

Efficacy of Supratarsal Injection of Triamcinolone Acetonide (Corticosteroid) for Treating Severe Vernal Keratoconjunctivitis (VKC) Refractory to All Conventional Therapy

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Purpose: To determine the efficacy of supratarsal injection of triamcinolone acetonide for treating severe Vernal keratoconjunctivitis (VKC) patients refractory to all conventional therapy.

Material and Methods: The study was conducted at the Eye department of Sindh Government Qatar Hospital Orangi Town Karachi from January 2007 to April 2009. Eighteen patients of Vernal keratoconjunctivitis (VKC) resistant to all established therapy were included in the study. Patients presenting with signs and symptoms of the disease were clinically evaluated. They were given 0.5 ml (20 mg) of supratarsal injection of Triamcinolone acetonide. These cases were then evaluated and followed up for the relief of signs and symptoms of the disease and rise of intraocular pressure for a period of two years.

Results: All patients experienced dramatic symptomatic relief from the disease. Reduction in cobblestone papillae by 50% was noted within three weeks after giving injection of corticosteroids in all patients. There was reduction in shield ulcer in 22% of patients and limbal involvement in 33% of patients in one to three weeks. No complications or side effects were observed.

Conclusion: The dramatic clinical improvement, symptomatic relief from the disease and lack of increase in intraocular pressure suggest that supratarsal injection of corticosteroids may be a valuable therapeutic approach for the treatment of refractory VKC.

VKC is typically a condition affecting young people at an average age of 12 years with a predilection to young boys¹. Wide range of therapeutic modalities are available for its treatment². Milder cases can often be treated with cold compresses, tear substitutes, topical vasoconstrictors^{3,4} or topical antihistamines⁵. More advanced cases may be treated with topical nonsteroidal anti inflammatory agents^{6,7} mast cell stabilizers⁸⁻¹⁰ and topical corticosteroids¹¹. The treatment of severe VKC remains a difficult problem for the patient and physician. Patients with advanced VKC with large cobblestone papillae, severe limbal involvement, or a shield ulcer which is rare but serious complication,¹² pose

especially difficult problem because they are often markedly symptomatic and debilitated by their condition². Due to the general frustration with the treatment of the refractory patients, new therapeutic agents have been tried and used in the treatment of advanced VKC. Oral prostaglandin mediators, such as aspirin^{13,14} and suprofen¹⁵ have been used to alleviate some signs and symptoms of recalcitrant VKC. More recently, topical ketotifen fumarate¹⁶, levocabistine hydrochloride¹⁷, and lodoxamide¹⁸ appear to provide some relief in mild and moderately affected patients. However their efficacy has been similarly disappointing when applied to patients with severe refractory disease. There is a scant literature on this

topic. We carried out a study in our department to use a technique of supratarsal injection of corticosteroids, which in our experience has been an effective and safe adjunct in the treatment of these patients whose disease is difficult to treat.

MATERIAL AND METHODS

Total of 18 patients were included in the study with the signs and symptoms of sever VKC refractory to maximum medical therapy between the ages of 5 to 25 years. Any patient with systemic disease, history of ocular trauma, cataract, raised intraocular pressure, ocular surgery, follow up less than 4 months and age below 5 and above 25 years were excluded from the study. Each patient was treated by a stepwise protocol before selection for the study. All patients received topical sodium cromoglycate 4%, lodoxamide 0.1%, prednisolone acetate 0.125%. No patients were treated with topical cyclosporine or oral therapy. Despite this treatment patients had symptoms including severe itching, foreign body sensation, ropy mucus discharge or photophobia that interfered with their daily routine. Inadequate control of clinical signs included persistent severe giant cobblestone papillae (Fig. 1), shield ulcer, persistent limbal conjunctival thickening and edema. Such patients were then subjected to supratarsal injection of corticosteroid. Written consent was taken from the patients or parents. Injection was given either in local (L.A or Topical) or general (G.A) anesthesia. With a cotton tipped applicator the superior tarsus was lifted away from the globe. A 27 gauge needle was used to inject 2.5 ml of 2% lidocaine with epinephrine. The needle was placed subconjunctivally 1mm above superior tarsal border as shown in (Fig. 2), to avoid marginal arcade blood vessels which produced a ballooning of the potential space between conjunctiva and the Muller's muscle. After allowing sufficient time for anesthesia to take effect, a 27-gauge needle was positioned in the supratarsal space between conjunctiva and Muller's muscle and 0.5 ml of triamcinolone acetonide (20mg) was slowly injected (Fig.2). Eye pad was applied for 24 hours.

After the injection patients were maintained on topical sodium cromoglycate 4% four times a day. If shield ulcers were present, prophylactic topical moxifloxacin was added. Patients were followed up for the relief of symptoms as well as for resolution of clinical signs. Resolution of cobblestone papillae was defined as a 50% decrease in the size or number of papillae. Resolution of limbal involvement was considered complete with the disappearance of limbal

edema, Trantas' dots and limbal papillae. Resolution of shield ulcer was defined as complete healing of the epithelial defect. Patients were also observed for the potential complications including blephroposis, skin depigmentation, infections, motility disturbances, conjunctival scarring and increase in intraocular pressure.

RESULTS

Total of 18 patients were included in the study. Age groups are shown in Table 1. Sex and presentation of VKC are shown in Table 2.

Table 1:

Age Group (Years)	No. of patients n (%)
5-10	8 (44.44)
10-25	10 (55.55)
Total	18 (100)

Table 2:

Sex	No. of patients n (%)
Male	13 (72.22)
Female	5 (27.77)
Presentation	
Limbal VKC	6 (33.33)
Shield Ulcer	4 (22.22)

All patients were treated with 0.5 ml of triamcinolone acetonide (20mg) and followed up for a minimum of four months to two years after injection. All patients experienced prompt and dramatic response of their debilitating symptoms especially photophobia after one to five days. The symptoms and clinical response was dramatic. A 50% decrease in cobblestone papillae occurred within 15 days for all patients. In fourteen of 18 patients complete disappearance of cobblestone papillae occurred after supratarsal injection. In the six patients with limbal VKC the edema and thickening, limbal papillae and Trantas' dots resolved in 30 days. In the four patients with shield ulcer the epithelial defect healed completely by three weeks after injection. After the treatment by supra tarsal injection, all the patients

were maintained on conventional therapy such as topical sodium chromoglycate 4%, lodoxamide 0.1%. Two patients required repeat injection after seven weeks and became asymptomatic within 15 days. Potential complications including blephropotosis, skin depigmentation, infections, motility disturbances, conjunctival scarring and increase in intraocular pressure have not been observed.



Fig. 1:

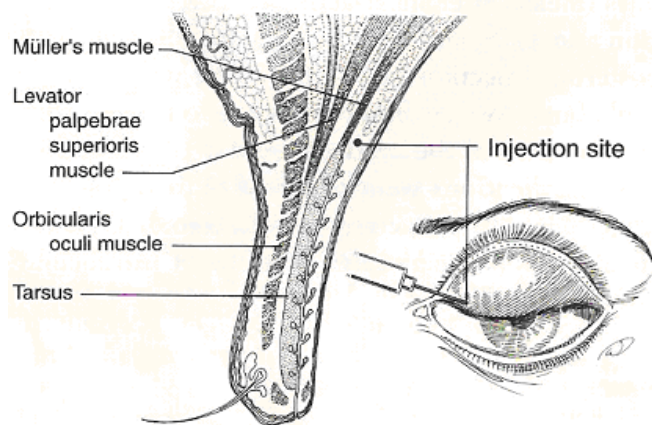


Fig. 2:

DISCUSSION

VKC is not uncommon condition in our country. Mild to moderate cases respond to conventional treatment however there remains a need for more effective treatment modalities in refractory cases of VKC. In the past severe refractory VKC has been treated by aggressive intervention including surgical excision of cobblestone papillae and cryotherapy of upper tarsus. Such radical therapeutic modalities have been largely

ineffective and have resulted in extensive scarring. Current treatment options including tear substitutes, topical antihistamines, topical non steroidal anti-inflammatory, mast cell stabilizers and topical corticosteroids are minimally effective in advanced disease. More recently oral prostaglandin mediators and new mast cell stabilizers have been used. In general the efficacies of these mediators have been disappointing when applied to refractory cases. Agents such as topical cyclosporine have also been tried as adjunctive and monotherapy in these recalcitrant patients^{19,20}. In those studies temporary symptomatic relief is particularly attained, but there is less effect on cobble stone papillae or shield ulcers. Further, symptoms frequently recur on cessation of the cyclosporine.

VKC usually resolves without complications unless it is over treated, treatment should be conservative and iatrogenic side effects should be avoided. Any new therapeutic intervention should be designed with these considerations in the mind. Supratarsal injection was well tolerated by even the youngest individual. Once one patient received the injection and experienced some symptomatic relief, their compliance with ongoing topical treatment regimen was much more constant. The increased compliance as the patient's symptoms abated undoubtedly contributed to successful post injection treatment. These results of our study are similar to the study done by Holsclaw et al². Results attained with the supratarsal injection of corticosteroid both in signs and symptoms were dramatic and prompt. The clinical resolution of cobblestone papillae was universal. More surprising was the resolution of limbal edema and shield ulcer despite their lack of proximity to the site of injection in all patients. Although factors such as relief of symptoms and decrease in cobblestone papillae can be somewhat subjective, each patient attained such impressive symptomatic improvement and marked decrease in cobblestone papillae that the effect was dramatic. Furthermore in fourteen patients complete disappearance of cobblestone papillae occurred after supratarsal injection. Similarly the limbal edema and shield ulcer completely resolved in all patients with these features.

In summary we used supratarsal injection of corticosteroid injection as a new therapeutic modality for treating refractory VKC. The procedure is well tolerated even in young patients. In our experience this technique provided prompt symptomatic relief in

100% of severely debilitated patients. Clinical resolution of such varied features as large cobblestone papillae, limbal edema and shield ulcer was attained in the patients. The substantial improvement in this small series of patients, combined with the apparent lack of side effects, leads us to suggest that supratarsal injection of corticosteroid may prove to be a valuable addition to our therapeutic approach in treating refractory VKC.

CONCLUSION

The results of our study are very encouraging. The dramatic clinical improvement, symptomatic relief from the disease and lack of increase in intraocular pressure suggest that supratarsal injection of corticosteroids may be a valuable therapeutic approach for the treatment of refractory VKC. Since the study is on small scale and single centre, we recommend that the study should be done at multicentre and high scale to reach a definite conclusion.

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