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Photo Essay

Edited by Cynthia A. Toth with Michael I. Seider and Xi Chen

Retinal Toxicity Related to Long-term Use of Ritonavir

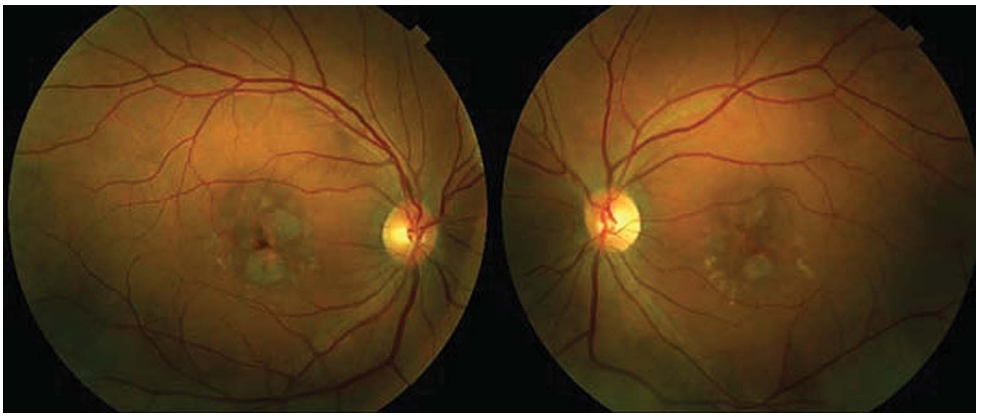

Fig. 1. Fundus examination of the macular RPE atrophy related to long-term use of ritonavir in both eyes.

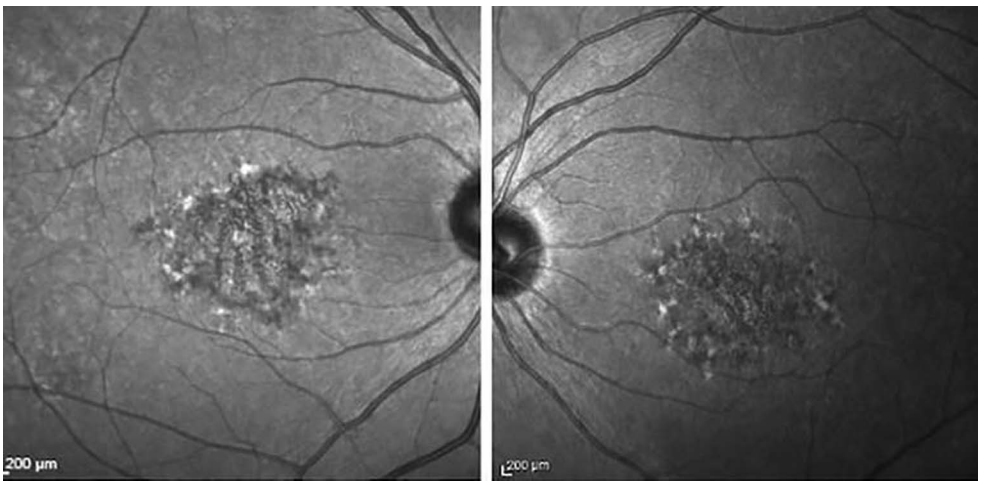

Fig. 2. Infrared reflectance fundus imaging of the bilateral macular RPE atrophy.

Ritonavir retinal damage has been previously described as retinal pigment epitheliopathy associated with macular telangiectasia and intraretinal crystal deposits.[1] This photo essay shows retinal toxicity related to long-term use of ritonavir. The fundus examination revealed hypopigmented lesions that appear as rounded lesions of 1/2 disk diameter surrounded by numerous small lesions in the macular region corresponding to the retinal pigment epithelium (RPE) atrophy (Figure 1).

The infrared reflectance fundus imaging shows multiple bilateral macular areas of RPE atrophy that appears as gray areas mixed with areas of high brightness (Figure 2). Blue laser autofluorescence (AF) emphasizes the RPE damage characterized by dark areas with well-defined limits more numerous

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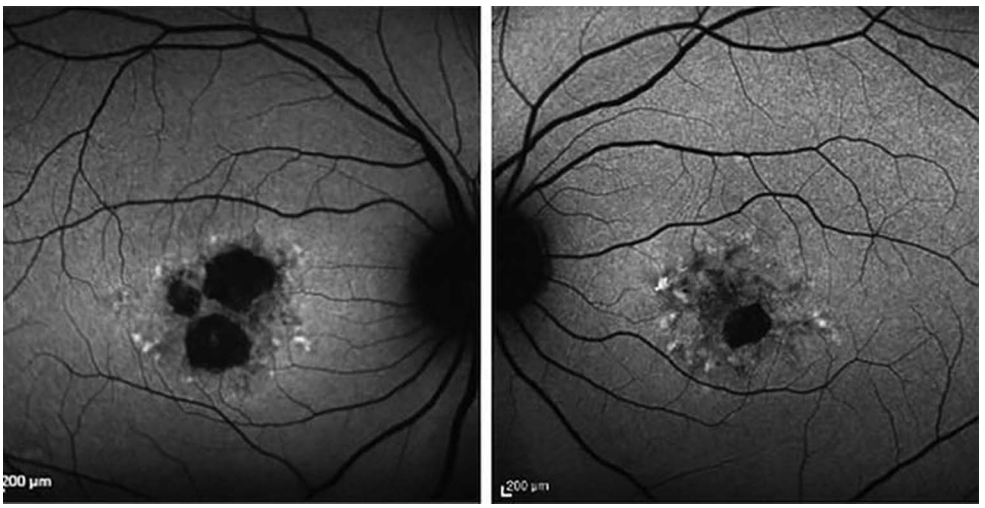

Fig. 3. Blue laser AF of the macular RPE atrophy in both eyes; the AF images also show a diffuse background granularity of the AF signal from the EPR, more prominent in the left eye. Surrounding the hypo-AF areas of RPE atrophy, a speckled hyper-AF pattern is observed.

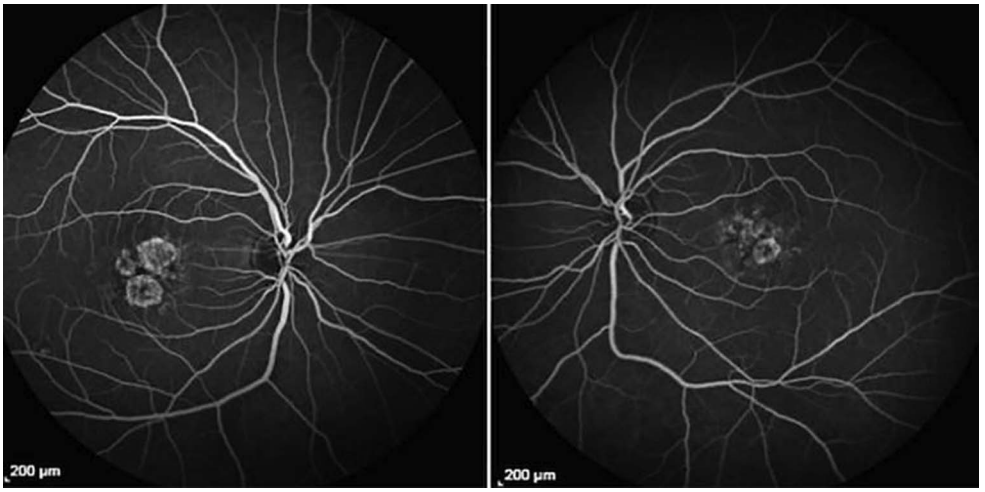

Fig. 4. Fluorescein angiography of the bilateral macular lesions.

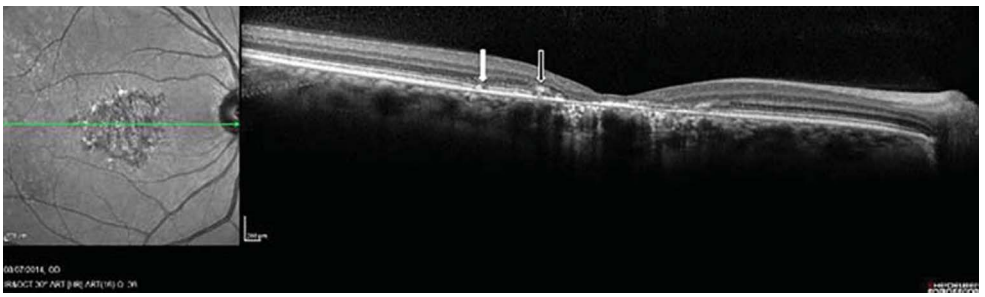

Fig. 5. Optical coherence tomography of the macula: irregular outer segments of photoreceptors, interdigitation and ellipsoid zones (white arrow), perifoveal areas of hyperreflectivity affecting the outer nuclear layer and the external limiting membrane (black arrow), and subfoveal irregular hyperreflectivity of the atrophic RPE/Bruch complex with optical shadowing that obscures the underlying choroiditis.

in the right eye. The AF images also show a diffuse background granularity of the AF signal from the RPE, more preeminent in the left eye. Surrounding the hypo-AF areas of RPE atrophy, a speckled hyper-AF pattern is observed (Figure 3).

The RPE atrophy resulted in window defects in the fluorescein angiography presenting as rounded hyperfluorescence areas in the macula (Figure 4). The optical coherence tomography (SD-OCT; Heidelberg Spectralis, Heidelberg Engineering, Heidelberg, Germany) demonstrated a narrowed foveal contour, irregular macular outer segments of photoreceptors, interdigitation and ellipsoid zones, perifoveal areas of hyperreflectivity affecting the outer

nuclear layer and the external limiting membrane, and subfoveal irregular hyperreflectivity of the atrophic RPE/Bruch complex with optical shadowing that obscures the underlying choroiditis (Figure 5).[2]

These findings in the AF images could be an indicator of active toxicity. After an 8-month follow-up, there was a slight difference in the examination with reduction of background granularity and hyper-AF pattern, and an increase in hypo-AF areas of RPE atrophy (see **Figure, Supplemental Digital Content 1**, http://links.lww.com/IAE/A351). The correlation of these novel findings in AF with active toxicity must be evaluated in further studies.

Key words: acquired immunodeficiency syndrome, fluorescein angiography, ritonavir, tomography, optical coherence, toxicity.

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2. Staurenghi G, Srinivas S, Chakaravarhyu U. Proposed Lexicon for anatomic landmarks in normal posterior segment. The IN-OCT consensus. Ophthalmology 2014;121:1572–1578.

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