The present results suggest that the AqH IL-10 to IL-6 ratio may be as useful as the previously suggested vitreal IL-10 to IL-6 ratio and, thus, provides a less invasive alternative for the evaluation of these cytokines to support histopathology and immunocytologic evidence, or follow-up after treatment, for PVRL.

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Differential improvement of vertical and horizontal metamorphopsia scores after epiretinal membrane vitrectomy with ILM peeling
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Editor,
Epiretinal membranes (ERMs) are fibrous proliferations on the retinal surface, and their contraction can cause metamorphopsia which decreases the visual acuity. Amsler charts have been widely used to detect metamorphopsia in eyes with ERM and other macula diseases, but these cannot quantify the degree of metamorphopsia.

To overcome this limitation, Matsumoto (2003) developed a method of quantifying the degree of metamorphopsia using a set of cards called the M-CHARTS. They showed that the metamorphopsia threshold score by M-CHARTS was significantly correlated with the severity of the proliferation and also with the degree of retinal contraction (Matsumoto 2003; Arimura et al. 2005).

We reviewed the medical records of 24 eyes of 23 patients (9 men, 14 women; mean age, 70.9 ± 7.0 years; range, 54–84 years) with an idiopathic ERM who underwent ERM vitrectomy with internal limiting membrane (ILM) peeling at the Kyushu University Hospital. Patients who had any type of macular abnormalities, history of ocular trauma and previous intraocular surgery other than uncomplicated cataract surgery were excluded. The best-corrected visual acuity (BCVA) was measured with Landolt charts, and the decimal values were converted to logarithm of the minimum angle of resolution (logMAR) units. The preoperative refractive powers ranged from −5.0 dioptres (D) to +3.5 D (average, 0.10 ± 2.19 D). The metabolymphosia horizontal (MH) score or metamorphopsia vertical (MV) score was measured with the M-CHARTS as described (Matsumoto 2003).

Compared with baseline, the BCVA was significantly improved at each postoperative visit (data not shown). At the baseline, the MH score (0.72 ± 0.13) was higher than the MV score (0.70 ± 0.09), but the difference was not significant (p = 0.40; Wilcoxon signed-rank tests). The MH score at each postoperative visit was significantly lower than that at the baseline (3 months, 0.47 ± 0.09, p = 0.002; 6 months, 0.49 ± 0.10, p = 0.09; and 12 months, 0.40 ± 0.09, p = 0.007; Fig. 1A). In contrast, the MV score did not change significantly after ERM vitrectomy: at 3 months, 0.46 ± 0.07, p = 0.40; at 6 months, 0.66 ± 0.11, p = 0.57; and at 12 months, 0.85 ± 0.11 (p = 0.06) compared to the baseline values (Fig. 1B). Our results showed that only the MH score was significantly improved after the ERM was removed with ILM peeling. This differential improvement of the MH and MV scores has also been reported after anti-VEGF therapy.

Fig. 1. Time-course of metamorphopsia horizontal (MH) (A) and metamorphopsia vertical (MV) (B) scores after epiretinal membrane (ERM) removal with ILM peeling. The MH scores at 3, 6 and 12 months are significantly better than the baseline. *p < 0.05. The MV scores did not improve significantly from the baseline at each postoperative time (3 months, p = 0.40; 6 months, p = 0.57; and 12 months, p = 0.06). POM, postoperative month.
in eyes with age-related macular degeneration (Nowomiejska et al. 2013). However, in ERM patients, the results of earlier studies showed that there were significant improvements of both the MH and MV scores after ERM removal with ILM peeling (Kinoshita et al. 2012). The reason for this difference is not clear, but we suggest that the report of macular migration towards optic disc after ILM peeling may have played a role (Yoshikawa et al. 2013). Because Arimura et al. (2005) showed that a horizontal retinal contraction causes vertical metamorphopsia and vertical retinal contraction causes horizontal metamorphopsia, macular movement towards the optic disc might enhance vertical metamorphopsia and prevent recovery of MV score. Further investigations comparing the differential recovery of the MH and MV scores after ERM removal with or without ILM peeling are needed.

In conclusion, our findings showed a significant improvement of the MH score but not the MV score after ERM vitrectomy with ILM peeling. We suggest that this differential improvement is related to the horizontal displacement of the retina after ILM peeling. Our findings demonstrate that quantifying the degree of vertical and horizontal metamorphopsia scores with M-CHARTS will help explain differences in the metamorphopsia experienced by patients before and after surgery.

The association of single nucleotide polymorphisms in the connective tissue growth factor gene with pseudoexfoliation syndrome/glaucoma

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Editor,

Pseudoexfoliation (PEX) syndrome is an important ocular condition, characterized by fibrillar material deposition on the anterior lens capsule, iris transillumination defects in the peripupillary region, reduced pharmacologic dilation ( Yanoff & Duke 2008). While about 10% of PEX syndrome eventually develop glaucoma, it is impossible to predict which patients will develop glaucoma (Yanoff & Duke 2008). Furthermore, PEX glaucoma is frequently resistant to medical management, and postoperative inflammation is common (Allingham et al. 2005). Browne et al. (2011) found that PEX glaucoma contained higher level of aqueous humour connective tissue growth factor (CTGF) than primary open angle glaucoma and PEX without glaucoma. We investigated the role of the CTGF gene in PEX and further analysed the association with PEX glaucoma.

We selected tagging SNPs for the region containing from 50 Kb of 5′ to 5 Kb of 3′ of CTGF based on the East Asian populations (CHB-JPT HapMap3 release #2) data of the international HapMap project using HAPLOVIEW 4.1 (Barrett et al. 2005). Twelve SNPs (rs6917644, rs9399005, rs2151532, rs928501, rs7768619, rs9388949, rs12192108, rs1475723, rs928505, rs233925, rs170881 and rs9388956) were genotyped in genomic DNA from the peripheral blood leukocytes. Genotyping was performed using a 5′ exonuclease assay ( TaqMan; Applied Biosystem Inc., Foster City, CA, USA). Samples with a call rate of <50% and SNPs with a call rate of <80% were excluded. Common SNPs with a minor allele frequency (MAF) of >5% and a Hardy–Weinberg equilibrium (HWE) using HAPLOVIEW 4.1 p value of >0.01 were included (Barrett et al. 2005). The Fisher’s exact test was conducted for genotype frequency.

A total of one hundred and seven PEX syndrome patients, including forty-one pseudoexfoliative glaucoma, were enrolled. Among the 46 SNPs in the region (Chr6: 132 306–132 364 Kb), the common 33 SNPs with a MAF of >5%, HWE p > 0.001 and a call rate of >80% were used for tagging. The 33 SNPs were tagged with a mean r2 of 0.97 by a total of 12 tagging SNPs, which were genotyped. The 12 SNPs except for rs170881 showed a call rate of >90%. No SNPs were significantly deviated from HWE in controls. MAF of the SNPs was greater than 5%. The rs928501 SNP, which is ~3 Kb distant from 5′ of CTFG, was marginally associated with the disease susceptibility in total patients (p = 0.006, Bonferroni-corrected p = 0.072). When patients were divided into two groups depending on the presence of glaucoma, the rs928501 was associated with PEX without and with glaucoma (p = 0.016 and 0.018, respectively, Table 1). The odds ratio of rs928501 was 5.217 (95% confidence