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Service (sector) Retina and Vitreous Nº CEP

Effects of indocyanine green injection on the retinal surface and into the subretinal space in rabbits.

M. Maia, M. Farah, M.S. Humayun, R. Smith, E. Freymüller. Purpose: To evaluate the effects of indocyanine green (ICG) injection on the retinal surface and into the subretinal space of rabbit eyes. Methods: Twenty-two Dutch-belted rabbits underwent a two-port vitrectomy followed by injection of ICG (5mg/ml) on the retinal surface and into the subretinal space. Balanced salt solution (BSS) was also injected subretinally. The locations where the ICG were delivered (both epiretinal and subretinal) were exposed to light from an endoilluminator for 7 minutes. The animals were examined at 1, 7, and 14 days after surgery. The eyes were studied by fluorescein angiography as well as light and electron microscopy. Results: No damage was observed after epiretinal ICG injection, but subretinal ICG injection resulted in damage to the outer nuclear layer (ONL), photoreceptor inner and outer segments (PS) and retinal pigment epithelium (RPE). This damage was more severe with longer follow-up. Control experiments without ICG, in which BSS was injected into the subretinal space or light was delivered on the epiretinal surface, demonstrated damage only to the POS. Conclusions: Subretinal ICG delivery of 5mg/mL in rabbits induces RPE, PS, and ONL damage. These mechanisms of damage may explain the RPE changes that are sometimes seen after ICG-assisted ILM peeling in human subjects.