

3 de Dezembro

08h30 | 10h00 – Sala 1

Retina Médica | Medical Retina

Moderadores | Chairs: Bernardete Pessoa (CHUP), Fernanda Vaz (CHLO), Isabel Pires (CHUC)

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LONG TERM DETERMINANTS OF NEURORETINAL DEGENERATION IN DIABETIC MACULAR EDEMA TREATED WITH INTRAVITREAL INJECTIONS

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Introduction: Diabetic retinopathy manifests itself by three major pathologic pathways including neuroretinal degeneration, retinal ischemia and inner blood-retinal barrier breakdown. Current treatment modalities (laser photocoagulation and intravitreal injections) are addressing the latter two, but the component of neurodegeneration is less understood. Therefore, this study aims to characterize variables associated with inner retinal neurodegeneration and retinal atrophy in long term diabetic macular edema (DME).

Methods: This study included 68 patients with type 2 diabetes mellitus and DME treated with intravitreal injections (anti-VEGF and corticosteroids). A minimum follow-up of 3 years was observed. SD-OCT scans were evaluated for imaging biomarkers: ellipsoid zone disruption, subretinal fluid, disorganization of retinal inner layers (DRIL) and hyperreflective foci (HRF); as well as quantitative indicators: central subfield thickness (CST), macular volume and thickness of inner retinal layers (nerve fiber (NFL), ganglion cell (GCL) and inner plexiform (IPL) layers). Relevant associations between systemic factors, clinical variables and the occurrence of retinal degeneration and macular atrophy were analyzed.

Results: A mean of 15.2 ± 2.6 intravitreal injections were performed during 39.1 ± 1.7 months of follow-up. Central subfield thickness improved from 487.88 ± 94.32 to 329.06 ± 52.21 μm ($p < 0.001$). A significant decrease in thickness of retinal NFL ($p = 0.001$), GCL ($p = 0.005$) and IPL ($p < 0.001$) was verified at the end of follow-up. No significant association was seen between neuroretinal degeneration and systemic factors, number of intravitreal injections or baseline CST. Foveal atrophy (CST < 240 μm) was verified in 16% of cases. Such cases had lower baseline thickness of GCL plus IPL (40.57 ± 7.91 vs 58.43 ± 18.24 μm , $p = 0.005$), and higher prevalence of baseline DRIL ($p = 0.015$). Visual acuity was significantly worse in patients with foveal atrophy (0.80 ± 0.23 vs. 0.37 ± 0.21 logMAR), as well as in those with ellipsoid zone disruption ($p = 0.005$). The presence of HRF was associated with a greater number of injections.

Conclusion: Intravitreal anti-VEGF and steroid agents are effective in improving macular thickness, however most patients will have significant decreases in NFL and GCL thicknesses. Also, 16% of patients will develop foveal atrophy and consequently achieve lower visual acuity outcomes, possibly due to permanent loss of neuroretinal cells. Additional research is required into novel therapies aiming at arresting neurodegeneration and foveal atrophy.