

Evaluation of the retinal vascular and structural changes in migraine patients treated with anti-CGRP monoclonal antibodies

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Abstract

Aims/Purpose: Migraine is a disabling and chronic neurological disease characterized by recurrent attacks that can lead to ocular and systemic complications. Several studies have investigated changes in retinal vascular density and structure in migraine patients. This study aims to evaluate vascular and structural changes of the retina in patients with migraine (with and without aura) before and after one-year treatment with anti-calcitonin-gene-related peptide (CGRP) monoclonal antibodies.

Methods: Ten patients affected by migraine with (MwA) and without aura (MwoA) and ten healthy controls (HCs) were enrolled in this study. Optical coherence tomography angiography (OCT-A) was performed to assess retinal vessel density and spectral-domain optical coherence tomography (SD-OCT) to evaluate foveal thickness, peripapillary retinal nerve fiber layer thickness, and macular ganglion cell layer thickness. In addition, we evaluated these parameters for each group after one year of treatment with anti-CGRP monoclonal antibodies for MwA and MwoA and one year without treatments for HCs.

Results: At the baseline, MwA patients had significantly lower foveal thickness than MwoA and HCs. From OCT-A data analysis, we also found that the superficial foveal vascular density values in MwA patients were lower than in MwoA patients and HCs. The foveal avascular zone was significantly enlarged in MwA patients compared to MwoA patients and HCs. After one year of treatment with anti-CGRP monoclonal antibodies, no statistically significant differences (p -value < 0.05) were observed in terms of retinal structure and vascularity in all three groups comparing data at the baseline and after one year of treatment.

Conclusions: The results of our study suggest that migraine is associated with vascular and structural retinal changes, especially in patients affected by migraine with aura. The CGRP-targeted therapy plays an important role in reducing the frequency of migraine attacks and their systemic implications but, nowadays, there is no evidence that this therapy could even have an effective impact on retina vascularity or structure.

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