.05$) and 2 ($p < 0.05$), so 6.2% were born with a weight of 500-900 g in group 1 (2) children weighing 1000-1499 g - 25% (8), 1500-2499 g - 59.3% (19), in the weight category 2500 g and above - 9.3% (3) of newborns. In the 1st group, 8.6% (5) of newborns were born in the weight category of 1000-1499g, 31.0% (18) of 1500-2499g, 60.4% (35) of newborns weighing 2500g and above, in 2- 1 newborn was born in the 500-999g weight category (2.9%); in the 1000-1499g weight category - 11.7% (4), 1500-2499g - 47.1% (16) and 2500g and above - 38.2%(13) of newborns.

Antenatal fetal death occurred in 2 cases (6.2%) in group 3; this complication was not detected in groups 1 and 2. The Apgar score of newborns below 7 points at 5 minutes after birth was also more often determined in group 3 (1.7%, 5.8%, 18.7%, respectively, groups). Early neonatal mortality occurred in the 3rd group in 2 (6.2%) cases and in the 2nd group - in 1 (2.9%) case. Our study showed that the most unfavorable outcomes (premature birth, birth of newborns with small weight for gestational age, antenatal fetal death, Apgar score below 7 points at 5 minutes) were more often observed in pregnant women whose PE criterion was hypertension + uterine placental

dysfunction. PE is a heterogeneous disease, with significant variation in the timing of disease onset, presentation and severity of symptoms, suggesting multiple subtypes of the disease with different etiologies and pathophysiologies. The placenta plays a key role in the pathogenesis of PE, and disturbances in its function underlie most obstetric disorders, many of which are currently classified under the general term "placenta-associated diseases" [2]. Also, one of the etiological factors in the development of these complications is obesity, since in this case adipokines (hormones of adipose tissue - adiponectin, leptin, resistin - which are a type of cytokines, are secreted by adipocytes (adipose tissue cells) and are involved in the pathogenesis of preeclampsia by affecting the regulation of placental angiogenesis, preventing proper vascular transformation and trophoblast invasion.[9,10,11,12] During a healthy pregnancy, the spiral arteries of the uterus are remodeled by extravillous cytotrophoblast and become vessels of larger diameter, while blood flow into the intervillous space of the placenta increases, which promotes the growth and development of the fetus, and these vessels do not respond to vasopressors in the maternal bloodstream [5,7,8]. With PE, insufficient remodeling of the uterine spiral arteries occurs, resulting in ischemia-reperfusion changes in the placenta, which causes damage to thin villous structures, promotes the formation of blood clots, which leads to disruption of utero-fetal-placental blood flow and decreased exchange of oxygen and nutrients between mother and fetus [5,15,16]. Although there is strong evidence supporting this model of the pathophysiology of PE, it is important to note that not all cases of PE demonstrate structural or molecular signs of ischemia-reperfusion [6], this possibly explains the various options for the development of this complication in pregnant women.

CONCLUSIONS:

Thus, our study showed that the most common adverse outcomes of PE (premature birth, birth of small-for-gestational-weight infants, antenatal fetal death, Apgar score below 7 points at 5 minutes) were more often observed in pregnant women, in which the criterion for PE was hypertension + uteroplacental dysfunction. These data indicate the need for more careful monitoring of women with PE, determining the optimal timing of delivery to reduce maternal complications, perinatal mortality and morbidity.



REFERENCES.

1. Национальный клинический протокол «Артериальная гипертензия во время беременности»-Ташкент-2022-сс.130
2. Babic I, Mejia A, Wroblewski J.A, Shen M, Wen S.W., Moretti F. Intraplacental Vilous Artery Doppler as an Independent Predictor for Placenta-Mediated Disease and Its Comparison with Uterine Atrery Doppler and/or Placental Biochemical Markers in Predictive Models: A Prospectiv Cohort Study. // Fetal Diagn Ther.-2020.-47(4).-P.292-300.doi:10.1159000503963.Epub 2019 Nov 14.PMID:31726454.
3. Black R.E., Laxminarayan R, Temmerman M., et.al., editors. Reproductive, Maternal, Newborn, and Child Health: Disease Conrtol Priorities, Third Edition (Volume 2). Washington (DC): The International Bank for Reconstruction and Development // the World Bank.-2016.- Apr.5.Preface.
4. I.N Raxmatjonovna. The problem of acceleration of children's development (literature review). International Multidisciplinary Journal for Research & Development. Volume10, Issue 12, pp. 160-164, 2023
5. И.Н Рахматжоновна. Влияние запора на антропометрические показатели детей при заболеваниях толстого кишечника. Тиббиётда янги кун 2 (34), 85-87
6. АА Джурабаев. О роли helicobacter pylori в патогенезе атрофического желудка гастрита и рака. "Журнал клинической и профилактической медицины" № 1, стр.16-19, 2024. ISSN 2181-3531
7. АА Djurabayev. On the etiological and pathogenetic aspect of nonspecific colitis. World Bulletin of Public Health 29, 24-26, 2023
8. АА Dzhurabaev. The role of endoscopic examinations in early diagnosis diseases of the esophagus, stomach, and duodenum. Innovations in technology and science education, 264-269
9. Влияние адипонектинов на развитие преэклампсии у беременных женщин с ожирением. Ш.Д.Бабажанова, О.Е. Шаланкова. Modern educational system and innovative teaching solutions, Том 7, № 7, стр.57-59, 2023/11/19 https://scholar.google.com/citations?view_op=view_citation&hl=ru&user=4C9sWTwAAAAJ&citation_for_view=4C9sWTwAAAAJ:qjMakFHDy7sC
10. Оценка риска ранней и поздней преэклампсии у женщин с избыточной массой тела и ожирением. Бабажанова Ш.Д Шаланкова О. Е., Международный конгресс по репродуктивной медицине, Том 12., стр 39, "МЕДИ Экспо", 2023 https://scholar.google.com/citations?view_op=view_citation&hl=ru&user=4C9sWTwAAAAJ&citation_for_view=4C9sWTwAAAAJ:u-x6o8ySG0sC
11. Certain aspects of the diagnosis of polycystic ovary syndrome in fertile women. Sattaraliyeva Hayotxon Botirali qizi , World Bulletin of Public Health (WBPH) Available Online at: <https://www.scholarexpress.net> Volume-28, November 2023 ISSN: 2749-3644.
12. Risk factors of uterine scar dysplasia development after caesarean section aspects and terminology. G'ulomova R.I., World Bulletin of Public Health (WBPH), Available Online at: <https://www.scholarexpress.net> Volume-29, December 2023. ISSN: 2749-3644
13. Obstetric tactics during Covid-19 disease, Makhmudova_Kh.T., Ethipi international journal of multidisiplinary research 12.12.2023. PP.366-368
14. Aholi salomatligida sog`lom turmush tarzini ahamiyati, Makhmudova_Kh.T. Aholiga kursatilayotgan birlamchi tibbiy-sanitariya yordamini takomillashtirish 10-noyabr 2023, P,126
15. Physiological aspects of morphofunctional changes in the digestive tract under stress (literature...) Mirzazhonova S.A., Ganizhonov P.H., International Multidisciplinari Journal for Research&Development, Vol 10 No. 12 (2023) https://scholar.google.com/scholar?cluster=17834408336051404076&hl=ru&as_sdt=2005
16. Acquired coagulopathies, Mirkurbanova T.X., International Journal of Health Systems and Medical Sciences, Vol. 3 No. 3 (2024): March <https://inter-publishing.com/index.php/IJHMS/article/view/2833>