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STUDY OF THE CLINICAL AND FUNCTIONAL STATE OF THE VISUAL ORGAN IN WOMEN WITH MILD MYOPIA DURING PREGNANCY AND THE POSTPARTUM PERIOD

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Abstract

Hormonal changes occurring in the body during pregnancy, including cyclical fluctuations in estrogen and progesterone levels, as well as hemodynamic alterations, affect ocular tissues and microcirculation, leading to significant changes in intraocular pressure, retinal microcirculation, ocular muscle function, and accommodative capacity. According to global statistics, the prevalence of myopia among women with ocular diseases ranges from 25% to 35%, and transformations in visual function during pregnancy have been confirmed by statistical data (WHO, 2020).

Relevance of the topic The relevance of this study lies in the need for a comprehensive assessment of the clinical and functional state of the visual organ

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in women with mild myopia during pregnancy and the postpartum period. Physiological hormonal and hemodynamic changes occurring during pregnancy may influence ocular structures and visual functions, potentially increasing the risk of myopic progression and functional visual disturbances.
Purpose of the study, a detailed evaluation of visual parameters in this group of patients and evaluation of the visual system in women with ophthalmopathology during repeated pregnancies.
Materials and Methods. For this study, 50 women (98 eyes) with mild myopia at various stages of pregnancy were selected at the Khorezm branch of RSSPMCEM. The participants were monitored during early and late stages of pregnancy as well as during the 40-day postpartum period.
The results of this study showed that retinal dystrophies exhibited pathological progression during subsequent pregnancies. Changes in the vitreous body were found to be of a temporary nature.

Keywords: Recurrent pregnancy, laser coagulation, peripheral retinal dystrophies, mild myopia

Introduction

Ruzimova, N.E., & Karimova, M.Kh. (2026). Study of the clinical and functional state of the visual organ in pregnant women with mild myopia during repeated pregnancies.

Results: Clinical Assessment of the Visual Organ in Pregnant Women with Mild Myopia

During the first pregnancy, the mean visual acuity of the participants was 0.37 ± 0.32, which increased to 0.74 ± 0.26 with optical correction. Analysis of intraocular pressure (IOP) revealed an average IOP of 17.5 ± 2.0 mmHg.

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Fundus biomicroscopy showed that in 63 eyes (64.3%), no pathology was detected in the optic disc or macular region, and no pathological changes were observed in the peripheral retina. In the remaining 35.7% of eyes, peripheral retinal changes were identified as follows: 6 eyes (6.1%) had pigmented cystoid dystrophies, 6 eyes (6.1%) had cyst-like dystrophies, 4 eyes (4.1%) had non-depressed white dystrophies, 5 eyes (5.1%) presented with peripheral retinal tears, and 6 eyes (6.1%) showed retinal excavation scars, of which 2 eyes had previously undergone border laser coagulation, with moderate-intensity three-row pigmented laser coagulates observed. Additionally, 4 eyes (4.1%) exhibited combined dystrophies, involving both vitreo-retinal traction and peripheral tears, and other types of dystrophies were observed in 4 eyes (4.1%). Despite the presence of mild myopia, intraretinal, chorioretinal, and vitreoretinal dystrophies were observed in the peripheral retina. Eighty-six percent of the dystrophies were located in a single retinal quadrant, while the remaining cases involved dystrophies in two quadrants.

Digital ultrasound A-scan examination showed that the mean anterior-posterior axial length of the eye was 23.95 ± 0.45 mm. Digital B-scan ultrasonography revealed that in 65 eyes (66.3%), the vitreous body was unchanged. Small floating opacities in the vitreous body were observed in 27 eyes (27.6%). Significant floating opacities were detected in 4 eyes (4.1%), and in 2 eyes, minor irregularities along the retinal contour were identified despite the absence of pathological changes in the vitreous body.

Comparative analysis with fundus examination showed that when pathological vitreous shifts were present, they were primarily associated with peripheral retinal tears and peripheral vitreoretinal dystrophies.

Postpartum Outcomes and Laser Coagulation Results

In 13 eyes with retinal dystrophies, barrage laser coagulation was performed. The mean number of laser coagulates was 120 ± 60, applied in four rows according to

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L'Esperance, using type II and III coagulates. Among the pregnant women, 95 delivered vaginally, while 3 underwent cesarean section.

In all women who delivered vaginally, no significant changes were observed in visual acuity or intraocular pressure during the 40-day and 6-month postpartum periods ($p \geq 0.05$). Ultrasound A-scan examinations revealed no significant differences in the anterior-posterior axial length of the eye ($p \geq 0.05$).

Notable changes were observed in B-scan ultrasonography. During the 40-day postpartum period, 6 eyes exhibited new mild floating opacities in the vitreous body. Laboratory analysis revealed hemoglobin levels below 90 g/L in these patients. After appropriate treatment, the opacities regressed, and by the 6-month follow-up, only 1 eye retained the opacity.

These findings indicate that newly formed changes in the vitreous body during the postpartum period are temporary in nature.

Second Pregnancy Examination Results

During the second pregnancy, the mean visual acuity of the participants was 0.36 ± 0.33, which improved to 0.74 ± 0.26 with optical correction. The average intraocular pressure was 17.5 ± 2.0 mmHg.

Fundus biomicroscopy revealed pathological vitreous shifts in 1 eye. A more detailed analysis showed that in an eye with pre-existing peripheral vitreoretinal dystrophy, a new small retinal tear with a flap ("tear with a cap") developed during the second pregnancy. Since two types of dystrophies were present, the incidence of combined dystrophies increased by 5.1%.

To manage the newly formed pathological lesion, additional barrage laser coagulation was performed, and prophylactic peripheral laser coagulation was applied to the remaining retinal areas. In 97 eyes, the ocular condition remained stable throughout the second pregnancy.

Digital A-scan ultrasonography revealed that the mean anterior-posterior axial length of the eye was 23.95 ± 0.45 mm. Digital B-scan ultrasonography showed

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that in 63 eyes (66.3%), the vitreous body remained unchanged. Small floating opacities in the vitreous were observed in 31 eyes (27.6%), while significant floating opacities were detected in 4 eyes (4.1%). In 2 eyes, minor irregularities along the retinal contour were noted despite an otherwise normal vitreous body. Analysis of these data indicated that pathological vitreous shifts occurred in only 2 eyes.

In cases where the vitreous body remained unchanged, an increase in the number of small floating opacities was observed during the second pregnancy. Comparative analysis with fundus examination demonstrated that when pathological vitreous shifts were present, they were primarily associated with peripheral retinal tears and peripheral vitreoretinal dystrophies.

Among the pregnant women, 95 delivered vaginally, while 3 underwent cesarean section.

In all women who delivered vaginally, no significant changes were observed in visual acuity or intraocular pressure during the 40-day and 6-month postpartum periods ($p \geq 0.05$). A-scan ultrasonography revealed no significant differences in the anterior-posterior axial length of the eye ($p \geq 0.05$).

Notable changes were detected on B-scan ultrasonography. During the 40-day postpartum period, 10 eyes exhibited an increase in the number of significant floating opacities in the vitreous body. These patients also had somatic conditions, including a decrease in arterial blood pressure of more than 10 mmHg below normal. After appropriate treatment, regression of the vitreous opacities was observed, and by the 6-month follow-up, only 3 eyes retained residual opacities. These findings indicate that newly formed changes in the vitreous body during the postpartum period are temporary in nature.

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Third Pregnancy Examination Results

During the third pregnancy, the mean visual acuity of the participants was 0.36 ± 0.33, improving to 0.74 ± 0.26 with optical correction. The average intraocular pressure was 17.5 ± 1.5 mmHg.

Fundus biomicroscopy showed that the majority of eyes remained stable throughout the third pregnancy. Pathological vitreous shifts were observed in 2 eyes. Detailed analysis revealed that one eye with peripheral cystoid dystrophy developed new tears, and one eye presented with combined dystrophies. As a result, the incidence of combined dystrophies increased by 7.1%.

To manage the newly formed pathological lesions, additional border laser coagulation was performed, and prophylactic peripheral laser coagulation was applied to the remaining retinal areas. In the other eyes, the retinal condition remained stable throughout the pregnancy.

Digital A-scan ultrasonography showed that the mean anterior-posterior axial length of the eye was 23.95 ± 0.45 mm. Digital B-scan ultrasonography revealed that in 60 eyes (66.3%), the vitreous body remained unchanged. Small floating opacities were observed in 34 eyes (27.6%), while significant floating opacities were detected in 4 eyes (4.1%). In 2 eyes, minor irregularities along the retinal contour were noted despite an otherwise normal vitreous body.

Analysis of the data indicated that in 5 eyes, the number of floating opacities had increased. Comparative evaluation with fundus examination demonstrated that when pathological vitreous shifts were present, they were primarily associated with peripheral retinal tears and peripheral vitreoretinal dystrophies.

Among the participants, 95 women delivered vaginally, while 3 underwent cesarean section.

In all women who delivered vaginally, no significant changes were observed in visual acuity or intraocular pressure during the 40-day and 6-month postpartum periods ($p \geq 0.05$). Follow-up A-scan ultrasonography revealed no significant

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differences in anterior-posterior axial length ($p \geq 0.05$). Fundus biomicroscopy demonstrated stability of both the central and peripheral retina ($p \geq 0.05$).
Notable changes were observed on B-scan ultrasonography. During the 40-day postpartum period, 14 eyes showed an increase in mild floating vitreous opacities, and 5 eyes exhibited significant floating opacities. After monitoring the patients' somatic condition and laboratory parameters, regression of these opacities was observed, and at the 6-month follow-up, only 4 eyes retained mild floating opacities and 1 eye retained significant floating opacities.

Conclusion:

Newly formed changes in the vitreous body during the postpartum period were temporary. During repeated pregnancies, progression of retinal dystrophies was observed, mainly manifesting as the formation of peripheral retinal tears. In eyes that had previously undergone peripheral laser coagulation, the retinal condition remained stable during subsequent pregnancies.

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