10.14 Retinal dysfunction in patients with macula-on rhegmatogenous retinal detachment: multifocal ERG study

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Purpose: To evaluate macular function using multifocal ERGs (mfERG) for rhegmatogenous retinal detachment (RRD) patients with macular sparing.

Methods: In total, 14 patients with macular-on RRD, which did not involve the macula, underwent mfERG (MonPack One®, Metrovision Inc., Perenchies, France). The involvement of macula was confirmed by spectral-domain OCT scan images. In addition, best-corrected visual acuities (BCVA) and wide-field fundus images were obtained from the patients. MfERGs were performed by one experienced colleague, and fixation of patients was monitored with an infra-red camera during the test. At least 300 responses were averaged for statistical analysis. The response densities and implicit times of N1 and P1 in Ring 1 and Ring 2 were estimated. The results of mfERG in RRD eyes were compared with the results from the fellow eyes of each patient.

Results: Mean age of all subjects was 53.0 ± 24.1 years and none of the patients had another ocular pathologic condition except senile cataract in the fellow eyes. The number of patients who showed retinal tears on the superior and inferior fundus was nine and five eyes, respectively. There was no significant difference in BCVA between macula-on RRD eyes and fellow eyes. However, the mean response density of P1 was significantly lower in the macular-on RRD eyes than the fellow eyes ($p = 0.037$). Averaged P1 response density from Ring 1 and 2 were revealed to be significantly reduced in macula-on RRD eyes ($p = 0.002$). The mean response densities of N1 from mfERG also showed similar patterns. Conversely, the mean implicit times of N1 and P1 showed no significant difference between macula-on RRD eyes and fellow eyes.

Conclusions: The results from mfERG for macula-on RRD patients presented statistically significant decreased response densities compared to contralateral eyes. It suggests that an electrophysiologic macular dysfunction was identified in the macula-on RRD patients, despite anatomically attached structure on the macula.