

Photoreceptor cell injury starts in the initial stage of Vogt-Koyanagi-Harada disease

Liu Yang

Department of Ophthalmology, Peking University First Hospital

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Background:

Photoreceptor injury was reported in experimental Vogt-Koyanagi-Harada (VKH) animal model as well as in patients. In this study, we aimed to demonstrate photoreceptor cell injury using spectral domain optical coherence tomography (SD-OCT) and fundus autofluorescence (FAF) in VKH disease.

Patients & Methods:

Thirty-four eyes of 17 patients diagnosed with VKH disease that was followed up from the initial stage to the convalescent stage were reviewed. All the patients underwent SD-OCT and FAF tests, along with ophthalmological examination at the follow-ups.

Results:

In the initial stage of VKH disease, seventeen (50%) eyes of the patients had hyperautofluorescence around the macular and retinal pigment epithelium undulation. In the convalescent stage of VKH disease, the SD-OCT scans revealed the outer nuclear layer attenuation, interruption of myoid zone, ellipsoid zone and outer segments of photoreceptors in convalescent phase, along with suspect interdigitation zone and RPE/Bruch's complex injury. FAF showed the peri-macular hyperfluorescence area persistent existed in the convalescent stage of the disease. The microstructure abnormality of outer retina observed in SD-OCT scans was corresponded to the peri-macular hyperfluorescence in FAF in the initial stage.

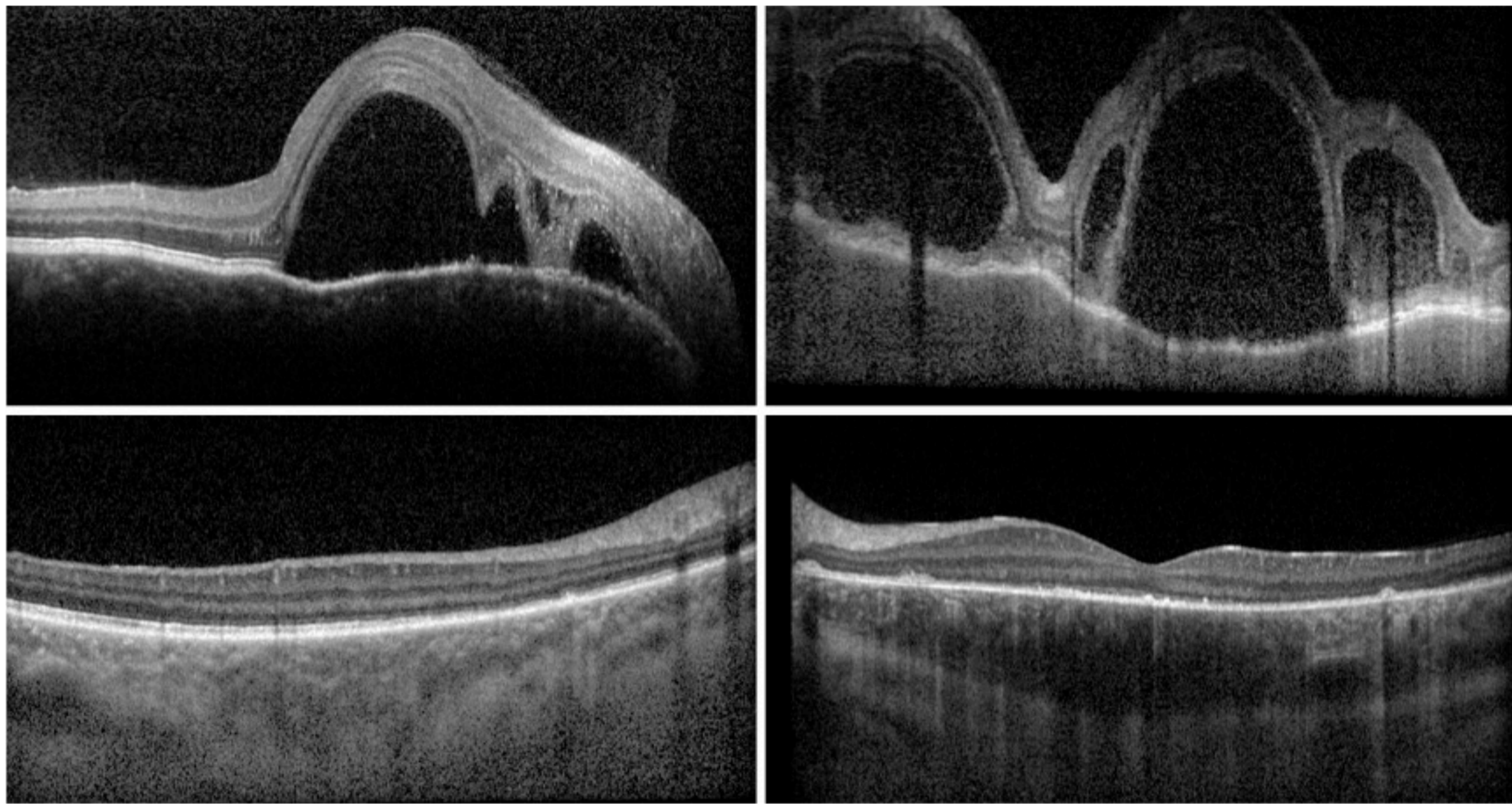


Figure 1. SD-OCT images of VKH disease patients in acute and convalescent phase. In convalescent phase, the retina reattached, but outer nuclear layer attenuation, interruption of myoid zone, ellipsoid zone and outer segments of photoreceptors were seen.

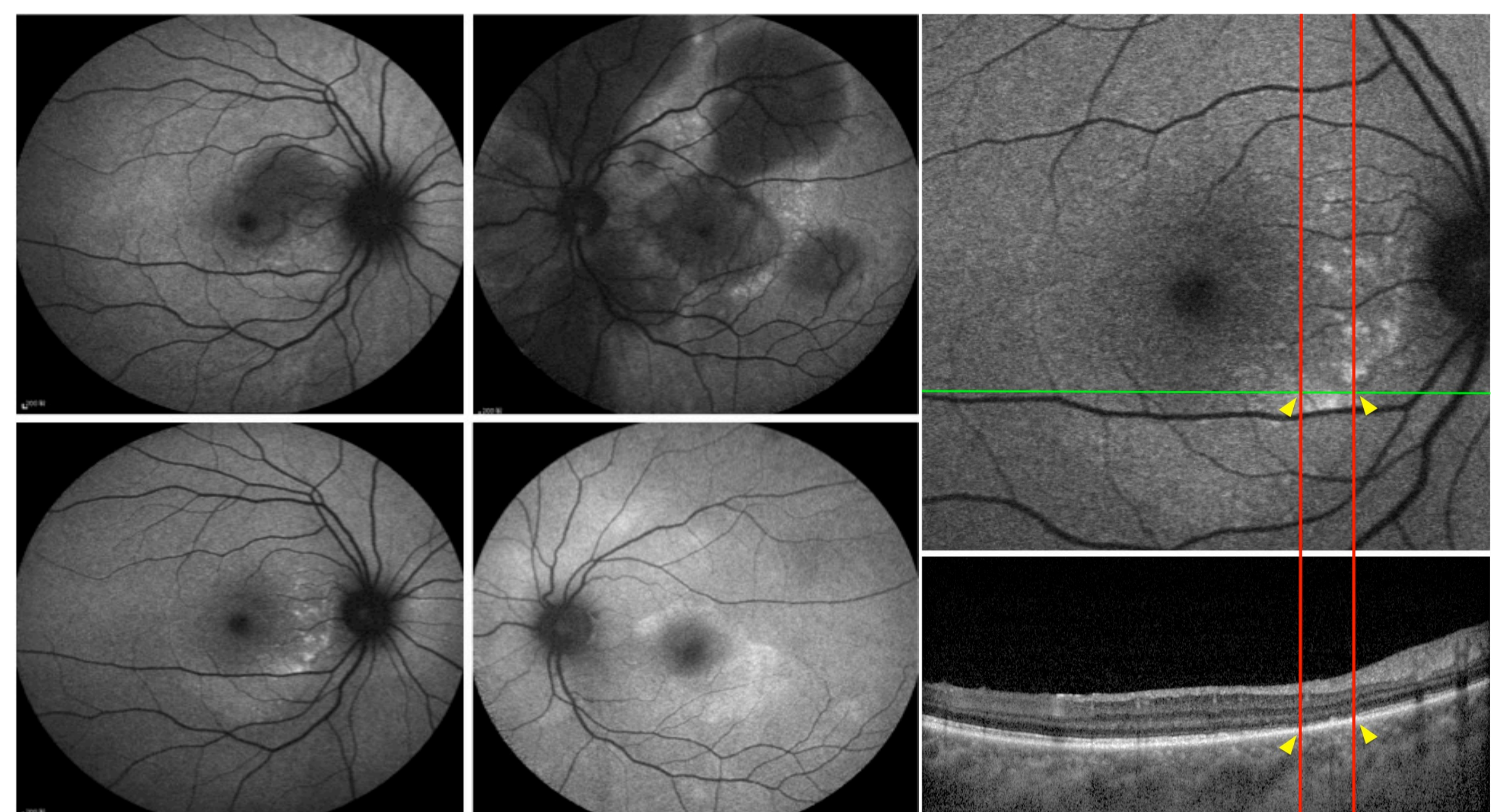


Figure 2. FAF images of VKH patients in acute and convalescent phase. In acute phase, FAF showed hypofluorescence in retinal detachment region with hyperfluorescence around. In the convalescent phase, the peri-macular hyperfluorescence area persistent existed. The hyperfluorescence in FAF corresponded to the abnormality in SD-OCT scan, which showed the interruption of ONL, myoid zone, and ellipsoid zone.

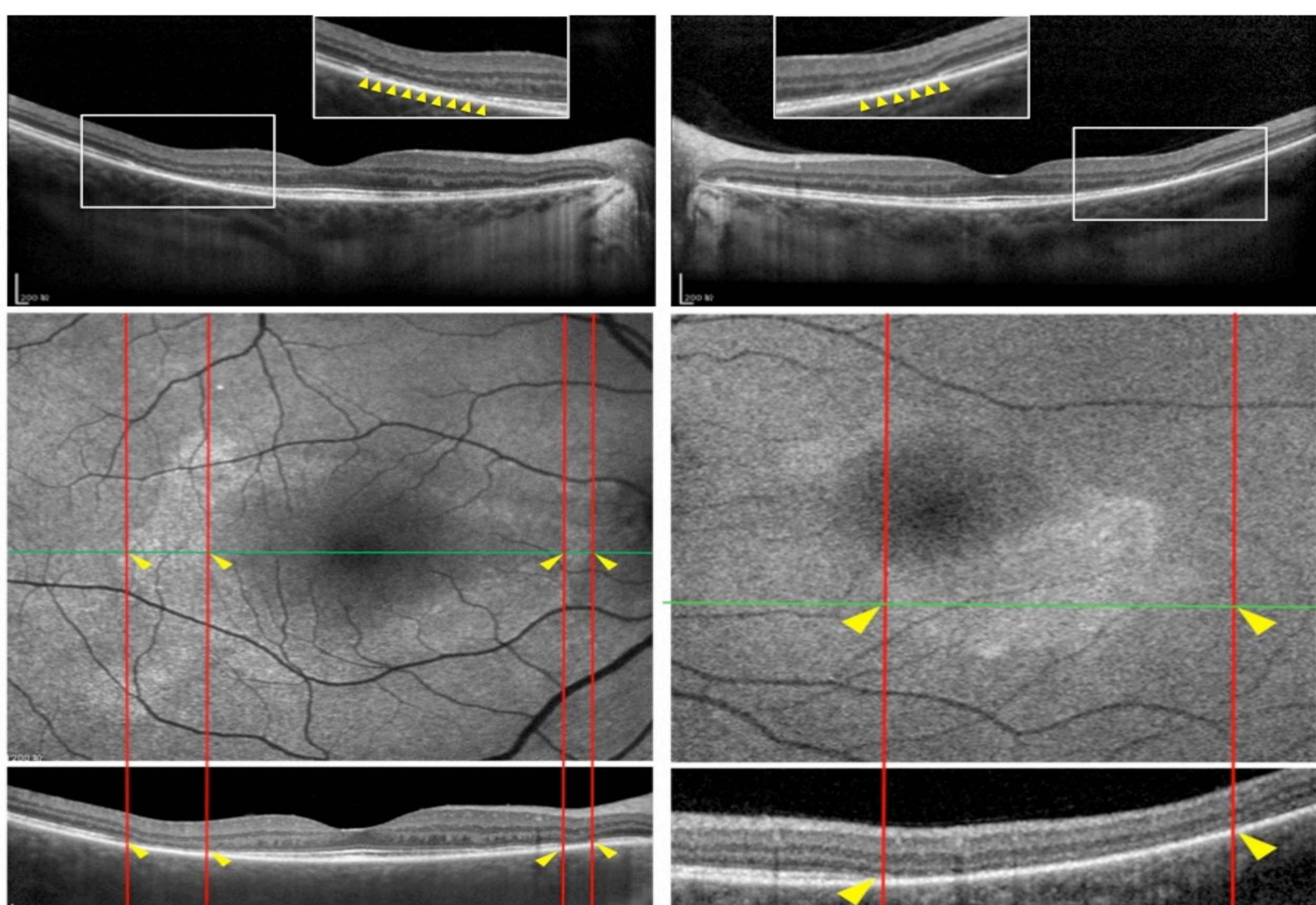


Figure 3. OCT features of a VKH patient in convalescent stage. Outer nuclear layer attenuation, loss of myoid zone, ellipsoid zone and outer segments of photoreceptors, along with interdigitation zone and RPE/Bruch's complex injury. The hyperfluorescence in FAF corresponded to the abnormality in OCT scan.

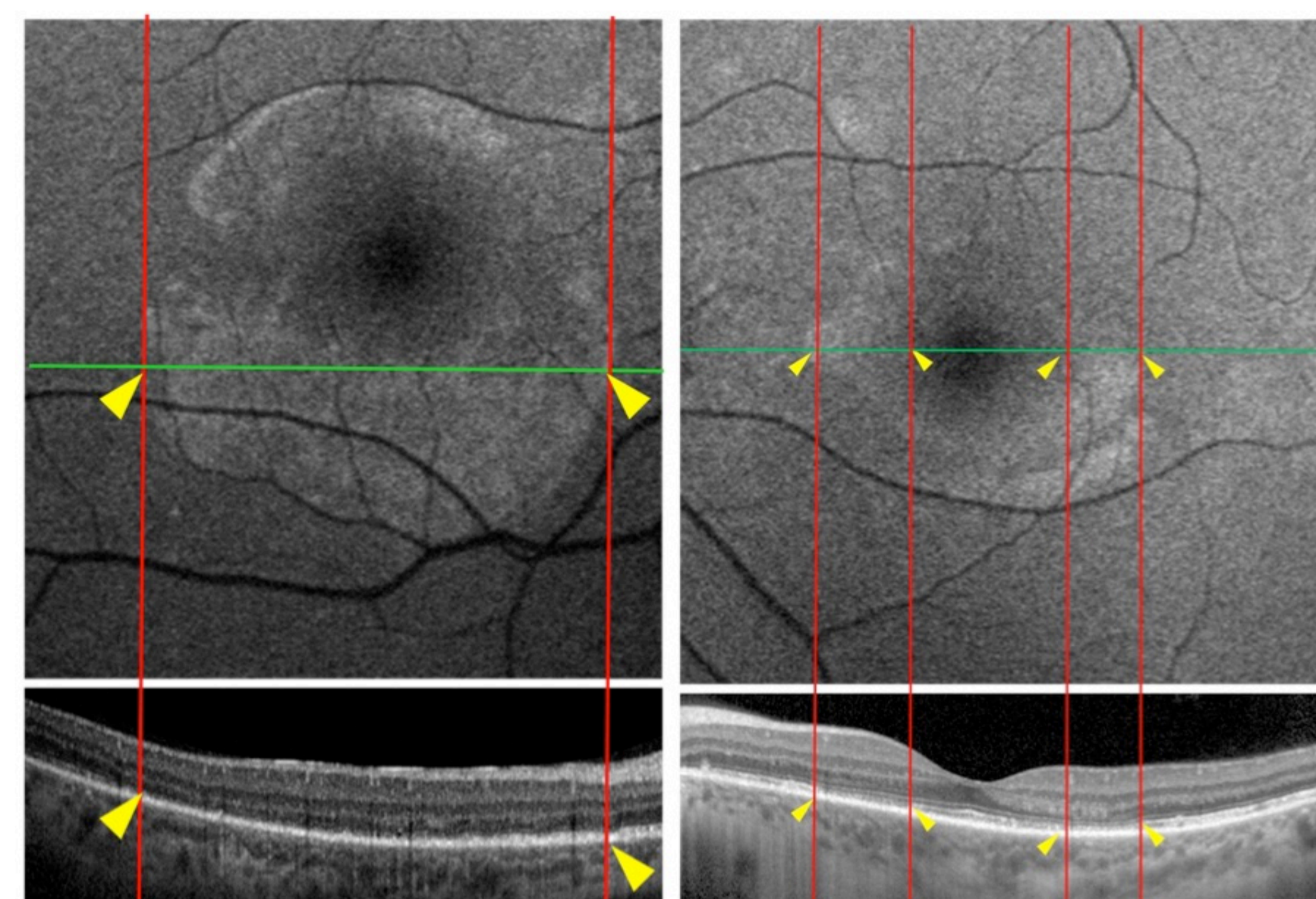


Figure 4. The combination of autofluorescence photography and SD-OCT scan in convalescent stage of a VKH patient. Peri-macular hyperfluorescence in FAF corresponded to the abnormality in OCT scan which showed the thinner of ONL, interruption of myoid zone, ellipsoid zone, the outer segments of photoreceptor and injury of the interdigitation zone and RPE/Bruch's complex.

Conclusions:

The photoreceptor injuries in VKH disease started at the first beginning of the disease and persisted until the convalescent phase. SD-OCT scan and FAF are effective and noninvasive tools for evaluating photoreceptor cell damage. The comprehensive analysis of SD-OCT and FAF could provide us more useful information of VKH disease.