Periorbital triamcinolone in the management of post-operative cystoid macular oedemas.

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Introduction

Management of Cystoid Macular Oedema (CMO) following cataract surgery or pars plana vitrectomy remains a contentious issue with no published consensus reached. We demonstrate the efficacy of sub-Tenon's triamcinolone injections on a pro re nata basis in the treatment of post-operative CMO. Data were retrospectively collected on 50 eyes of 44 patients who were treated with periocular injections of Triamcinolone acetonide for post-vitrectomy or post-phacoemulsification CMO. Mean pre-injection logMAR visual acuity was 0.43 and post-injection, 0.31 (p=0.0381, paired sample t-test). Mean pre-injection CMT was 435.06 μm and post-injection was 350.60 μm, giving a mean reduction in CMT of 84.46 μm (p<0.0001, paired sample t-test). We demonstrate the safe and efficacious use of periocular Triamcinolone injections as a first-line treatment for post-operative CMO.

Cystoid Macular Oedema (CMO) is a well-established complication following anterior segment surgery. However, there is limited evidence regarding CMO following Pars Plana Vitrectomy (PPV). Post-PPV CMO can be defined as the presence of intraretinal cysts seen on Optical Coherence Tomography (OCT). Sigler et al. reported a 1.04% incidence of CMO following 25-Gauge PPV for internal limiting membrane removal for epimacular membranes [1].

Pseudophakic CMO remains one of the most frequent post-operative complications with published incidence rates as high as 20% [2]. First described by Irvine in 1953 [3], the underlying pathophysiology of CMO is not completely understood but likely multifactorial. Post-operative CMO is considered to be due to disruption of the blood-aqueous and/or blood retinal barriers with underlying inflammatory process acting as a key component [4]. The release of local inflammatory mediators such as cytokines, prostaglandins, Vascular Endothelial Growth Factor (VEGF) often precipitated by surgery causes an increase in perifoveal capillary permeability leading to an accumulation of intraretinal fluid in characteristic cystoid expansions [3,5,6]. These mediators can therefore be targeted to medically treat post-operative CMO.

Risk factors which can increase the likelihood of this occurring include diabetes mellitus, intraocular inflammation, retinal vascular events, epiretinal membrane, prostaglandin analogue therapies, a history of post-operative CMO in the contralateral eye, amongst many others [3,7].

Pseudophakic CMO can be clinically challenging to manage with various treatment modalities proposed and no published consensus has been achieved as to the best practice management by the Royal College of Ophthalmologists or national cataract societies such as United Kingdom and Ireland Society of Cataract and Refractive Surgeons (UKISCRS). Management options include topical treatment with non-steroidal or anti-inflammatory drops alone or in combination [8,9], intravitreal injectable therapies of corticosteroid such as triamcinolone acetonide (40 mg/ml) or intravitreal dexamethasone implant (Ozurdex 0.7 mg) [10,11]. Utility of these treatment modalities must be balanced against possible side effects. Notably with corticosteroid treatment, topical or slow-release implants such as Ozurdex® include raised intraocular pressure and subsequent glaucoma.

Triamcinolone acetonide is a low-cost, synthetic corticosteroid with anti-inflammatory and immunosuppressive properties. Patients can receive injections into the posterior sub-Tenon's space or retroorbital injections of triamcinolone in the treat of for post-surgical CMO, uveitis and diabetic macular oedema [12]. There is limited data around the use of repeated periorbital injections of triamcinolone for post-operative CMO.

We aimed to demonstrate the efficacy of sub-tenon's triamcinolone injections on a pro re nata basis for the treatment of post-operative CMO with respect to change in visual acuity and Central Macular Thickness (CMT).

Methodology

Data were retrospectively collected on 50 eyes of 44 patients who were treated with periocular injections of Triamcinolone acetonide for post-vitrectomy or post-phacoemulsification CMO (defined clinically as the presence of intraretinal cysts on OCT). Data collated included baseline demographics (age, gender), indication, number of injections, pre- and post-injection visual acuity (LogMAR), CMT (μm) and additional treatments required.

Results

Mean age of presentation was 70 ± 14 years and 59.1% (26/44) of study candidates were male. Two patients required 4 injections, two required 3 injections, six required 2 injections and the remaining patients all required one injection. The average time between injections varied between 7 and 24 weeks. Mean number of injections per eye was 1.26. Mean pre-

injection logMAR visual acuity was 0.43 and post-injection, 0.31. A difference found to be statistically significant using a paired sample t-test (p=0.0381). Mean pre-injection CMT was 435.06 μm and post-injection was 350.60 μm, giving a mean reduction in CMT of 84.46 μm (p<0.0001, paired sample t-test). 14% of patients required additional treatment with an intravitreal Dexamethasone implant. There were no cases of globe perforation during periorbital injection of triamcinolone [13].

Discussion

This retrospective study demonstrated triamcinolone as a potential first line treatment for post-surgical CMO, observing improvement in anatomical and functional parameters.

Triamcinolone is quickly absorbed into the retina when compared with the sustained release of steroid from an Ozurdex® implant resulting in an earlier response to treatment [14]. Sub-Tenon's triamcinolone is a less invasive method of managing CMO when compared to intravitreal administration, and allows larger volumes of active drug to be delivered with greater exposure. Ferreira et al. has demonstrated its enhanced safety profile through use of an operating microscope ensuring correct anatomical placement and greater drug availability of a sub-Tenon's Triamcinolone [15]. Significant adverse effects associated with a periorbital triamcinolone injection include globe perforation [13], of which there were no cases in the current study population highlighting its safety profile. The most frequent adverse event is raised IOP but this is typically transient and managed with topical agents [16]. Even with repeated injections, triamcinolone acetonide is far more cost effective than alternatives such as Ozurdex® which cost £870 per unit, compared with £7.45 for one vial of triamcinolone.

Our study shows the potential use of periocular Triamcinolone injections as a cost-effective, safe and efficacious first-line treatment for post-operative CMO.

Conclusion

In conclusion, our study shows the potential use of periocular Triamcinolone injections as a cost-effective, safe and efficacious first-line treatment for post-operative CMO. We aimed to demonstrate the efficacy of sub-tenon's triamcinolone injections on a pro re nata basis for the treatment of post-operative CMO with respect to change in visual acuity and Central Macular Thickness (CMT). This retrospective study demonstrated triamcinolone as a potential first line treatment for post-surgical CMO, observing improvement in anatomical and functional parameters.

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