A 5 year old boy presented with complaints of pain and photophobia and gross diminution in vision in both eyes. Slit lamp examination revealed cobble stone papillae in the tarsal conjunctivae, diffuse punctate epitheliopathy of cornea and two almost similar round epithelial defects in both corneas. He was diagnosed to be suffering from bilateral vernal keratoconjunctivitis, with grade 2 Shield ulcer in both eyes. Shield ulcer of grade 2 and above is refractory to the combined regime of topical corticosteroids, dual acting antihistamine and lubricating eye drops. After removal of plaque and scrapping of base, the ulcer re-epithelialized completely in two weeks, leaving behind a nebular opacity eccentric to pupil which stained negatively with fluorescein dye. The patient was followed up for two months and no recurrence of ulcer was noted. The unique finding in this case is the presence of bilateral, almost similar lesions in both eyes that were refractory to medical treatment.

**Introduction**

Vernal keratoconjunctivitis (VKC) is an atopic condition of the external ocular surface. It is frequently bilateral. VKC mainly affects young children of age less than 18 years. The most common symptoms are itching, photophobia, lacrimation and clinical findings include giant papillae, conjunctiva in upper tarsal plate, Trantas spot at limbus and superficial punctate keratopathy. The etiology of the disease is not completely known. However, VKC was considered an immediate hypersensitivity reaction. Approximately 50% of the patients with VKC have no family or personal history of atopy, and a large proportion have negative results in the standard allergy diagnostic tests, confirming that it is not solely immunoglobulin E (IgE) - mediated. Shield ulcer is an uncommon, incapacitating corneal manifestation that occurs in 3 to 11% of patients suffering from vernal keratoconjunctivitis. Management of this ulcer sometime can be difficult as it does not respond to medical treatment in certain situations and surgical intervention is necessary. Shield ulcer can lead to visual complications, so it should be treated aggressively, especially in children.

**Case Report**

A 5 year old boy presented to our department with complaints of photophobia, lacrimation and redness in both eyes since one month. Apparently, he was on sodium chromoglycate 2% eye drops and flumethalone 0.1% eye drops in both eyes without any significant improvement. On examination, his visual acuity was 6/18 and 6/36 in the right and left eye respectively. Slit lamp examination revealed grade 4 giant papillae in both upper tarsal conjunctiva (Figure 1). Corneal examination showed diffuse punctate epitheliopathy in both eyes. Examination of the right eye showed two corneal lesions measuring 2.5 mm x 2.5 mm at 4 o’clock and 1mm x 1mm at 11 o’clock position and around 4 mm inside the limbus (Figure 2). Left eye examination showed an almost similar lesion but the lesion was more towards the pupillary area (Figure 3). In both eyes, the posterior segments were within normal limits. He was diagnosed to be suffering from bilateral vernal keratoconjunctivitis with grade 2 Shield ulcer in both eyes. The patient was started with prednisonolone 1% eye drops every two hourly under antibiotic cover, moxifloxacin 0.5% eye drops three times a day, along with olopatadine 0.1% eye drops twice a day. He was also started on preservative free carboxymethylcellulose 1% eye drops in both eyes. After one week, the patient’s symptoms improved slightly in the form of a decrease in photophobia, but without any change in the size of corneal ulcers. Removal of plaque was advised. Under topical anaesthesia, the right eye ulcer plaque was removed with a bent 26G needle and the ulcer base was also scraped. The right eye was patched for twenty four hours. After twenty four hours, the patch was opened and the earlier regime of topical prednisolone 1% QID, moxifloxacin 0.5% TDS and olopatadine 0.1% eye drops BD were reinstituted. The same procedure was done in the left eye after 24 hours. The ulcer scrapings were also sent for microbiological investigations which were negative. Topical carboxymethylcellulose eye drop was replaced with topical cyclosporin (0.05%) eye drops four times a day in both eyes. After one week, the ulcer started decreasing in size in both eyes. The vision improved to 6/12 in right eye and 6/9 in left eye. The same treatment was continued for two weeks with tapering dose of steroid eye drops and Shield ulcer was re-epithelialised completely (Figure 4, 5) with vision in both eyes improved to 6/6. The patient was followed up for two months without any recurrence.
Discussion

VKC is typically seen in a young male. It is most commonly seen in hot and humid climate. The causative factors have not been identified. The IgE mediated immune response is seen in 56.7% of cases and positive prick test is seen in 43.7% of cases. The first sign of corneal involvement is superficial punctate epitheliopathy and the punctate keratopathy may slowly grow over time to form a corneal Shield ulcer. However, in these corneal ulcers, the inner corneal layers are not affected. If the ulcer is ignored at this stage, a plaque can be form over it. These plaques contain fibrin and mucous. Plaques are rare, if formed, they can lead to sight complications. Corneal involvement is a severe form of vernal keratoconjunctivitis. The incidence of Shield ulcers in VKC ranges from 3% to 20% in different studies. Cameron has graded Shield ulcer by severity. Shield ulcers can be divided into 3 different grades. Grade 1 ulcer has a clear base and favorable outcome. These ulcers re-epithelize with mild scarring on medical treatment. Grade 2 ulcers have inflammatory debris at the base and exhibit a poor response to medical therapy. The grade 2 ulcers are prone to infectious keratitis. Regular surgical debridement of these ulcers is necessary for rapid healing. The role of cyclosporin eye drops in low concentration (0.05%) along with standard medical treatment has been proven. Ugur Keklikci et al reported in one series that VKC was successfully treated with cyclosporine 0.05% for 4 weeks, 4 times daily. No side effects were attributed to topical CsA. However, when used alone without any steroid eye drops, the effect of topical CsA is similar to placebo. Grade 3 ulcers have a large base and elevated plaque. These ulcers are generally refractive to medical treatment and surgical intervention in the form of AMT is necessary. Our patient presented to us with two similar round grade 2 Shield ulcer in both eyes. Visual acuity in both eyes was reduced and being a young child of 5 years, the photophobia component was more. While conventional topical treatment was not helping his symptoms as well as signs, surgical debridement of the plaque resulted in rapid re- epithelization within two weeks and the ulcer has not recurred on follow up.
Conclusion

Corneal ulcer is a complication of VKC and grade 2 onwards. Shield ulcer becomes refractory to medical treatment. Surgical management in the form of debridement of corneal ulcer and at times, amniotic membrane transplantation is required in non healing cases and recurrent ulcers. Our patient recovered fully with surgical debridement as well as combined therapy with CsA eye drops. Low dose of CsA eye drops proves to be effective. To conclude, Shield ulcer with grade 2 onward should be treated aggressively with debridement regularly as well as continued medical therapy with steroid eye drops along with cyclosporine eye drops to prevent any sight threatening complications, especially in children.

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