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A preliminary report on the characterization of epiretinal membranes excised from patients affected by macular pucker

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Among the various pathologies of the vitreoretinal interface, idiopathic macular pucker (MP) is one of the most puzzling. MPs are characterized by the formation of an epiretinal membrane (ERM) that grows in front of the fovea and results in a major impairment of vision. MPs are also frequently complicated by the deformation of the regular macular anatomy, with stretching and deformation of all retinal layers and loss of the foveal pit. This result is usually referred to the presence of myofibroblast-like cells on the retinal surface that alter macular anatomy possibly exerting a significant traction on ERMs. In order to shed light on the physiopathological events that lead to the development of idiopathic MPs, we carried out an immunofluorescence study by confocal microscopy on ERMs excised from 32 eyes with diagnosis of MP using a panel of antibodies including anti-collagen I, anti-collagen IV, anti-collagen VI, anti-smooth muscle actin (SMA), anti-glial fibrillary acidic protein (GFAP) and anti-vimentin antibodies. Some samples were also challenged with anti-heat shock protein (HSP) 47, anti-HSP 90 and anti-receptor II of the transforming growth factor (TGFβRII) antibodies. ERMs broadly varied in thickness. Mostly, they were formed by a layer of collagen 1 adjacent the internal limiting membrane, collagen IV and a layer of vimentin+ cells. Cells also co-expressed SMA or GFAP. Collagen VI, in contrast, was almost always scanty, frequently within the intracytoplasmic vesicles. Some membranes showed a very high content of collagen IV, so abundant to resemble the distribution of interstitial collagens. Cells were almost always restricted to the vitreal side of the membrane; only rarely they could be seen embedded between layers of extracellular matrix. They were frequently HSP90+ and sometimes they contained collagen-immunoreactive materials in their cytoplasm. They also showed TGFβRII within intracytoplasmic vesicles. All in all, ERMs have many features resembling those characterizing fibrotic processes.

Keywords

Macular pucker, retina, pancreas, epiretinal membrane, immunofluorescence, confocal microscopy

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