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THE IMPORTANCE OF OPTICAL COHERENCE TOMOGRAPHY IN RETINOPATHY OF PREMATURITY

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Introduction:

We aimed to evaluate the optical coherence tomography (OCT) findings in the macula of patients with retinopathy of prematurity (ROP) and their relationship with the stage and severity of the disease.

Materials and methods:

The research was conducted through the data based on a retrospective chart review of patients who underwent laser photocoagulation or vitreoretinal surgery for ROP between January 2017- September 2023 and whose OCT images were obtained before the procedure were included in the study. The images were taken with a spectral domain handheld OCT device (Envisu C2300, Bioptigen) and the patients' gestational week, birth weight, ROP stage determined by preoperative examination, age at the time of surgery/laser, and OCT findings were scanned and recorded. OCT findings of the patients were analysed and compared with the simultaneous Retcam (RetCam 3 Clarity, USA) images.

Results:

Eighty-one eyes of 52 patients with OCT recordings were included in the study. The mean gestational age was 28.3 ± 3.13 (23-34) weeks and mean birth weight was 1301 ± 527 (550-2800) grams. The mean postmenstrual age at the time of imaging was 43.5 ± 7.3 (36-67) years. In the preoperative examination, 28 (34.5%) eyes were stage 3, 28 (34.5%) eyes were stage 4A, 9 (11.1%) eyes were stage 4B, 3 (3.7%) eyes were stage 4 (macular involvement not specified), 3 (3.7%) eyes had aggressive ROP (A-ROP), and 10 (12.3%) eyes had persistent avascular retina. Laser photocoagulation was performed in 20 (24.7%) eyes and intravitreal anti-VEGF was performed in 26 (32%) eyes. OCT findings in the eyes were as follows in order of frequency: macular detachment in 8 (10.2%) eyes, retinoschisis in 7 (11.5%) eyes, tractional or nontractional vitreous membrane in 6 (7.6%) eyes, cystoid macular edema (CME) in 5 (6.4%) eyes, preretinal hyperreflective tissue in 3 (3.8%) eyes, epiretinal membrane in 3 (3.8%) eyes, 3 (3.8%) eyes had scar and 1 (1.2%) eye had subretinal hyperreflective material. Also 1 (1.2%) eye was evaluated as stage 4A in the preoperative examination but was changed as stage 4B due to macular involvement on OCT. When we examined the distribution of OCT findings according to stages, it was observed that CME was more common in stage 3 (60%) and retinoschisis was more common in stage 4A (70%). When the relationship between OCT findings and gestational age, stage, presence of preplus/plus disease, laser and intravitreal anti-VEGF treatment was assessed; CME was statistically significantly more frequent in patients with preplus/plus disease ($p: 0.028$).

Conclusions:

The aforementioned OCT findings in our study also described in the literature^{1,2} and it was observed for the first time that CME was significantly more frequent in patients with preplus/plus disease. In addition, the stage of 1 eye differed from the clinical examination as a result of the OCT assessment.

OCT analysis may determine the visual prognosis by contributing to staging as well as determining macular findings³.

Sources:

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3. Chavala SH, Farsiu S, Maldonado R, Wallace DK, Freedman SF, Toth CA. Insights into advanced retinopathy of prematurity using handheld spectral domain optical coherence tomography imaging. *Ophthalmology*. 2009 Dec;116(12):2448-56.