

Vernal Keratoconjunctivitis and Association Of Intestinal Worm Infestation

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Thirty two patients with severe form of vernal keratoconjunctivitis were selected and their stool were subjected to microscopic examination for ova, cysts, worm segments and living or dead worms. We advised these patients for three consecutive morning stools specimens, from the same laboratory. In our study 22(62.5%) patients out of 32 showed, infestation of various intestinal worms, with vernal keratoconjunctivitis. Patients were de-wormized and their disease pattern was studied. The objective of this study was to show the associations of worms as an etiologic factor and dewormization does help in alleviating the clinical features of the disease.

Key Words: Keratoconjunctivitis, intestinal worm infestation

Vernal keratoconjunctivitis is an allergic inflammatory condition with characteristic giant papillae, usually on upper tarsal conjunctiva and less commonly on the limbus. It is probably a combination of type I and type IV Gell and Coomb's hypersensitivity reaction. It most commonly occurs in spring (hence vernal) although perennial forms also occur. It affects predominantly youngsters, but resolves in most patients with time. There is usually a personal or family history of atopy. Distribution is world wide¹.

There are two populations, with vernal keratoconjunctivitis as atopic and non-atopic patients. They present with palpebral, limbal² and mixed³ forms of the disease. The palpebral features are as diffuse papillary hypertrophy, flat topped papillae, are called as "Cobble Stone" appearance. If these aggravate they become giant papillae. Limbal changes are as thickened conjunctiva, odema and hyperaemia, which progress to mucoid nodular discrete thickening, "Trantas dots" composed mainly of eosinophils. Corneal changes are characterised by punctate epithelial keratitis, epithelial macroerosions which are ameoboid or also called as shield ulcers, plaques, subepithelial scarring and pseudogerontoxon. These patients have a high incidence of keratoconus². Upto 27% of patients may have permanent visual loss as a result of vernal keratoconjunctivitis¹.

The principal symptom is itching, which may be nearly intolerable. It is aggravated by sweating, ocular irritation and rubbing the eyes. There is thin, ropy, white secretion. Conjunctival scrapings contain numerous eosinophils. Tear IgG and histamine levels are elevated³. Sometimes conjunctival pseudomembranes are developed, vernal ulcers do not respond to bandage contact lenses and conjunctival flaps are raised for their healing, occasionally⁴.

Material and methods

We selected thirty two patients with severe itching, redness and with papillary conjunctival reaction of cobblestone or giant papillae. They were advised for the stool examination. Three morning specimens, of stools

were collected on three consecutive days and were examined from same laboratory.

Study was conducted at Lahore General Hospital, Lahore in Eye Department as out patient. Study started from October 1994 to March 1997 (two years and five months). Average follow up of each patient was 8 to 18 months. They were examined fortnightly. We discussed about the disease with every patient.

Age ranged from 3 years to 30 years in our series, male to female ratio was 19:13. Duration of disease varied from 6 months to 3 years. Out of 32 patients who were subjected to stool examination, 22 showed worm infestation of different worms. Clinical diagnosis was made by biomicroscopic examination of palpebral, bulbar and limbal conjunctiva. Cornea were carefully examined for superficial punctate keratopathy (micro-erosions) or ulcers. Applanation tonometry was done for intraocular pressure. Vision and fundi were examined routinely.

We excluded other cases from our study as those of drug allergy, seasonal allergy, chronic conjunctivitis, contact lens allergic conjunctival reactions or giant papillary conjunctivitis due to redundant sutures.

Table 1 :Marked clinical feature at the time of presentation.

Features	n=	%age
Symptoms		
Itching	25	78.12%
Irrigation	03	09.37%
Redness	03	09.37%
Ropy discharge	01	03.12%
Signs		
Papilla		
Modest	19	59.37%
Cobble stone	09	28.12%
Giant papilla	04	12.5%
Limbal nodule	07	21.8%
Punctate C erosions	01	03.12%

History of any systemic disease was asked and we could examine the nose, throat and ears of those patients so as to see involvement of this system. These were put on mast

cell stabilizers, antihistamine vasoconstrictors, astringents and steroids, topically, so as to control their agony. Itching was the main symptom and papillae were main sign along with other features as shown in the Table 1. We used combantrine (pyrantel pamoate) systemically in single dose to deworm these patients.

Results

In our series of thirty two patients, we could find various laboratory reported worms in twenty two (22) patients (62.5%). These are of various types. Maximally reported worms, were Giardia Lambia. Tape worm and then H nana, E. coli and round worm (Table 2). Five patients were reported to have mixed infestation.

Table 2: Showing worm infestation.

Worms	n=	%age
Giardia lambia	07	31.8
Tape worm	04	18.18
H. Nana	03	13.63
E. coli	03	13.63
Round worm	03	13.63
Pin worm	01	4.54
Idomeba bustehili	01	4.54
Mixed	05	22.7

These patients were de-wormized by combantrin syrup in children and tablets stat in adults. Clinically they were again examined and asked for the severity of the disease. Nineteen of these patients were given this medicine twice. The rest (3) of the patients had once only. The time interval between the second dose was three weeks.

Among de-wormized group of 22 patients 12 reported to be satisfied and were symptom free. Four patients were comfortable. Three patients were still with moderate to severe disease. We could not follow four patients after dewormization (Table 3).

Table 3: Showing the results of dewormization and topical therapy.

	N=	%age
Satisfied	12	54.5
Comfortable	04	13.63
Un-satisfied	03	13.63
Dropped	03	18.18

Three patients repeatedly visited during the early summer months and are still being treated topically as well as systemically with combantrin to de-worm them. They are satisfied with treatment, but recurrence and exacerbation of the disease causes nuisance.

Rest of the 10 patients without worm infestation were treated topically with mast cell stabilizers, vasoconstrictors, anti-histaminic astringents and steroids. Steroids are still the mainstay for relief of these symptoms. They are well controlled. In our series one patients of 19 years, male, developed high intra-ocular pressure of 27mmHg, who was well controlled with

steroids. We had to stop the medicine and was put on ladoxamide only.

One boy of 7 years developed corneal ulcer in one eye (RE) with severe giant papillary conjunctivitis. He was treated and controlled by antibiotics and steroid therapy. Otherwise whole series did not develop any significant complications in spite of the fact that the patient, were examined carefully for corneal complications and high intraocular pressure in adults.

Discussion

Vernal keratoconjunctivitis is also called as "Spring Catarrh", Vernal Catarrh", or vernal conjunctivitis. In 1846 Art focused attention to these cases. Various workers went on collecting various data, and aspects of the disease. Until 1876, Camuset published his first paper highlighting the presence of eosinophils in the discharge. In 1950 Beigleman wrote an exhaustive monograph on the disease. It starts at the beginning of summer and is self limiting disease. Etiology is not definitely known. No infectivity on hereditary pattern is seen. But it occurs in twins. In Pakistan it was first reported by Allim ud Din in 1955⁵.

According to WHO report, there are many people in Pakistan who are suffering from worm infestation. In a school children study 60% were suffering from worm infestation where 10.5% tape worm, 4.5% H. nana, 15% round worm and various others⁶. This is due to the low socioeconomic condition. Contamination of hands, food which is not washed fully or is not cooked properly, are the causes. Improper disposal of excreta in villages and towns mediated through flies and others vectors are all helpful in infestation. In our series worm infestation is marked in 62.5% cases of vernal keratoconjunctivitis patients. This carries significant sense to correlate as etiologic factor, or in exciting the disease in these patients. The treatment helps, in alleviating the clinical features. Infestation is mixed with common worms. No one specific worm can be pin pointed.

Giardiasis is the commonest infestation as 31.8% and then tape worms are second commonest as 18.18%. Giardiasis is reported to be present in cystic or trophozite forms, in stools. Previously round worms, were reported to be present in 22% cases of the study. Dewormization helps in treating these patients and the clinical features are minimized or reduced in 54.5% of the cases. Patients feel satisfied of the therapy. 14% were those who were controlled with simple antihistamines and vasoconstrictor combination, rather than more than one drug. We had failure in 14% patients where in spite of dewormization, they had similar disease pattern. We had to use more than one medicine.

Still there are great lacunae in understanding the relationship of intestinal worms and the disease process. Is this just a co-incidence that is the presence of worm, or it is really related somehow? If so then what are the possible mechanisms? Are there any toxins, surface antigen, or the waste products of the worm bodies, which

on absorption excite a reaction on the mucous membranes of the human body. Proper and authenticated answer, to these questions require a further field of study where experimental model, of the disease should be produced in animals or in human volunteers by exciting with the parasitic antigenic proteins.

A lot of work is conducted on various aspects of the disease in literature particularly on immunopathologic aspects and treatment. Certain pathological aspects highlighted in literature are reviewed. Adhesion molecules are increased in the stromal layers of conjunctiva and along the vascular endothelium. This causes high levels of leukocytic infiltration in the conjunctive⁷. Nerve growth factor⁸, collagen type I and III⁹ in the giant papillae of vernal keratoconjunctivitis are increased along with mast cells in the tissue.

Eosinophilic cationic proteins, released from the activated eosinophils in allergic disease, damage the epithelial mucosa. Similar agents also contribute in development of lesion, in vernal keratoconjunctivitis¹⁰. They are reported as deposits in plaques of vernal ulcers^{11,12}. These ulcers are due to deranged immune mechanism, where bacterial invasion follows¹³. It is suggested that these corneal ulcers respond either to mechanical debridement¹⁴ or excimer laser phototherapeutic keratectomy may be a useful adjunct in treatment¹⁵.

On the aspects of treatment various observations are: cyclosporine 0.2% is considered to produce the tears in vernal, normal and keratoconjunctivitis sicca affected animals. It also causes immunosuppression on topical use, in vernal keratoconjunctivitis cases¹⁶ may be helpful, as short term treatment¹⁷ is considered to be effective in steroid resistant cases as steroid substitute¹⁸. Lodoxamide 0.1% ophthalmic solution (Alomide) is shown to reduce the tear T lymphocytes and their subsets, thereby reducing the symptoms of the disease. This drug has its antiallergic effect¹⁹. Considering the therapeutic options of the disease in a study it was concluded that cyclosporine lodoxamide, Na cromoglycate and steroids are of great help²⁰. Coutu concluded in a retrospective study that steroids are the best, then disodium cromoglycate and lastly antihistaminic, are of help²¹. Indomethacin 1% used topically is reported to be effective²². Centofanti et al²³ postulated the anti-inflammatory activity of 0.5% mipragoside, a ganglioside derivative in vernal keratoconjunctivitis cases, when used topically.

Conclusion

Every case of vernal keratoconjunctivitis should be investigated for intestinal worms and if found positive, should be dewormized, with simple easily available single stat dose, as an adjunct therapy to topical medication.

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