Objective Measurement Of Vitreous Inflammation Using Optical Density Ratio In Recurrent Vogt-Koyanagi-Harada Disease

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Background:
To quantify the vitreous inflammation and investigate the relationship between the uveitis severity and the optical density ratio obtained from vitreous using optical coherence tomography.

Patients & Methods:
Patients with recurrent Vogt-Koyanagi-Harada disease after steroid pulse therapy were included in the study. Spectral-domain optical coherence tomography images of vitreous were analyzed. The optical density measurements were obtained by using Image J. The optical density ratios (ODR) were calculated from the optical density of total vitreous area to the optical density of the retinal pigment epithelium (RPE).

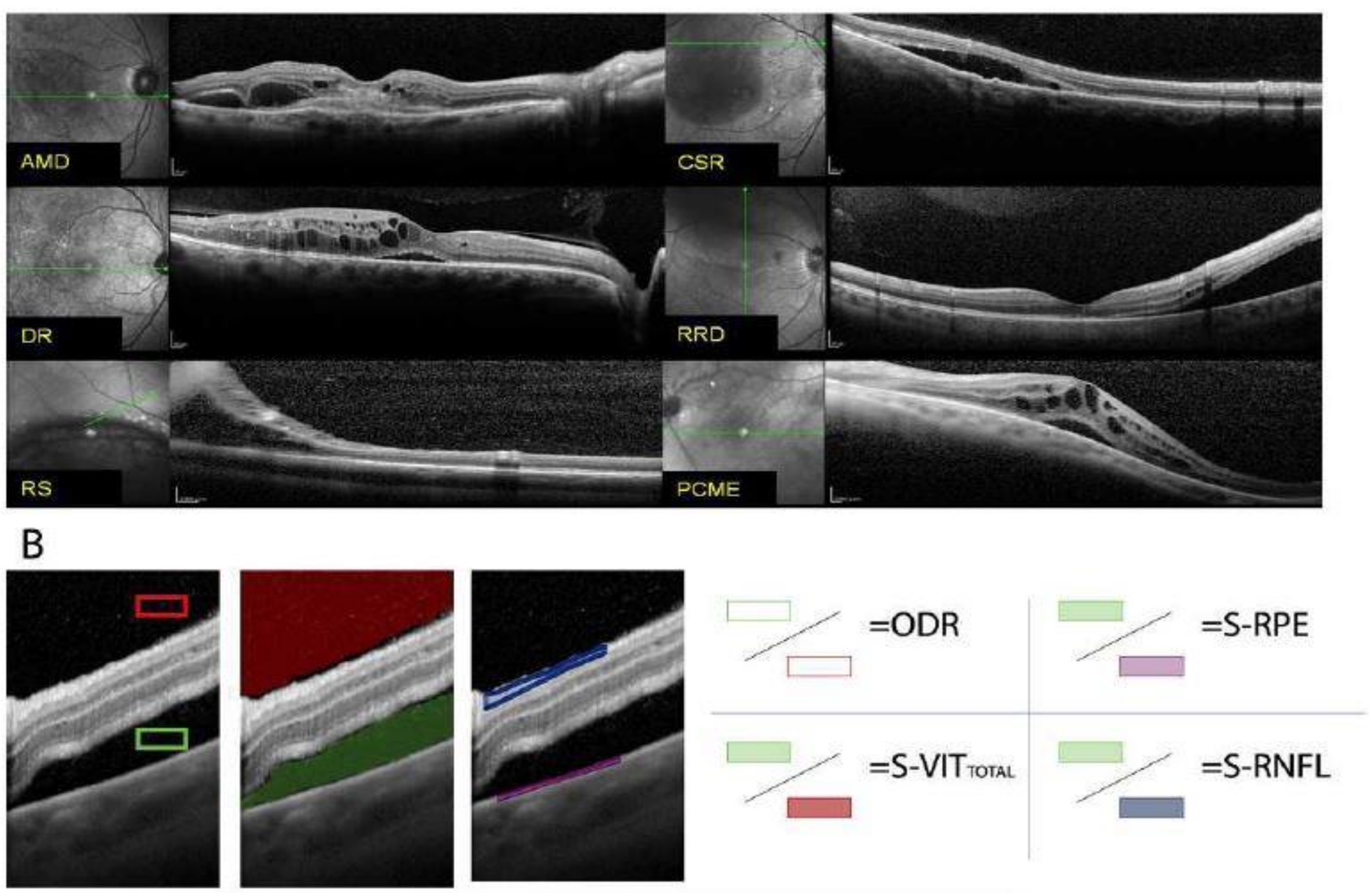

Figure 1.
Measurement of the optical density of retinal structures and vitreous in optical coherence tomography images using Image J and calculating optical density ratios of subretinal fluid.

Results:
12 eyes with 7 patients diagnosed with recurrent uveitis as a chronic manifestation of Vogt-Koyanagi-Harada disease were analyzed in this study. Maximum ODR were 0.146±0.09 (cell grade 0), 0.168±0.10 (cell grade +0.5), 0.220±0.06 (cell grade +1), and 0.344±0.53 (cell grade +2). Average ODR were 0.27±0.02 (cell grade 0), 0.32±0.02 (cell grade +0.5), 0.36±0.01 (cell grade +1), and 0.67±0.10 (cell grade +2). There was significant relationship between anterior chamber cell grade and maximum ODR (p=0.049), but there was no relationship between anterior chamber cell grade and average ODR (p=0.07).

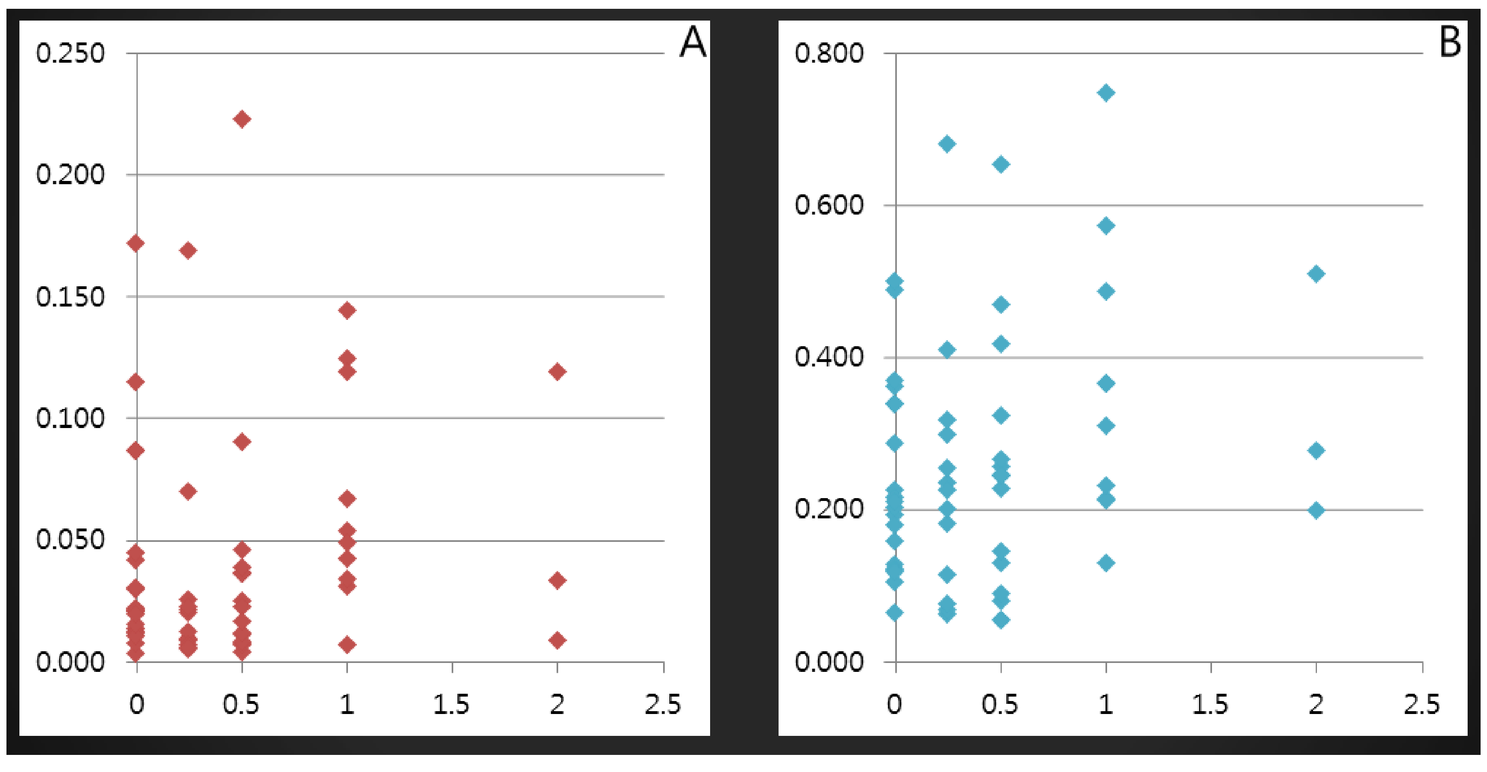

Figure 2.
The scatter diagram of anterior chamber cell grade (x axis) and optical density ratio (y axis) in recurrent Vogt-Koyanagi-Harada disease.
(A) Average ODR
(B) Maximum ODR

Conclusions:
In this study, we found a significant increase of maximum ODR according to anterior chamber inflammation. This suggests the usefulness of ODR as an objective inflammation measurement tool in recurrent Vogt-Koyanagi-Harada disease.