

R1 R2 R3 PG0 PG1 Estagiário Tecnólogo
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Service (sector) Medical Resident - Retina and Vitreous N° CEP 0153/05

EVALUATION OF THE TOXICITY OF SUBRETINAL DYES USED IN CHROMOVITRECTOMY

Penha FM, Maia M, Farah ME, Dib E, Rodrigues EB, Freymüller E and Smith RL **Purpose:** To evaluate the effects of subretinal injections of indocyanine green (ICG), infracyanine green (IfCG), trypan blue (TB), patent blue (PB), supernatant of triamcinolone acetonide with preservative (STA), preservative-free triamcinolone acetonide solution (MTA-PF), glucose (GL), and balanced salt solution (BSS) in rabbits. **Methods:** Total of thirty-two Dutch-belted rabbits was studied. The animals underwent vitrectomy and subretinal injection of 0.02 ml of either 0.05% ICG (279 mOsm), 0.5% IfCG (276 mOsm), 0.15% trypan blue (312 mOsm), 0,24% PB (285 mOsm), 4% MTA-PF (285 mOsm), 4% STA (330 mOsm), 5% GL (280 mOsm), or BSS (300 mOsm), which was tested as a control. Animals were examined 6, 12, and 24 hours and 14 days after the procedure by fluorescein angiography and fundus photographs; histological evaluation was performed by light and transmission electron microscopy. The histological injury was classified into four stages: **stage 1**, photoreceptor outer segment (POS) injury; **stage 2**, stage 1 + photoreceptor inner segment (PIS) injury; **stage 3**, stage 2 + outer nuclear layer (ONL) damage; and **stage 4**, stage 3 + retinal pigment epithelium (RPE) damage. **Results:** All subretinal blebs were flat 24 hours after the procedure. Fluorescein angiography showed window defects where ICG, IfCG, TB and STA had been injected. Subretinal BSS and glucose resulted in damage stage 1 during follow-up. MTA-PF caused damage stage 2, twenty-four hours and 14 days following the procedure. PB resulted in stage 3 damage 14 days following surgery. STA and IfCG resulted in stage 3 damage 24 h and 14 days following surgery. TB resulted in stage 4 damage 14 days after surgery. The most important injury was observed after subretinal ICG injection which resulted in stage 4 damage during all follow up. **Conclusions:** Subretinal injection of different dyes in rabbits followed the sequence from higher to lower toxicity : ICG, TB, IfCG, STA, PB, MTA-PF and GL. These findings emphasize that care must be taken regarding the choice of the dye used for chromovitrectomy, especially in macular hole surgery, where subretinal migration of these substances may occur.