SUPRATARSAL INJECTION OF TRIAMCINOLONE ACETONIDE FOR THE TREATMENT OF SEVERE VERNAL KERATOCONJUNCTIVITIS

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Date Received:
October 31, 2017
Date Revised:
February 19, 2019
Date Accepted:
March 03 28, 2019

ABSTRACT

Objective: To find out the use of supratarsal injection of triamcinolone acetonide in severe vernal keratoconjunctivitis in children.

Methodology: This descriptive study was conducted at Department of Ophthalmology, Hayatabad Medical Complex (HMC), Peshawar from 1st May, 2015 to 30th September, 2016. It included 62 eyes of 39 patients with severe vernal keratoconjunctivitis (VKC) associated with shield ulceration/keratitis, gelatinous limbal infiltrate and/or giant papillae on tarsal conjunctiva which showed resistance to conventional topical anti-allergic drops. Patients were treated with 20mg (0.5ml) supratarsal injection of triamcinolone acetonide. The patients were followed at 1st, 2nd and 4th weeks and at 3rd and 4th months after injection. Data analysis were done using SPSS version 16.

Results: Our study included 62 eyes of 39 patients. Twenty two (56.41%) patients were male and 17(43.59%) were females. Mean age was 6.90 years (range 4.0-10 years). In all patients (100%), the disease was successfully controlled for an average of 3 months. Repeat injection was needed in 4 patients (10.26%) at one month post injection due to early recurrence of symptoms & signs. Only 9 (23.07%) patients required repeat injection after 3 months. We observed no intraoperative or postoperative complications like cataract and glaucoma.

Conclusion: Rapid and dramatic clinical response and lack of complications suggested that supratarsal injection of triamcinolone acetonide constitutes an effective and safe option for severe and challenging cases of vernal keratoconjunctivitis.

Key Words: Vernal Keratoconjunctivitis, Triamcinolone acetonide, Supratarsal Injection

This article may be cited as: **Gul N, Israr M, Farhan M, Khan MN, Khattak M, Qadir A. Supratarsal injection of triamcinolone acetonide for the treatment of severe vernal keratoconjunctivitis. J Postgrad Med Inst 2019; 33(1): 64-7.**

INTRODUCTION

Vernal keratoconjunctivitis (VKC) is a bilateral inflammatory disease that occurs in children & adolescents with seasonal recurrence[1]. Treatment involves use of preventive measures such as avoiding exposure to agents that trigger the allergy; and topical and/or systemic drugs[2]. There is no gold standard treatment for this disease. Cold compresses, preservative-free artificial tears, topical NSAIDS and topical antihistamines/ mast cell stabilizers are used in milder cases. Topical and/or systemic corticosteroids are required in more severe cases. Immunomodulators such as cyclosporine and tacrolimus are used for steroid depended VKC[2]. Resection of the giant papillae is done in severe cases when they cause persistent corneal injury[3,4]. Controlling the disease is very challenging even for expert ophthalmologists. In some cases, the disease control is difficult even with systemic immunosuppressants[2].

Such patients are referred to us from different parts of our province. We mostly see the patients who are refractory to treatment and different treatment options have been tried before. The use of supratarsal steroid injection has shown promising results in severe and refractory cases of VKC in international studies[5,6]. To our knowledge there is limited data available on supratarsal injection of triamcinolone in VKC in our province. Therefore, we designed this study to find out the effectiveness and safety of supratarsal injection of triamcinolone acetonide in such severe and refractory cases of VKC and to suggest treatment for VKC in pediatric population in our province.

METHODOLOGY

This descriptive study was conducted at Department of Ophthalmology, Hayatabad Medical Complex (HMC), Peshawar from 1st May, 2015 to 30th September, 2016 after approval from ethical board of our hospital. Duration of the study was 16 months. Written informed consent was taken from legal guardians of all patients. The study evaluated the supratarsal injection of triamcinolone acetonide in children with severe and refractory VKC. Severe VKC was defined as the presence of shield ulceration/keratitis, gelatinous limbal infiltrate and/or giant papillae on tarsal conjunctiva. Refractory cases of VKC were those cases who were partially or not at all responding to topical antiallergic drugs (olopatadine 0.2%) twice per day and who showed detoriation of symptoms & signs following discontinuation of topical steroid (0.1% dexamethasone) 4 times daily with gradual reduction of one drop every week. Patients less than 4 years of age, those with scarred conjunctivae due to other diseases, infectious corneal ulcers and contact lens users were excluded from the study.

All patients who fulfilled the inclusion criteria were included in the study through out-patient department (OPD). They received supratarsal triamcinolone acetonide injection under mask anesthesia and aseptic condition. The upper lid was gently everted, then 20mg triamcinolone acetonide (injection Kenacort: 40mg/ml) was injected in the potential space between conjunctiva & Muller's muscle, about 0.5-1mm superior to the upper edge of tarsus with a 27 gauge needle. Lid was returned to normal position and all topical medications were discontinued. Patients were reviewed at 1st, 2nd and 4th weeks and at 3rd and 4th months after injection and symptoms & signs were evaluated. At each follow up visit, all patients underwent detailed ocular examination including visual acuity, intraocular pressure measurement & slit lamp examination including fundus examination. The symptoms (itching, photophobia, lacrimation, pain) and signs (conjunctival hyperemia /chemosis, size of giant papillae, limbal infiltrate, shield ulcers/keratitis and trantas dots were recorded. Improvement of symptoms was assessed. Giant papillae were described as papillae more than 1mm measured with slit lamp beam; limbal infiltrate and conjunctival hyperemia as number of clock hours involved; number of trantas dots, and size of keratitis/shield ulcers in millimeters.

Treatment was defined as successful when there was general reduction or complete resolution of symptoms & signs such as reduction in size of giant papillae to less than one millimeter, conjunctiva hyperemia and limbal infiltrates to less than 50%, reduction in number of trantas dots to less than 50% and reduction in size of keratitis to less than 50%. Treatment was defined as unsuccessful if symptoms & signs exceeded the pre-treatment level according to the patient's record. Re-injection was performed in cases of recurrence. Data analysis were done using SPSS version 16. Percentages were calculated for categorical variables like total number of patients, gender and frequency of symptoms & signs. Mean and SD values were calculated for variables like size of giant papillae and keratitis, limbal infiltrate and conjunctival hyperemia in number of clock hours and number of trantas dots. Chi square test was applied to check significance. P values of <0.05 was taken as statistically significant.

RESULTS

Our study included 62 eyes of 39 patients. Gender distribution is shown in Table 1. Mean age was 6.9 years (range 4-10 years). Mean follow up time was 4 months.

Frequency of symptoms & signs before treatment is shown in Table 2. All patients had conjunctival hyperemia followed by limbal infiltrate and trantas dots (83.87%) each.

The disease was successfully controlled for an average of 3 months in all patients (100%). There was complete resolution of symptoms and conjunctival hyperemia and significant reduction in size of giant papillae, limbal infiltrate and keratitis and number of trantas dots ($p < 0.05$). However, after 3 months, recurrence occured in all patients; but only 9 (23.07%) patients required repeat injection. Rests of 30 patients (76.92%) were started on topical olopatadine eye drops twice daily.

Four patients (10.26%) showed recurrence of symptoms & signs one month after injection. These 4 patients received repeat injection in both eyes. No intra/post-operative complication was noted in any patient.

Table 1: Gender distribution

Gender	Frequency	Percentage
Male	22	56.41%
Female	17	43.59%
Total	39	100%

Table 2: Frequency of symptoms & signs of severe VKC

Presentation		Frequency	Percentage
Symptoms	Itching	62	100%
	Photophobia	62	100%
	Lacrimation	62	100%
	Pain	7	11.29%
Signs	Conjunctival Hyperemia	62	100%
	Giant Papillae	23	37.09%
	Limbal Infiltrate	52	83.87%
	Shield Ulcer/Keratitis	8	12.90%
	Trantas Dots	52	83.87%

DISCUSSION

The treatment of severe VKC involves topical anti-allergic drugs, artificial tears and steroid eye drops or even oral steroids and cyclosporin[7]. But these conventional therapies are ineffective in severe VKC. Poor compliance with topical or systemic medications is another issue leading to poor control of the disease. Treatment of severe cases with supratarsal injection of triamcinolone acetonide is an important therapeutic modality. It is a safe strategy and brings rapid improvement in symptoms & signs[2].

In our study, we found a rapid symptomatic relief with supratarsal triamcinolone acetonide injection. It was due to local reduction of inflammation[8]. We experienced significant reduction in size of giant papillae, gelatinous limbal infiltrate, conjunctival hyperemia and improvement in keratitis following supratarsal injection of triamcinolone acetonide. A local study in different climatic and geographic location of our country also showed 100% effectiveness of supratarsal injection of triamcinolone acetonide in severe VKC[9]. As VKC is a bilateral asymmetric disease; supratarsal injection of triamcinolone acetonide was considered separately for each eye. This treatment avoided the prolonged use of topical eye drops and thus avoided the debilitating complications of prolonged use of topical steroids such as cataract and glaucoma. More consistent results are achieved with injection than with topical eye drops with prolonged control of the disease. It avoids the compliance problems with topical eye drops and difficulties administering eye drops in children. It is very cost effective treatment modality. Triamcinolone acetonide inhibits the intercellular adhesion molecule, tumour necrosis factor (TNF), interleukins 1, 2, 6 & 8 and T-cell mediated cytotoxic factors which play a role in the pathogenesis of VKC[7,8].

Our initial results with supratarsal injection are consistent with a study by Aghadoost et al[7]. We found recurrence of symptoms & signs at an average of 3 months which is consistent with local as well as international data[7,9]. Whereas a study by Douglas et al[10] showed no recurrence after supratarsal injection of triamcinolone acetonide. This difference in different studies may be due to immunological status of our patients and climatic changes in habitat of our patients. In our part of the world, children usually like outdoor games & activities; so they are more exposed to sunlight & hot climate with increased risk of VKC symptoms & signs.

Prolonged treatment with topical steroids increases the risk of complications like cataract and glaucoma which is not feasible especially in pediatric population. A study showed steroid responsiveness in patients treated with prolonged corticosteroids but 5.5% of these progressed to glaucoma, most of which required trabeculectomy with mitomycin C[1]. Main concern regarding use of steroid injection for VKC is also its effect of increasing intraocular pressure (IOP), but we didn't encounter it in our patients which is consistent with a local study by Sadiq et al[11]. However, Holschlen et al[5] found high IOP in their patients.

Immunomodulator drugs like tacrolimus & cyclosporine can be used for long term treatment but they are expensive[12]. However, supratarsal injection of triamcinolone acetonide may be a suitable option when high cost and intolerable adverse effects poses an issue.

CONCLUSION

Supratarsal injection of triamcinolone acetonide was found an effective and safe treatment option for severe and refractory cases of VKC in children. Symptoms & signs of ocular allergy were significantly improved with delay in recurrences. However, long term studies with larger sample size and control group is warranted to assess the safety & efficacy of supratarsal injection of triamcinolone acetonide in the treatment of such severe and refractory cases of VKC in children.

REFERENCES

1. Leonardi A. Management of vernal keratoconjunctivitis. Ophthalmol Ther 2013; 2:73–88.
2. Costa AXD, Gomes JAP, Marculino LGC, Liendo VL, Barreiro TP, Santos MSD. Supratarsal injection of triamcinolone for severe vernal keratoconjunctivitis in children. Arq Bras Oftalmol 2017; 80:186-8.
3. Bonini S, Coassin M, Aronni S, Lambiase A. Vernal keratoconjunctivitis. Eye 2004; 18:345-51.
4. Cornish KS, Gregory ME, Ramaesh K. Systemic cyclosporine A in severe atopic keratoconjunctivitis. Eur J Ophthalmol 2010; 20:844-51.
5. Holsclaw DS, Witcher JP, Wong IG, Morgolis TP. Supratarsal injection of corticosteroid in the treatment of refractory vernal keratoconjunctivitis. Am J Ophthalmol 1996; 121:243-9.
6. Saini JS, Gupta A, Pandey SK, Gupta V, Gupta P. Efficacy of supratarsal dexamethasone versus triamcinolone injection in recalcitrant vernal keratoconjunctivitis. Acta Ophthalmol Scand 1999; 77:515-8.
7. Aghadoost D, Zare M. Supratarsal injection of triamcinolone acetonide in the treatment of refractory vernal keratoconjunctivitis. Arch of iranian med 2004; 7:41–3.
8. Zaouali S, Kahloun R, Attia S, Jelliti B, Trigui M, Yahia SB, Messaoud R et al. Supratarsal injection of triamcinolone acetonide and childhood allergic keratoconjunctivitis. Int Ophthalmol 2012; 32:99-106.
9. Qamar MR, Latif E, Arain TM, Ullah E. Supratarsal injection of triamcinolone for vernal keratoconjunctivitis. Pak J Ophthalmol 2010; 26:28-31.
10. Holsclaw DS, Whitcher JP, Wong IG, Margolis TP. Supratarsal injection of corticosteroid in treatment of refractory vernal keratoconjunctivitis. Am J Ophthalmol 1996; 121:243–9.
11. Sadiq MN, Bhatia J, Rahman N, Varghese M. Safety and efficacy of supratarsal injection of triamcinolone in the management of refractory vernal keratoconjunctivitis. Rawal Medical J 2008; 33;235-8.
12. Garcia DP, Alperte JI, Cristobal JA, Mateo Orobia AJ, Muro EM, Valyi Z et al. Topical tacrolimus ointment for treatment of intractable atopic keratoconjunctivitis: a case report and review of the literature. Cornea 2011; 30:462-5.

CONTRIBUTORS

NG conceived the idea, planned the study and drafted the manuscript. MI, MF and MNK helped acquisition of data, did statistical analysis and critically revised the manuscript. MK and AQ did literature search, statistical analysis and finalization of manuscript. All authors contributed significantly to the submitted manuscript.