# FREQUENCY OF SHIELD ULCER IN PATIENTS HAVING VERNAL KERATOCONJUNCTIVITIS.

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## ABSTRACT

**OBJECTIVE:** To determine the frequency of shield ulcer as corneal complication occurring as a result of Vernal Keratoconjunctivitis and its effect on vision.

**INTRODUCTION:** Vernal keratoconjunctivitis (VKC) is a recurrent, bilateral, allergic inflammation of the conjunctiva and cornea. Shield ulcer is a visual threatening complication of vernal keratoconjunctivitis.

**METHODOLGY:** This Cross sectional study was conducted on patients suffering from vernal keratoconjunctivitis from 25th April 2009 to 26th dec 2009 in OPD, Eye Department, Lady Reading Hospital, Peshawar. Non probability consecutive sampling technique was used.

**RESULTS:** Out of 95 patients of VKC, shield ulcer was noted in 11 cases. Grade 2 ulcer in 07 patients, grade 1 in 03, while grade 03 in 01patient.

**Conclusion:** It concludes that VKC is a common ocular condition, and commonly seen in young boys. Shield ulcer is one of its serious complications. Grade 2 shield ulcer is the most common type.

**Key words:** Vernal keratoconjunctivitis, Shield ulcer, Visual acuity.

## INTRODUCTION

Vernal keratoconjunctivitis (VKC) is a recurrent, bilateral, allergic inflammation of the conjunctiva and cornea characterized by intermittent seasonal exacerbations. . It is an acute, type I immediate hypersensitivity response that may develop within minutes after the exposure to the allergens. Affected patients may be allergic to a wide variety of substances, including such airborne allergens as pollen, mite, molds, and animal dander. [1]

Vernal keratoconjunctivitis primarily affect boys and usually presents in the first decade of life (mean age is 7 years). [2]

Vernal keratoconjunctivitis has a global distribution with a widely varying incidence.[3] It is less common in Northern Europe and North America, and more common in African continent, the Mediterranean countries, in Central and South America, and in the Indian Subcontinent. [3] In Pakistan, allergic conjunctivitis affected 3.7 % of the surveyed population. [4]

The cornea is involved in severe cases of allergic disease such as vernal keratoconjunctivitis. Its pathology is due to the direct cytotoxic effect of chemical mediators such as eosinophil proteins, rarely results from mechanical or immunological pathways. [5, 6] Unlike other ocular allergies, vernal and atopic keratoconjunctivitis have a more complex immunological basis and a chronic inflammatory component. Involvement of inflammatory cells, particularly eosinophils and T-cell, cytokines and proteases can lead to more serious corneal damage with vision threatening potential. [7]

Corneal complications of Vernal keratoconjunctivitis include punctuate epithelial erosions (45%), keratoconus (15%), shield ulcer (14%), opacification (9%), corneal plaque (8%), acute corneal hydrops (6%) and pseudogerontoxon (3%). [1]

Shield ulcer is a visual threatening complication of vernal keratoconjunctivitis. The aim of this study is to determine the frequency of shield ulcer as corneal complication of the disease.

## METHODOLGY

This descriptive case series study was conducted at Out Patient Department, Eye Unit of Lady Reading Hospital, Peshawar from 25th April 2009 to 26th dec 2009 over 95 patients, under significance level 0.05 with prevalence 14% using WHO sample size calculator. This was a non- Probability consecutive sampling.

A special data collection proforma was filled for each patient having a detailed record of the disease including name, age, gender, address, father/guardian monthly income, any known allergy and seasonal variation. Visual acuity was tested using standard Snellen visual acuity chart along with best corrected visual acuity using pin hole. Ocular examination of shield

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ulcer was made with the help of slit lamp and staining the cornea with fluorescein. The diagnosis was made mainly on history and clinical examination including slit lamp examination and staining the cornea with Fluorescein. All those patients who refuse to give consent for this study were excluded. Blephritis and other allergic conditions like atopic keratoconjunctivitis contact lens induced conjunctivitis etc. Infective conditions of the eye like infective keratitis etc. and corneal complications secondary to ocular medications were excluded.

The data was analyzed with SPSS 10.0.

## RESULTS

In this study we determine the frequency of shield ulcer in patients having vernal keratoconjunctivitis. A total of 95 patients were included in the study. The main objective of my study was to determine the frequency of shield ulcer in vernal keratoconjunctivitis. 11(11.6%) patients presented with shield ulcer and 84 88.4% patients were having no shield ulcer. (TABLE 1)

Among 95 (100%) patients of vernal keratoconjunctivitis,11 (11.6%) were having shield ulcer . grade 1 shield ulcer was noted in 3 (3.2%) patients, 7 (7.4%) patients were having grade 2 shield ulcer and only 1 (1.1% )patient was having grade 3 shield ulcer. (TABLE 2)

Most of the patients in this study were having decreased visual acuity because of shield ulcer grade 2 and 3. 44 (46.3%) of the patients were having good vision from 6/6 to 6/24. 22 (23.2%) patients were having vision between 6/36 to 6/60 and 7 (7.4%) of the patients were having vision of counting finger. In 22(23.2%) of patients, the vision could not be recorded because of

**Table: 1 Shield ulcer (n=95)**

| Shield ulcer | Number of patients | Percentage |
|---|---|---|
| Yes | 11 | 11.6 |
| No | 84 | 88.4 |
| Total | 95 | 100.0 |

**Table: 2 Grade Of Shield Ulcer (n=95)**

| Grade | Number of patients | Percentage |
|---|---|---|
| Grade 1 | 3 | 3.2 |
| Grade 2 | 7 | 7.4 |
| Grade 3 | 1 | 1.1 |
| Total | 11 | 100.0 |

**Table 3: Visual Acuity Of The Affected Eye (n=95)**

| Visual Acuity | Number of patients | Percentage |
|---|---|---|
| 6/6 to 6/24 | 44 | 46.3 |
| 6/36 to 6/60 | 22 | 23.2 |
| Counting finger | 7 | 7.4 |
| Could not be recorded | 22 | 23.2 |
| Total | 95 | 100.0 |

**Table 4: Age of the patient in years (n=95)**

| Age in years | Number of patients | Percentage |
|---|---|---|
| Up to 10 years | 64 | 67.4 |
| 10 to 20 years | 23 | 24.2 |
| More than 20 years | 8 | 8.4 |
| Total | 95 | 100.0 |

**Table 5: Gender of the Patient (n=95)**

| gender | Number of patients | Percentage |
|---|---|---|
| Male | 72 | 75.8 |
| Female | 23 | 24.2 |
| Total | 95 | 100.0 |

**Table 6 FATHER/ GUARDIAN MONTHLY INCOME (n=95)**

| Income per month in rupees | Number of patients | Percentage |
|---|---|---|
| Less than 10,000 rupees per month | 61 | 64.2 |
| 10,000 to 20,000 rupees per month | 27 | 28.4 |
| More than 20,000 rupees per month | 7 | 7.4 |
| Total | 95 | 100.0 |

**Table 7 ASSOCIATED HISTORY OF ALLERGY (n=95)**

| allergy | Number of patients | Percentage |
|---|---|---|
| Yes | 18 | 18.9 |
| No | 77 | 81.1 |
| Total | 95 | 100.0 |

**Table 8 MONTH OF PRESENTATION IN OPD (n=95)**

| Month of the year | Month of the year | Number of patients |
|---|---|---|
| April, May , Jun | April, May , Jun | 64 |
| July, August, September | July, August, September | 21 |
| October, November, December | October, November, December | 10 |
| Total | Total | 95 |

**Table 9 DISEASE OCCUR IN SPECIFIC SEASON (n=95)**

| Seasonal | Number of patients | Percent |
|---|---|---|
| Yes | 81 | 85.3 |
| No | 14 | 14.7 |
| Total | 95 | 100.0 |

severe ocular discomfort or uncooperation of younger patients. (TABLE 3) 64 (67.4%) patients belonged to age group of up to 10 years and 23 (24.2% ) of patients belonged to age group between 10 to 20 years, while patients age group more than 20 years were 8 (8 8.4%) patients. (TABLE 4). Out of 95 patients of vernal keratoconjunctivitis, 72 (75.8%) belonged to male gender while 23 (24.2%) patients were females. (TABLE 5)

Most of the patients in this study were belonging to poor socioeconomic status.61 (64.2%) patients were having family monthly income of less than 10,000 rupees, 27 (28.4%) patients were having family monthly income between 10,000 to 20,000 rupees. only 7 (7.4%) patients were having family income of more than 20,000 rupees per month. (TABLE 6). 18 (18.9%) patients exhibited history of allergy, while 77 (81.1%) patients claimed no history of allergy. (TABLE 7).Vernal keratoconjunctivitis is common in summer and spring season. In our study most of the patients presented to OPD in the months of April to September.64 (67.4%) patients presented in April, May and June while 21 (22.1%) patients were presented to OPD in the month of July, August and September. In October, November and December, only 10 (10.5%) patients came with this disease. (TABLE 8). Most of the patients had seasonal variation. In our study, 81 (85.3%) patients had disease in specific season while only 14 (14.7%) patients had no seasonal variation. (TABLE 9).

## DISCUSSION

Vernal keratoconjunctivitis is severe allergic inflammatory condition involving cornea and conjunctiva and Shield-shaped corneal ulcers and plaques are serious sight-threatening corneal manifestations of vernal keratoconjunctivitis. [8]

This study was conducted in Out Patient Department, Eye Unit, Khyber institute of ophthalmic medical sciences, Lady Reading Hospital, Peshawar from April 25 to December 26, 2009. A total of 95 patients having vernal keratoconjunctivitis were included in the study. Shield ulcer was noted in 11 cases. Out of these 11 cases, grade 1 shield ulcer was seen in 3 cases, grade 2 in 7 cases and grade 3 ulcer was observed in only 1 case. So the commonest subtype was grade 2 shield ulcer. There is no data available on the frequency of grades of shield ulcer. Shield ulcer is a rare and sight threatening complication of vernal keratoconjunctivitis. It has been reported to range from 11 to 14 %. [1, 9, 10]

Cameron classified shield ulcers on the basis of their clinical characteristics, response to treatment and complications. Patients with a shield ulcer having a clear base are classified as grade 1; these have a favorable outcome and re-epithelialisation with mild scarring. Ulcers with visible inflammatory debris in the base are grade 2 ulcers; such ulcers are prone to Complications and exhibit delayed epithelialisation and a poor response to medical therapy. Elevated plaques are grade 3 shield ulcers, which respond best to surgical therapy. [14] Most of the patients (46.3%) were having good vision between 6/ 6 and 6/ 36. And 23.2% patients had satisfactory vision between 6/ 36 and 6/ 60. Only 7.4% patients had vision of counting fingers. Vision could not be recorded in 23.2% of the patients due to lack of cooperation or due to severe distress. The main cause of reduced vision was shield ulcer . VKC has the potential to induce serious visual changes; not only as result of the disease itself, but also due to the complications associated with its evolution and management. Poor vision is mainly because of complication of the disease like keratitis and corneal ulcer. [11] 67.4% of my cases were up to 10 years of age. It is common in young boys and its incidence is under 14 years of age[12]. In another study it's about 12%.[13] it is rare in adults.[14,15] Most of these patients (75.8%) were males and only 24.2% were females (Table 5 and graph 2). Males are more affected than females. [16,17] Male : Female ratio is 1:1.14.[18] Most of my patients in my study were poor and belonging to lower socioeconomic class.64.2% patients were having monthly income of less than 10,000 rupees. So it is concluded that poverty is a contributing factor for the disease. [1] An associated history of allergy has been reported by many authors.[19,20]. In my study 81.9% patients claimed no history of allergy and only 18.9% patients had history of allergy. According to a study, of 207 patients, age ranging form 1 to 45 years and of whom 131 (63.28%) were males. Of the patients, 38.65% presented vernal keratoconjunctivitis; 38.65%, atopic keratoconjunctivitis; 12.56%, perennial allergic conjunctivitis and in 10.14% patients the diagnosis was not defined. Extra ocular allergy was more frequent in patients with atopic keratoconjunctivitis (91.25%) and less frequent in patients with vernal keratoconjunctivitis (32.5%). Family history of allergy was more frequent in patients without defined diagnosis (59.1%) and less frequent in the vernal group (28.75%). The most intense symptoms were itching and tearing in patients with keratoconjunctivitis. There was a positive correlation between symptom intensity and signs severity. Chronic and severe types of ocular allergy, with potential threat to visual function, predominated in the studied group.[21,22]

Vernal keratoconjunctivitis is also called as spring catarrh, although it is not necessarily occurs entirely in spring season[1,23,24]. In my study, majority (67.4%) of the patients presented in April, May and June and most (85.3%) of the patients claimed the disease as seasonal.

## CONCLUSION

The data presented in this study regarding the circumstances and the factors associated with it demonstrate a clear need for primary prevention and control measures. Most of the cases of vernal keratoconjunctivitis could have been avoided if simple prevention measures had been in place. Education targeting parents, schoolteachers, and children regarding hygiene and preventive measures is urgently needed to reduce the incidence of this disease and its complications especially shield ulcer and its consequences.

## RECCOENDATIONS

Specific recommendations for early recognition, avoidance of hazardous drugs especially steroids and judicious use of medicines, and close supervision of children by parents and caretakers should be emphasized. Ophthalmologists, pediatricians, nurses, social workers, and other professionals involved in the health care of children play an important role in increasing awareness of problems involving eye safety among their patients, families, and the community. Efforts should be made to engage professionals in wide-ranging health care occupations in a public health campaign focused on the risks for eye allergies, particularly among youth.

Finally, it is very important that the registry of such ocular problems be standardized. Without the availability of standardized and complete data, it is impossible to conduct comparison studies, evaluate surgical procedures and treatments, or further investigate and control this important public health problem.

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