

ORIGINAL ARTICLE

LOCATION OF THE PLACENTA IN DETERMINING THE CLINICAL PICTURE OF PREECLAMPSIA

Todorovska I¹, Jovanovska V¹, Dabeski D¹, Tanturovski M¹, Kondova Topuzovska I²

¹*PHI University Clinic for Gynecology and Obstetrics – Skopje,*

²*PHI University Clinic for Infectious Diseases and Febrile Conditions – Skopje*

Abstract

Introduction: Preeclampsia is a syndrome that affects 4-9% of pregnancies. It is a systemic disease characterized by a combination of hypertension and proteinuria after 20 weeks of gestation in previously normotensive pregnant women.

Purpose: To determine the correlation between the location of the placenta and the occurrence of preeclampsia.

Material and Method: 50 patients were examined during the second screening in pregnancy and were controlled during the period of 30-34 gestational weeks in order to determine whether they were hospitalized with symptoms of preeclampsia.

Results: Out of the examined patients, 27(54%) had a central location of the placenta, 17(34%) had a lateral location, 4(8%) had a posterior location and 2(4%) had a fundal location of the placenta. Out of the 50 patients in the study, 6 (12%) developed symptoms of preeclampsia. Out of the 50 patients in the study, 27(54%) had a central location of the placenta, 4 of them (14.81%) developed symptoms of preeclampsia and 23(85.19%) of the patients were normotensive. In patients with preeclampsia, 4 of them (14.81%) had a central location on the placenta.

Discussion: The incidence of preeclampsia in the studied group is 12%. After screening in the third semester, 27(54%) patients had a central location and 4(14,81%) had a tendency to develop preeclampsia, severe preeclampsia, postpartum hemorrhage. The resulting neonates had a lower birth weight and a lower Apgar score than in normotensive patients.

Conclusion: Preeclampsia is a serious condition, and its prevention is of great importance. Any test that can predict possible complications must not be dismissed, but carefully considered.

Key Words: *Bed, preeclampsia, second semester screening.*

LOCATION OF THE PLACENTA IN DETERMINING THE CLINICAL PICTURE OF PREECLAMPSIA

Introduction

Preeclampsia is a syndrome that affects 4-9% of pregnancies and is an important cause of maternal and perinatal mortality and morbidity. It is a systemic disease characterized by an inflammatory response and endothelial disruption and is clinically identified as a combination of hypertension and proteinuria after 20 weeks of gestation in previously normotensive pregnant women (1).

One in three cases of maternal morbidity is associated with preeclampsia. Preeclampsia is the cause of 50,000 maternal deaths annually worldwide.

Preeclampsia can be moderate or severe, according to clinical and laboratory parameters and the presence of maternal and fetal complications.

Also, preeclampsia can be classified as early, which occurs before 34 weeks of gestation, and late, which occurs after 34 weeks of gestation. Early preeclampsia occurs due to abnormal uteroplacental perfusion, and this leads to low-birth-weight neonates. They are associated with poor maternal and neonatal outcomes. Late preeclampsia occurs in patients associated with a chronic inflammatory condition. It has a lower degree of fetal distress (1,2).

The placentas of patients with preeclampsia are associated with placental hypoperfusion, such as infarcts and fibrin deposits. Ischemia and hypoxia from inadequate trophoblast invasion increase the production of proinflammatory cytokines in the placenta. Tumor necrosis factor alpha and interleukin 1 levels are increased and secreted from the placenta of patients with preeclampsia. Decreased production of the anti-inflammatory cytokine interleukin 10 increases the production of pro-inflammatory cytokines (1).

The placenta is a source of angiogenic molecules that play an important role in the formation of blood vessels in the maternal-fetal space. Imbalance of placental production and release of pro- and antiangiogenic factors contributes to systemic endothelial cell dysfunction in patients with preeclampsia. Therefore, reduction of angiogenic placental growth factor (PLGF) and vascular endothelial growth factor (VEGF), and increased production of antiangiogenic factors soluble endoglin (sEng) and soluble fms-like tyrosine kinase-1 (sFlt-1), are associated with the pathogenesis of preeclampsia (1,2).

This study is devoted to the correlation of the location of the placenta and the severity of the clinical picture of preeclampsia.

No test for the diagnosis of preeclampsia is perfect, and therefore the search for a test that will improve the diagnosis of preeclampsia continues. There are studies that link the location of the placenta to the occurrence of preeclampsia. During the screening in the second semester, the position of the placenta is determined. If the placenta is found to be anterior wall or lateral, the patient can be monitored at the tertiary level for developing preeclampsia.

Material and Method

This is a prospective study. 50 health patients were examined during the second screening in pregnancy, in the outpatient polyclinic section at the tertiary level (University Clinic of Gynecology and Obstetrics, Skopje) and were controlled during the period of 30-34 gestational weeks in order to determine whether they were hospitalized with symptoms of preeclampsia. All patients were delivered at University Clinic of Gynecology and Obstetrics.

The patients were divided into two groups:

- 1) A group of healthy patients who did not develop symptoms of preeclampsia, and
- 2) A group of patients who developed symptoms of preeclampsia.

The patients were examined on an ultrasound device Voluson E10, from the company General Electrics.

The review is performed on a Voluson E 10 device in the outpatient department, and on a Voluson S6 in the hospital department of the tertiary institution in the period from November 2022 to September 2023.

Inclusion criteria include:

A singleton pregnancy with normal tension, during the second screening in our institution; and Female patients agreeing to contact the tertiary level in the event of an increase in blood pressure.

Exclusion criteria are:

Patients with thyrotoxicosis,

Severe anemia,

Multiple pregnancies,

Vascular diseases,

Gestational diabetes mellitus,

Vascular disorders,

Renal disease,

Epilepsy,

Cardiovascular disorders.

Laboratory analysis for preeclampsia and blood pressure were taken in the patients hospitalized in the department with a diagnosis of preeclampsia.

The placenta is noted as the central, lateral, fundal and posterior position, determined during the second trimester screening. Hypertensive disorders are considered if the diastolic pressure is over 90mmHg in a period of 6 hours or over 110mmHg.

Results and Discussion

Out of the examined patients, 27 (54%) had a central location of the placenta, 17 (34%) had a lateral location, and 4 (8%) had a posterior location and 2 (4%) had a fundal location of the placenta.

Out of the 50 patients in the study, 6 (12%) developed symptoms of preeclampsia.

Out of the 50 patients in the study, 27 (54%) had a central location of the placenta, and 4 of them (14.81%) developed symptoms of preeclampsia, and 23(85.19%) of the patients were

normotensive. In patients with preeclampsia, 4(14,81%) of the patients with preeclampsia had a central location on the placenta.

Table1. Location of the placenta

Placental location	Normotensive	Preeclampsia	Total
Central	23(85,19%)	4(14,81%)	27(54%)
Lateral	15(88,23%)	2(11,76%)	17(34%)

Fisher's exact test is considered to be not statistically significant.

Patients with a lateral position of the placenta were 17 (34%), 2 (11.76%) patients with lateral position of the placenta developed preeclampsia. The remaining 15 (88.23%) were normotensive. Severe preeclampsia was diagnosed in 2 (33.33%) of the patients diagnosed with preeclampsia, and in 4 (66.67%) patients, moderate preeclampsia was diagnosed. Both patients with severe preeclampsia had a central placental location.

Table 2. Preeclampsia severity

Severity of preeclampsia	Central placenta	Lateral placenta	Total
Moderate	2	2	4
Severe	2	0	2
Total	4	2	6

Fisher's exact test is considered to be not statistically significant.

13 of all examined patients had postpartum hemorrhage, out of which 10(20%), normotensive patients and 3(6%) patients with preeclampsia with a central placenta location.

The incidence of admission of neonates to the Intensive Care Unit in patients with preeclampsia has increased.

The incidence of preeclampsia in the studied patients is 12%. After screening in the third semester, 27 (54%) patients had a central location and 4 of them (14.81%) had a tendency to develop preeclampsia, severe preeclampsia, postpartum hemorrhage. The resulting neonates had a lower birth weight and a lower Apgar score than in normotensive patients.

Although the etiology of preeclampsia is not reliably defined, there is evidence that indicates that disorders in the placenta are the most important factors responsible for the development of the disease and its severity (3).

Conclusion

This study confirmed correlation of the location of the placenta and the severity of the clinical picture of preeclampsia. Attention should be paid to placental location during second-trimester screening (4,5). Placental location can be used as predictor of the development of preeclampsia, and to reduce maternal and neonatal complications. In the central location of the placenta, more

frequent and more careful monitoring of pregnant women and fetuses is needed, in order to detect the occurrence of preeclampsia in time and to respond promptly to avoid possible severe consequences.

The statistical insignificance is considered to be due to the small number of patients examined so far in the study. The study continues, and with the larger number of patients, statistical significance will be reached. Until then, vigilance remains for patients where the placenta is centrally located for the development of symptoms of preeclampsia.

References:

1. Cunningham FG, Williams JW. Williams obstetrics. 1866–1931. 23rd ed. New York: McGraw-Hill, Medical; 2010.
2. Duley L. The global impact of pre eclampsia and eclampsia. *Semin Perinatol* 2009; 33(3):130–137. DOI: 10.1053/j.semperi.2009.02.010.
3. Asegaonkar P, Ghike S. Pregnancy outcome in women with pre eclampsia remote from term in a rural tertiary care hospital. *PJMS* 2014; 4(1):40–44.
4. Faizi S, Pai MV. Role of midtrimester localization of placenta in predicting pregnancy outcome. *IJIFM* 2014; 5(3):87–91. DOI: 10.5005/jpjournals-10016-1087.
5. Magann EF, Doherty DA, Turner K, et al. Second trimester placental location as a predictor of an adverse pregnancy outcome. *J Perinatol* 2007; 27(1):9–14. DOI: 10.1038/sj.jp.7211621.