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Outer retinal changes in preeclampsia

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Objective: The most common ocular finding in preeclampsia is severe arteriolar spasm. Optical Coherence Tomography (OCT) provides a non-invasive technique for visualization of the various retinal layers. The purpose of the study is to describe vascular retinal changes seen in preeclampsia.

Study Design: Swept source OCT was used during the study. We extracted depth-integrated images using the IMAGENet software by selecting the outer retina in accordance with the automated layer segmentation system.

Results: We report a case of a primigravida 40-year-old pregnant with monochorionic twins. She was admitted at 29 weeks of gestation due to elevated blood pressure (BP) without proteinuria. Blood tests were normal. Visual acuity was 20/20 bilaterally and funduscopy unremarkable. During hospitalization, the patient developed preeclampsia manifested by increasing BP and proteinuria. At 33 weeks the patient complained of bilateral visual blur. The visual acuity was right 3/20, left 2/20, as bilateral extensive, punctate, pale-yellow Elschnig's spots were present in the posterior fundus. We also noticed bilaterally swollen discs, discrete left peripapillary flame-shaped hemorrhages as well as some degree of macular edema. At that time, the BP increased and a cesarean section was performed. Two healthy babies were delivered. Over the next three weeks, as the patient recovered hemodynamically and visually the optic disc regained its usual appearance and the spots gradually faded.

At the paroxysmal phase(second row) there is diffuse structural changes well beyond the area of thickened retina. Two days later (third row), as the blood pressure is regularized and proteinuria resolving, the general changes in vascular texture persist but the central avascular area looks closer to baseline. Peripapillary macular edema is decreasing.

Ten days later(last row), after substantial decrease of the retinal thickness, the overall texture of the deep vascular plexus has not returned to its initial state but the central avascular area looks normalized.

Conclusion: OCT analysis revealed extensive outer retinal changes. No similar changes were detected at the level of the superficial capillary plexus or at other selected planes. The described ocular findings should be regarded as the first documentation of the selective effect of preeclampsia on the deep vascular plexus and outer retina. With its angiographic modalities, OCT should improve our understanding on the impact of preeclampsia on the retina. This novel modalities, considered to be safe in pregnancy, are crucial in characterizing vascular and structural changes in normal and complicated pregnancy.

Biography

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