Safety and efficacy of Supra-tarsal injection of Triamcinolone in the management of refractory Vernal Keratoconjunctivitis

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ABSTRACT

Objective: We aimed to assess the efficacy, safety and longevity of the effect of supratarsal injection of intermediate acting steroid triamcinolone acetonide in the management of recalcitrant vernal catarrh.

Patients and Methods: In this prospective study 45 patients (90 eyes) with severe Vernal Keratoconjunctivitis (VKC), resistant to conventional method of treatments underwent injection of 0.6 ml triamcinolone acetonide in supratarsal area (in conjunctival side of upper lid). The effects were monitored and cases were followed for 12 months.
Results: Dramatic relief of symptoms (burning, itching, lacrimation and photophobia, ropy discharge) was seen in all patients in first few days after the supratarsal injection. Size of the cobble stone papillary hypertrophy in tarsal conjunctiva and gelatinous thickening of conjunctiva at limbus decreased significantly in the first month but never disappeared completely. Mean period of recurrence of symptoms was 156.6 days [range 13-359 days]. All patients tolerated the treatment well and no complication was noticed.

Conclusion: Rapid and dramatic symptomatic and clinical response and lack of complications shows that supratarsal injection of triamcinolone acetonide is safe and effective therapeutic approach for refractory VKC. (Rawal Med J 2008;2008:235-238).

Keywords: Vernal Keratoconjunctivitis [VKC]; triamcinolone acetonide; tarsal conjunctiva.

INTRODUCTION

Vernal keratoconjunctivitis (VKC) is a severe perennial or seasonal form of allergic conjunctivitis predominantly affecting children and young adults.\(^1\) Eighty percent of patients are below 14 years of age and boys are usually more affected at 2:1 ratio.\(^2\) The chief symptoms of this disease include severe itching, photophobia, redness, tearing and tenacious discharge.\(^3\) The important clinical signs in conjunctiva include cobblestone papillae in the upper tarsal conjunctiva, limbal conjunctival thickening with gelatinous nodules and Tranta's dots. Corneal involvement can occur in the form of punctuate keratitis, shield ulcer, scarring and pannus formation.\(^4\) In majority of children, the disease resolves spontaneously between age 2 and 10 years. Eyes with refractory and frequently
recurrent VKC often develop potentially blinding complications like corneal vascularization, corneal opacity or signs of steroid over use.\(^5\)

The conventional methods of treatment of severe VKC may not be effective in patients with giant papillae, severe limbal involvement, or corneal shield ulcer. Recently, a number of new therapeutic agents have been used in refractory VKC. These include topical non-steroidal anti-inflammatory agents (Suprofen),\(^6\) topical mast cell stabilizers (Nedocromil, Lodoxamide),\(^7\) topical immunomodulators (Cyclosporine),\(^8\) topical antihistamines (Levocabastine),\(^9\) and ganglioside derivatives (Miprogoside).\(^{10}\) However, most of these newer treatment modalities have been found relatively ineffective. Systemic therapy with high doses of aspirin relieves some signs and symptoms, but tarsal cobblestone papillae and shield ulcers remain relatively unaffected.\(^{11}\) More recently, successful use of supratarsal injection of corticosteroids has been reported in severe and refractory VKC.\(^{12-13}\) We report the results of our prospective study using triamcinolone acetonide in treatment of refractory VKC.

**PATIENTS AND METHODS**

For this prospective, double blind study, we enrolled 45 patients (90 eyes) with clinical diagnosis of advanced and resistant VKC who were resistant to conventional methods of treatment. Only those patients having intense itching, foreign body sensation, photophobia and discharge severe enough to interfere with daily routine of life for a minimum period of 2 years were included. All had cobble stone papillae and progressive limbal vascularization with papillary hypertrophy. All theses patients were on long time treatment with a combination of fluorometholone eye drops, dexamethasone eye drops,
naphazoline eye drops, sodium cromoglycate 2% eye drops, and in some cases oral antihistamines for at least 2 to 10 years. These patients responded only minimally to the conventional treatment and underwent triamcinolone acetonide injection into supratarsal area. None of the patients were previously treated with oral prednisolone, topical cyclosporine, topical lodoxamide or nonsteroidal anti-inflammatory drugs. Patients with history of contact lens wear, those who were unable to communicate because of age or intellect, or on systemic antihistamines or steroids for their other problems or unwilling for the procedure were excluded from the study.

An informed consent was obtained prior to administration of supra tarsal injection of triamcinolone acetonide. Photograph of every eye was taken before treatment and then on every visit. A row of five cobblestones in the centre of upper tarsal plate was measured and recorded. Selected patients underwent injection of 0.6 ml triamcinolone acetonide in supratarsal area and were followed for 12 months. One of the authors injected the steroid in both eyes while the results and follow up were maintained independently by another observer to avoid bias.

Triamcinolone acetonide 0.6 ml (1 ml = 10 mg drug) was injected in potential space between conjunctiva and Muller's muscle, 1 mm superior to upper edge of tarsus with a 27 gauge needle after proparacaine hydrochloride 0.5 % was instilled into the eye 3 times at an interval of 2 minutes. This produced ballooning of the potential space between the
conjunctiva and Muller's muscle (Fig. 1). No eye dressing or patching was used after giving the injection.

All topical medications were discontinued. Patients were followed in the first week and fourth week after injection, symptoms were recorded subjectively and size of cobble stone papillae was evaluated and documented. Follow-up was continued every month for 12 months. Treatment success was defined as the reduction of symptoms by at least 50% of pre-treatment severity and/or 50% reduction in the maximum pre-treatment size of cobble stone papillae. Disease recurrence was determined if symptoms or maximum papillae size increased and attained or exceeded the pre-treatment levels. All patients were observed for any side effects of steroid injection namely ptosis, depigmentation of eye lid skin, infections, motility disturbance, clarity of crystalline lens and raised intraocular pressure on every visit.

RESULTS

Out of 45 patients (90 eyes), 35 (78%) patients were male and 10 (22%) were female, with mean age of 16.06±3.66 years (range 8-23).

A dramatic symptomatic response was noticed in all patients within the first week after receiving the injection. This response was independent of the severity or duration of the disease. Improvement of symptoms was followed by the reduction in the size of cobble stone papillae (Fig 2a and 2b) and limbal thickening.
within 1 month of receiving injection (Fig 3a and 3b). Approximately 50% or more decrease in size of cobble stone papillae was noticed. We did not notice complete disappearance of cobble stone papillary hypertrophy in any of our patients. Recurrence of symptoms was observed in all patients by the end of one year (Mean recurrence period: 156.6±87.52). Peak recurrence was seen between 60 days to 180 days [22 patients] (Fig 4).

Earliest recurrence was seen in one patient just 13 days after the injection while the most delayed recurrence was seen after 359 days. We did not observe any steroid induced complication in any of the patients in the study during 12 months of follow up.

**DISCUSSION**
The recalcitrant eyes with VKC invariably develop disease related or treatment related complications with irreparable ocular morbidity and blindness.\textsuperscript{1,5,12} This poses a challenge for the treating ophthalmologist, especially when the patients with advanced VKC remain markedly symptomatic and debilitated despite maximum medical management. Surgical excision and cryo destruction of cobble stone papillae have been abandoned because of significant risk of extensive scarring.\textsuperscript{12} Holsclaw in 1996 reported his initial experience of managing twelve such patients with supratarsal injection of either short or intermediate acting corticosteroids.\textsuperscript{12} All patients in his series showed a dramatic symptomatic and clinical improvement irrespective of the type of corticosteroid used. One patient in their series developed persistent increase in intra ocular pressure after injection of intermediate acting corticosteroid. In our series, we found that triamcinolone acetonide injection in supratarsal area relieved symptoms in 100% of patients, but did not prevent recurrence of VKC. Douglas in 1995 showed that he had no recurrence of VKC after short or intermediate acting steroid injections in supratarsal areas.\textsuperscript{13} This difference may be due to immunologic status of patients and climatic variations in habitat of patients. Patients included in our study belonged to very hot and sandy areas, a climate which poses an important risk factor for VKC. In our study, the initial response to treatment was consistent with reports of Holsclaw\textsuperscript{12} and Saini.\textsuperscript{14} The injection of triamcinolone provides initial symptomatic relief by reducing the inflammation locally. The use of intralesional steroids in the management of chalazion or eye lid haemangioma, has led to many vision threatening complications like depigmentation of skin or tissue atrophy and retinal and choroidal vascular occlusion.\textsuperscript{15-17} Bilateral retinal artery embolisation associated with intralesional corticosteroid injection for an eyelid capillary
hemangioma of infancy has also been reported.\textsuperscript{18} In our study, after 12 months of follow-up none of the patients developed any side effect or complications of steroid injection. In conclusion, we used supratarsal injection of triamcinolone acetonide in patients with severe refractory VKC, found it well tolerated and provided high rate of clinical response with lack of complications. However, a curative treatment for refractory VKC remains elusive.

REFERENCES


