

Severe retinal toxicity secondary to sub-retinal dye injection

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Introduction

We report a case of profound retinal atrophy, confirmed histologically, following subretinal injection of MembraneBlue-Dual dye performed to detect occult retinal breaks during retinal detachment repair pars plana vitrectomy.

Case

A 64-year-old male was referred with a left total retinal detachment of three months duration. He underwent phacoemulsification with intraocular lens implant, 23-gauge PPV, cryopexy and 16% C3F8 gas tamponade. Subretinal injection of MembraneBlue-Dual dye (DORC International, Netherlands) was utilised as part of the dye extrusion technique (DE-TECH) to identify occult causative breaks. The patient's post operative course was complicated by medically controllable raised IOP, but unusually also by very severe ocular pain and an early dramatic decline in vision to NPL. The retina re-detached, requiring further PPV. Unfortunately, enucleation was required for intractable pain.

Discussion

MembraneBlue Dual is a product combining Trypan blue 0.15% and Brilliant Blue 0.025%. Trypan blue 0.06% has been reported to cause short term retinal dysfunction on introduction to the vitreous, and animal studies have shown photoreceptor death and retinal disorganisation on exposure to 0.2%. Brilliant Blue dye has been connected to cases of outer retinal layer damage and loss of choriocapillaris along with RPE irregularities.

Retinal detachment itself causes photoreceptor death and retinal gliosis, however the profound decline in vision to NPL within days of sub-retinal dye injection along with the profound RPE atrophy leads us to the conclusion that the sub-retinal use of vital dye was the cause of the pathology in this case.

In summary, we report a case of sub-retinal dual blue dye, administered for the purpose of locating retinal breaks. Surgeons should be aware of this rare complication.

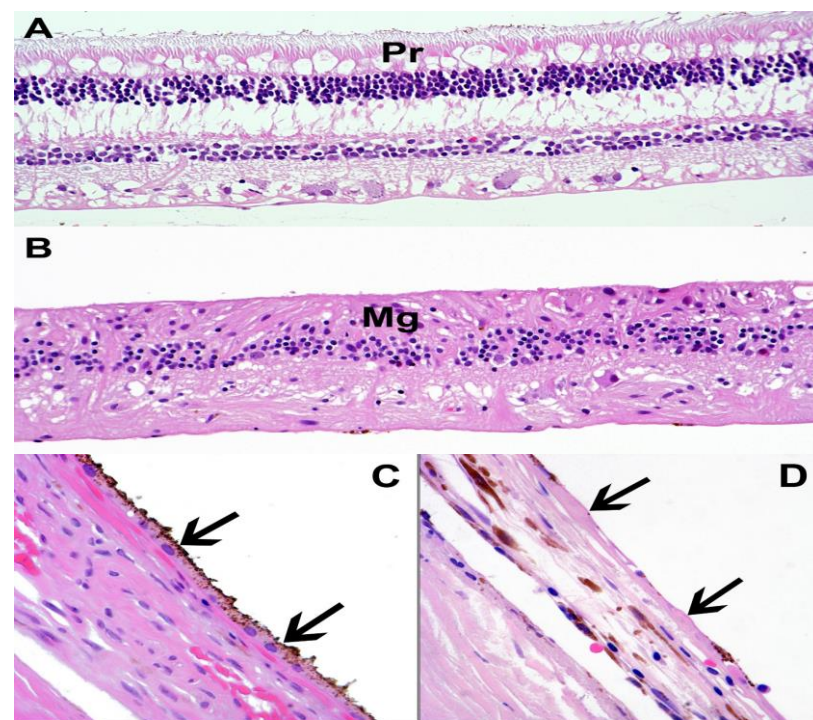


Figure 1: A – normal H&E of the retina with photoreceptor outer segments labelled Pr. B – This patient's retina, note the disruption of the retinal architecture and Muller cell gliosis (Mg) at the site of lost outer photoreceptor segments. C - H&E-stained normal retinal pigment epithelium (RPE). D - H&E-stained image of this patient's severely atrophic RPE. The arrow points to an eosinophilic band that represents thickened Bruch's membrane.

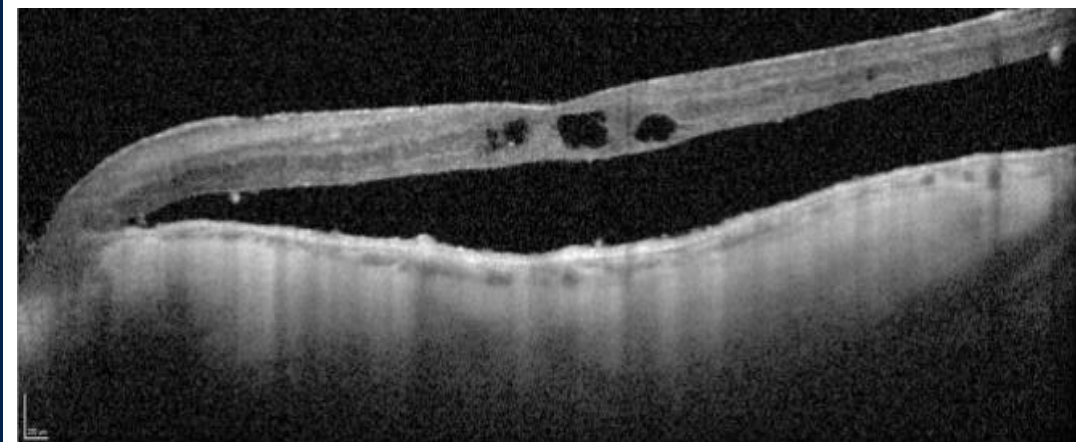


Figure 2: OCT Macular showing retinal re-detachment following initial repair. Note the complete loss of the RPE layer on this scan.

References

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