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9.09 Multiple evanescent white dot syndrome (MEWDS): electrophysiological evidence of retinal ganglion cell dysfunction

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Purpose: Multiple evanescent white dot syndrome (MEWDS), first described in 1984, is characterized by the appearance of altered visual fields, often with increased blind spot or paracentral scotoma, decreased visual acuity (VA), photopsias and myodesopsias, being more frequent in young female patients, from 15 to 50 years. It typically affects only one eye and has spontaneous resolution in 4 to 6 weeks. OCT demonstrated the reduction of the retinal ganglion cell layer, which was maintained after complete resolution of symptoms and a complete recovery of the ellipsoid (Hakayama H. et al. *BMC Ophthalmol* 2014;14:132). However, functional evaluation of retinal ganglion cells has not been described so far in patients with MEWDS.

Methods: We performed clinical and electrophysiological evaluation of a 17 year old patient with MEWDS in the initial phase of the disease and 6 weeks after the onset of symptoms, with fluorescein angiography (FA), indocyanine green angiography, ocular coherence tomography (OCT), autofluorescence, Goldman kinetic perimetry, and electrophysiological evaluation with flash ERG, PERG, mfERG, and pattern VEP.
Results: The patient had decreased VA and paracentral scotoma in the right eye, observed 4 days after the onset of symptoms. The presence of multiple whitish spots in the perimacular region and foveal granularity was evident. FA showed multiple clusters of hyperfluorescence early on and later showed impregnation of the optic disc. Indocyanin green angiography showed multiple hypofluorescent points. OCT showed the ellipsoid to be disrupted. An increase in the blind spot was evident in Goldmann kinetic perimetry. Based on these findings, the diagnosis of MEWDS was made. Electrophysiological evaluation showed no changes in the flash ERG or in the pattern VEP. In the mfERG, a decrease in the central response (R1) was evident, with the remaining rings within normal range. In the PERG, the N95 wave was decreased, with a normal P50 wave, compatible with retinal ganglion cell dysfunction. The clinical and electrophysiological evaluation was repeated 6 weeks after the onset of symptoms. At that time, FA, indocyanine green angiography and OCT were normal. An increase of the blind spot was present, although smaller than initially. The electrophysiological evaluation was normal, with full reversal of PERG and mfERG changes.
Conclusions: This is the first report in the literature of the PERG and evaluation of retinal ganglion cell function in patients with MEWDS. The reduction in the N95 wave observed in the PERG performed 5 days after the onset of symptoms suggests retinal ganglion cell dysfunction. The decrease in the retinal ganglion cell layer described in 2014 by Hakayama et al. appears to have a functional repercussion. However, unlike the structural change that is maintained over time, the function of retinal ganglion cells seems to recover after 6 weeks.