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SAFETY AND EFICACY OF INTRAVITREAL TRIAMCINOLONE IN PANUVEITIS

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ABSTRACT

Uveitis is inflammation of uveal tract and mainly affects young people . It has a worldwide prevalence ranging from 38 to 730 per 100 000. If not properly managed it can cause many devastating sight-threatening complications . The goals of therapy for uveitis are to reduce inflammation, prevent damage to ocular structures, and prevent long-term visual loss. In panuveitis all components of uvea are inlammed .To contrl inflammation in posterior segment topical therapy is not sufficient and systemic therapy with steroids has many sideeffects. Triamcinolone acetonide is a potent corticosteroid and can be administered by intravitreal route. Higher concentration is achieved at the site of inflammation The purpose of this study is to evaluate the role ofintravitreal triamcinolone in improving visual acuity and clinical features of patients with treatment resistant panuveitis.

Introduction

Uveitis encompasses a myriad of conditions, all of which are characterised by inflammation of the uveal tract, either directly or indirectly . The ophthalmologists goal in treating this potentially blinding condition is by eliminating the inflammatory reaction within the eye while minimizing the potential risks of therapy to the patient. Various treatment modalities are steroids (topical, peribulbar, subtenon, intravitreal or systemic), mydriatic and cycloplegic agents, non steroidal anti inflammatory agents and immunosuppressives. Systemic steroids are associated with many side effects and repeated local instillation have poor compliance. Triamcinolone acetonide is a potent corticosteroid and is increasingly being tried as an intravitreal depot in treatment of chronic uveitis, cystoid macular edema, exudative AMD, proliferative retinopathy and diabetic macular edema and macular edema with CRVO. The relatively low solubility in water ensures its longer persistence in vitreous, in contrast to other more water soluble corticosteroid such as dexamethasone. Side effects related to systemic steroids are avoided. Higher concentration is achieved at the site of inflammation.

The purpose of this study is to evaluate the role of intravitreal triamcinolone in improving visual acuity and clinical features of patients with treatment resistant panuveitis. This study also aims to study the safety of intravitreal triamcinolone injection.

Material and Methods

A prospective study in 25 patients with refractory panuveitis was done between January 2006 and May 2008 at ophthalmology OPD of tertiary eye care hospital .All patients who were refractory to other modalities like local and systemic anti-inflammatory drugs were included .The patients with preexisting glaucoma or were steroid responders were excluded from the study.4 were female and one was male ,age ranging from 21-35 years(mean 28 years).The patient were divided further according to etiology .Complete ocular and systemic examination was done .Ocular examination included visual acuity ,intraocular pressure, slit lamp examination with particular attention to lens, fundus examination using direct ,indirect ophthalmoscope and slit lamp biomicroscopy with 78D &90D lens and gonioscopy . Laboratory investigation included complete blood count, ESR, mantoux test, serum sugar, VDRL, RA factor ,HLA B 27, ELISA for HIV, X- ray chest & X-ray sacroiliac joint. Three patients had bilateral panuveitis while 2 had unilateral. Patients were considered refractory if there was no response to steroid (systemic and topical) and treatment of underlying disease after a period of 2 weeks. Intravitreal triamcinolone injection was given in one eye of each patient .contralateral eyes of patients with disease was considered as control (3 eyes) The procedure was performed using standard aseptic technique in eye OT. Pupil was dilated for better visualization of needle during injection. After sterilization with 5% povidone iodine, 2% lidocaine was applied 2 mg/0.1ml (Kenacort 40mg /ml) was injected through 27G needle in the inferotemporal pass plana 3.5mm posterior to limbus. After injection, IOP , indirect ophthalmoscopy and fundus examination was carried out to evaluate perfusion of the central retinal artery and the intravitreal location of triamcinolone. Antibiotic drops were administered after injection and then 4 times per day for 2 weeks. Patients were advised to remain in sitting position or lying with head elevated for 3 hours to avoid gravitational fall of triamcinolone particles over posterior pole particularly disc& macula. After the first injection patients were evaluated at 1 week, 2week, 4week, 6week & 8week. At each study visit, patients underwent a complete dilated ophthalmic examination done. Main outcome measures were BCVA, IOP, progression of an existing cataract, state of angle of anterior chamber, vitreous and macular edema resolution.

Result

Study enrolled 25 patients (eyes 5), 14 were female and 11 male with mean age of 28 years (21-35 years). 6 patients had unilateral panuveitis, rest 19 had bilateral involvement .One patient revealed history of tubercular synovitis of knee joint and had positive mantoux test. Patient was under ATT with gradual progressive painful diminution of vision in both eyes.4 patients were HLA B27 positive . Rest patients neither had any positive history nor sign of any systemic disease. All 25 patients were started corticosteroids systemically and topically. Fundus details were not visible due to extensive vitritis. Anterior inflammation reduced in all 25 patients but no improvement in vitritis even after 2 weeks, indicating patients either had panuveitis or posterior uveitis with spill over in anterior segment. Intravitreal triamcinolone was given in one eye of each patients with bilateral disease as control. All 25 eyes which received intravitreal triamcinolone showed decrease in vitritis and improvement in visual acuity on one week follow up. Maximum improvement was noticed at 2 weeks with stabilization of visual acuity and clinical condition up to 2 months follow up.

Table 1 : Preinjection and post injection visual acuity

Visual Acuity	Pre injection		Post injection	
	No.	%	No.	%
PL to HM	3	12%	-	
HM to CF 3feet	21	84%	-	
CF3 feet to 3/60	1	4%	-	
3/60 to 6/60	-	-	2	8%
6/60 to 6/18	-	-	15	60%
6/18 to 6/6	-	-	8	32
Total	25	-	25	-

19 control eyes of patients with bilateral disease had no improvement in the clinical condition. All 25 patients hade normal IOP (mean 17.3) before intravitreal triamcinolone injection . In 2 eyes , there was transient hypotony (7mm Hg) after intravitreal

injection which become normal after 2 days. In 3 eyes there was increase in IOP during the course of 2 months follow up which was controlled with topical antiglaucoma medication.. None of the patients had lenticular opacity before intravitreal injection and no progression in cataract was noticed . 4 patients complained of floaters due to triamcinolone which subsided in all cases after 1 month, no other complication was noted after intravitreal injection

Discussion

The rationale behind use of corticosteroids to treat inflammatory lesions of posterior segment lies in their ability to inhibit the arachidonic acid pathway of which prostaglandin regulate the production of vascular endothelial growth factor . Antonetti et al demonstrated that VEGF may regulate vessel permeability by increasing the phosphorylation of tight junction protein such as occludin and zonula occluden . Also triamcinolone acetonide has been shown to reduce the breakdown of the blood retinal barrier taking into account that eye contains only 0.01% of the total body volume and considering that for achieving high concentration of drug at its site of action it is best to apply it directly into the region of required action . Machener and Paymen[1] studied the possibilities of injecting cortisone directly into the eye . In our study , clinical improvement was noted in all 5 eyes with reduction in vitrits and improvement visual acuity at 2 months follow up . The advantages of treatment in our patients were rapid and effective reduction of inflammation . While Andriodi .S, Letko[4] in their study of 20 eyes with chronic uveitis macular edema , noted improvement in 55% deterioration in 15% and no change in 5% . Tejas Desai and Bakulesh Khamar (2004) in there study of 21 eyes of 17 patients with posterior uveitis found that following intravitreal triamcinolone acetonide injection, clinical improvement and reduction in inflammation in 17 eyes out of 21 eyes . Benitez Deal, Castello Sanchez JM [5] in their study of 10 patients with noninfectious uveites noted that after IVTA injection, inflammation resolved completely in all cases .

The enthusiasm for the use of intravitreal steroids is often tempered by the adverse effect profile as noted in various publised series and anecdotal reports . There adverse events are related to both injection itself and potential toxicity of corticosteroid injection related events .Injection related events include bacterial infection of eye (endophthalmitis) vitreous haemorrhage and retinal detachment. The potential toxicity of corticosteroids includes the development of cataract and glaucoma. Furthermore, in human eyes mean elimination half life triamcinolone is 18.6 days and 3.2 days in nonvitrectomised and vitrectomised patients respectively and that after a single intravitreal injection measurable concentration of triamcinolone would be expected to last for approximately 3 months in absence of a vitrectomy[2,3]. Thus effect typically wanes and patients who are actually successfully treated may require repeated injections . With each repeat injection , the patient is again subjected to the risk of the injection procedure and the risk of a steroid related cataract and glaucoma increases.

However in our study , no patient had increase in IOP or progression of cataract or any other complication . 4 patients complained of floaters which subsided in all cases after 1 months of follow up. The rise in IOP mostly occurs during the first 4 – 8 weeks after IVTA .However there are study who have noted elevation of IOP 2 months after IVTA , which persisted for atleast 6 months . Persistence of trace amount of triamcinolone may lead to the prolonged elevation of IOP in such patients . Since we have followed patients up to 2 months , IOP elevation is possible beyond 2 months also , a major limitation of our study . Other limitation of our study is its small sample size.

Conclusion

Intravitreal triamcinolone is effective for reducing the inflammation with promising results in patients with panuveitis and posterior uveitis .Close monitoring for several months after intravitreal injection is needed to get the maximum benefit of this salvage therapy

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