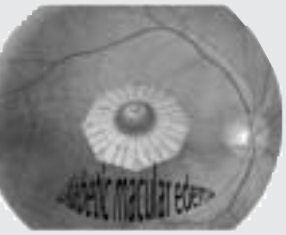

Retinal glial reaction patterns and their relationship to diabetic CME

Author: Didier Ducournau, Yvette Ducournau

Purpose:
To compare the gliosis degree of macular astrocytes and Müller cells in different pathological circumstances with and without cystoid macular edema (CME), in order to understand the neuro-pathological reactional mechanisms and thus explain therapeutical results.

Methods:
Seven globes -3 with CME and 4 without - enucleated for melanoma or endophthalmitis and presenting vascular pathology and/or retinal detachment (RD) have been investigated in histology and immunohistochemistry with GFAP in order to study astrocytous and Müller cells glia.

Results:
There are selective modalities for the expression in GFAP according to the glial cell type and to the nature of pathological process: In 2 cases of isolated ischemia we noticed the presence of a CME predominant in external layers, and of a hypertrophic and hyperplastic astrocytous gliosis at the internal and perivascular layers level, without any Müller cell gliosis. In 2 cases of isolated RD, the Müller cells presented a massive radial gliosis from the internal limiting membrane to the external limiting membrane, without any astrocytous cell gliosis or CME. In 3 cases in which both pathologies were associated, both forms of gliosis were observed without any extensive CME.

Conclusion:
Both astrocytous cell gliosis and Müller cell gliosis very likely aim at restoring the blood-retinal barrier and at limiting neuronal apoptosis phenomenon. Müller cell radial gliosis could add a determining and protecting mechanical role on edema. Those results incite to favour therapeutical ways stimulating Müller cell radial gliosis such as the ILM removal or new lasers.

Take Home Message:
Inducing a Müller cell gliosis could prevent from edema development.