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RECENT UPDATES ON COMPLICATION OF VERNAL KERATOCONJUNCTIVITIS IN TERTIARY EYE HOSPITAL OF PARSA, SOUTHERN TERAI REGION OF NEPAL.

Ophthalmology

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ABSTRACT

Introduction: Vernal Keratoconjunctivitis also known as Spring Catarrh is allergic disorder of the ocular surface of children, especially boys common in warm, dry and windy climate. Recurrent inflammation can cause sight threatening complication. The main objective of this hospital based study is to assess and record the complication related to Vernal Keratoconjunctivitis. **Method:** A Retrospective study was done in pediatric ophthalmology department of Ram Kumar Mahabir Prasad Kedia Eye Hospital, Parsa, Nepal from 1st October 2022 and 31st September 2023. Visual acuity was measured with the standard Snellen visual acuity chart and for children under 5 years of age Kay pictures were used. A convenience sampling method was used. Data collection was done from patient files and outpatient department register. **Result:** Eight hundred and ninety patients with Vernal Keratoconjunctivitis were enrolled. Six hundred and twenty children were male (69.66% , n= 690) and two hundred and seventy were female children 30.33% (n=270). Children of age 2-15 years old (mean age 9.5) were involved in this study. One hundred and sixty children (17.9% , n= 160) had complication in the eye due to vernal keartoconjunctivitis and visual impairment of less than 6/60 was found in 3,6%. **Conclusion:** Recurrent inflammation leads to corneal complication, visual impairment and visual loss. Treatment modalities in all the hospital should add counseling section in the department to educate parents that the medication will be for long duration to ease discomfort due to symptoms of Vernal Keratoconjunctivitis. Proper guidance should be given to the parents about the sight threatening side effects of steroids and avoiding exposure of children to hot humid, windy climate.

KEYWORDS

Vernal Keratoconjunctivitis, Infalmmation, Complication, cornea

INTRODUCTION:

Vernal Keratocinjunctivitis (VKC) is an atopic condition of the external ocular surface affecting the eyes of young children (male > female) usually in hot dry climate. The main symptoms are ocular itching, redness and foreign body sensation. Conjunctival papillary reaction in limbal and tarsal area (Horner Trantas dots and cobblestone papillae) with thick abundant ropy mucoid discharge are the signs.[1] Vernal Keratoconjunctivitis was first described by Arlt who found 3 cases of peri-limbal swelling in young patients in 1846. In 1899 Trantas described the limbal white dots that had been previously demonstrated by Horner. Presence of activated Eosinophils, Mononuclear cells, Neutrophils in conjunctival scraping and IgE mediated reaction via mast cell release are the causes of Vernal Keratoconjunctivitis .[2]

Vernal keratoconjunctivitis in some severe cases may lead to sight-threatening complications. Compromised Corneal epithelium defence mechanism due to trauma from upper tarsal papillae and inflammation leads to shield ulcers and plaques. limbal stem cell deficiency occurs in 1.2% of older patients with VKC.[3] Other commonly associated complications from vernal kerato-conjunctivitis include keratoconus and irregular astigmatism due to frequent eye rubbing, steroid-induced glaucoma and steroid induced cataract from frequent use of topical corticosteroids

There are many studies conducted in Vernal Keratoconjunctivitis in Nepal but none reported the prevalence of complication of Vernal Keratoconjunctivitis in Parsa and neighbouring districts which has a very hot and humid summer. The main objective of this hospital based study is to assess and record the complications and to determine the major reasons for the visual impairment related to Vernal Keratoconjunctivitis in children of Parsa , Southern Terai region of Nepal.

MATERIALS AND METHOD

This is a retrospective study done between 01 October 2022 and 31 September 2023 in Ram Kumar Mahabir Prasad Kedia Tertiary Eye Hospital , Parsa , Southern Terai Region of Nepal. Eight hundred and Ninety children (890) children with Vernal Keratoconjunctivitis were enrolled in the study .Children with typical symptoms and signs of Vernal Keratoconjunctivitis were included in the study and those with allergic conjunctivitis other than Vernal Keratoconjunctivitis were excluded from the study.

Visual Acuity was measured with Kay picture optotypes for children under 5 years of age and others by standard visual acuity charts . Topcon Slitlamp , Portable Nidek Slitlamp Biomicroscope was used for anterior segment evaluation . Intraocular pressure measurement was done using Perkins portable Tonopen and detail posterior segment fundus evaluation was done using 90D (volk) and Heine Omega 500 Binocular Indirect Ophthalmoscope. Evaluation under Anesthesia was done for intraocular pressure measurement , anterior segment and posterior segment evaluation for children ehen required . Keratometry was used for possibilities of Keratoconus .On the basis of the symptoms , signs and examination diagnosis of complication of vernal keratoconjunctivitis was done by pediatric ophthalmologist. A simple clinical score by Bonini et al was used for disease severity classification.[4]

Convenience sampling method was used. The sample size was calculated using the following formula:

$$n = Z^2 \times \frac{p \times q}{e^2}$$

$$= 1.96^2 \times \frac{0.50 \times 0.50}{0.05^2}$$

$$= 384$$

Where, n= minimum required sample sizeZ= 1.96 at 95% Confidence Interval (CI)p= prevalence taken as 50% for a maximum sample calculationq= 1-pe= margin of error, 5%The calculated sample size was 384. However, we have included 890 patients.

Data collection was done from patient record , files and register. Data entry was done in Excel Spreadsheet and SPSS software was used for analysis.The study was approved by the Ethical Committee of Ram kumar Mahabir Prasad Kedia eye Hospital.

RESULTS:

Eight hundred and ninety children with clinical diagnosis of Vernal Keratoconjunctivitis were enrolled in this study. Six hundred and twenty children were male (69.66% , n= 690) and two hundred and seventy were female children 30.33% (n=270).

Table 1 Gender distribution of children with Vernal Kerato conjunctivtis

	Male	Female	Total
Number	620	270	890
Percentage	69.66 %	30.33%	100 %

Table 2. Age distribution of children with vernal Kerato conjunctivtis

Age	Number	Percentage
2-5	255	28.65 %
6-10	325	36.51 %
11-15	310	34.84 %

Most of the children were between six to ten years old (36.51% , n= 325). Three hundred and ten children (34.84%. n= 310) were teenagers and two hundred and fifty five were preschool children .

Table 3. Visual Acuity Of Children with Vernal Keratoc onjunctivitis

Visual Acuity	Number	Percentage
6/6 to 6/18	730	82.02 %
6/18 to 6/60	128	14.38%
< 6/60	32	3.60%

Visual impairment of less than 6/60 was found in 3,6% (n= 32) , 6/18 to -6/60 in 14.38% (n= 128 and 6/6 to 6/18 in 82.02 % (n = 730)

Table 4 : Complications Of Vernal Keratoconjunctivitis

Complications	Number of Children	Percentage
Shield ulcer	40	4.49 %
Corneal Scar	17	1.91 %
Keratoconus	13	1.45 %
Corneal Neovascularisation	45	5.05 %
Steroid induced Cataract	27	3.03 %
Steroid induced Glaucoma	18	2.02 %
Total	160	17.9 %

Among eight hundred and ninety children, one hundred and sixty children (17.9%, n= 160) had complication in the eye due to vernal keratoconjunctivitis. Corneal neovascularization was found in forty five children (5.05%. n= 45)Shield ulcer was seen in forty children (4.49%, n= 40), steroid induced cataract in twenty seven children (3.03% n =27), steroid induced glaucoma in eighteen children (2.02% , n= 18) corneal scar in seventeen children (1.91%, n= 17) and keratoconus in thirteen children (1.45% , n= 13).

Table 5. Severity of Vernal Keratoconjunctivitis

Severity	Number	Percentage
Grade 0	122	13.7 %
Grade 1	232	26.06 %
Grade 2	280	31.46 %
Grade 3	181	20.33 %
Grade 4	75	8.42 %

According to Bnini et al classification of Vernal Keratoconjunvtivitis majority of children had Vernal keratoconjunctivitis of grade 2 (31.46 %, n= 280) 13.7 % (n=122) one hundred and twenty two children were classified as grade 0, two hundred and thirty two children grade 1 (26.06%), one hundred and eighty one children grdae 3 (20.33% , n= 181) and seventy five children had VKC of grade 4 (8.42 % , n= 75)

DISCUSSION

Vernal keratoconjunctivitis (VKC) is underdiagnosed bilateral chronic inflammation of the ocular surface due to allergic reaction usually recurrent and has substantial impact on daily routine activities of children. In rare cases, VKC in most cases is self limiting but persistent inflammation and prolong steroid dosage can cause permanent ocular injury and low vision.[5]

Among eight hundred and ninety children 69.66% were male and 30.33 % female which is similar to the study done in India by Saboo et al where they found VKC in 468 children with male predominance of 87 % and a similar study done in Ethiopia in 574 children showed that males were 4.23 times more likely to get affected than female .[6,7] In Terai region of Nepal male children are more motivated for school education and outdoor activities and female children are trained for indoor household works which could be the reason for male dominance in this study.

Most of the children with Vernal keratoconjunctivitis in this study fall in the age group 6 – 15 (71.35 %. n= 335) compare to children of age 2 -5 years old which is similar to the study done by mukta et al where they found VKC in 67.22 % of children of age 6 – 15 .[8] The parents in Parsa district of Nepal usually send children to school after 6 years of age which make them involved in playground activities in hot climate.

The ocular complications of vernal keratoconjunctivitis patients include shield ulcer, Corneal neovascularization, corneal scar, steroid-induced cataract, steroid-induced glaucoma, irregular astigmatism, keratoconus, acute hydrops, central corneal scars, and limbal tissue hyperplasia.[9]

In this study complication due to Vernal keratoconjunctivitis was seen in 17.9 % (n= 160) children with visual impairment of less than 6/60 in 32 children (3.6%). This result was similar to the study done by saleh et al where sample size was smaller than this study found complication due to VKC in 15.7 % with visual impairment in 20 patients (4.6%).[1] The complication with visual impairment was due to improper education of parents, inadequate medication and misuse of topical and oral steroids.

Majority of children in this study had corneal complication (12.9%, n= 115). Corneal noevascularization in 5.05% (n= 45) , Shield corneal ulcer in 4.49 % (n= 40) corneal scar in 1.91 %(n=17) and Keratoconus in 1.456 % (n= 13). In similar study done by I kansakar et al in 220 children with VKC corneal complication was elucidated in 17.8 % .[10] No any case of limbal stem dysfunction and acute hydrops was reported.

Forty five children (5.05%) with vernal keratoconjunctivitis had steroid induced glaucoma and cataract Twenty seven children (3.03%) has steroid induced cataract similar to study done by Saleh et al where 5 children (1.16%) had such complication .[1] In a study done by Sen et al in one thousand four hundred and twenty three children in India forty seven patients has steroid induced glaucoma.They concluded that Injudicious use of steroids was the reason of ocular hypertension and vision threatening glaucoma in children of vernal Keratoconjunctivtis (VKC) .[11] In this study eighteen children (2.02%) has steroid induced glaucoma. The major reason was prolong and repeated use of steroid to overcome discomfort due to symptoms caused by the inflammation and ocular discharge in Vernal Keratoconjunctivitis.

CONCLUSION:

Recurrent inflammation leads to corneal complication, visual impairment and visual loss. Treatment modalities in all the hospital should add counseling section in the department to educate parents that the medication will be for long duration to ease discomfort due to symptoms of Vernal Keratoconjunctivitis. Proper guidance should be given to the parents about the sight threatening side effects of steroids and avoiding exposure to hot humid, windy climate.

REFERENCES

1. Al-Akily SA, Bamashmus MA. Ocular complications of severe vernal keratoconjunctivitis (VKC) in Yemen. Saudi J Ophthalmol. 2011 Jul;25(3):291-4. doi: 10.1016/j.sjopt.2011.02.001. Epub 2011 Feb 16. PMID: 23960939; PMCID: PMC3729521.
2. Buckley RJ. Vernal keratoconjunctivitis. Int Ophthalmol Clin. 1988 Winter;28(4):303-8. doi: 10.1097/00004397-198802840-00009. PMID: 3053489.
3. Sangwan VS, Jain V, Vemuganti GK, Murthy SI. Vernal keratoconjunctivitis with limbal stem cell deficiency. Cornea. 2011 May;30(5):491-6. doi: 10.1097/ico. 0b013e 3181cb f9d3. PMID: 21598432.
4. Bonini S, Sacchetti M, Mantelli F, Lambiase A. Clinical grading of vernal keratoconjunctivitis. Curr Opin Allergy Clin Immunol. 2007 Oct;7(5):436-41. doi: 10.1097/ACI.0b013e3282efb726. PMID: 17873585
5. Mehta JS, Chen WL, Cheng ACK, Cung LX, Dualan IJ, Kekunnaya R, Khaliddin N, Kim TI, Lam DK, Leo SW, Manurung F, Tesavibul N, Bremond-Gignac D. Diagnosis, Management, and Treatment of Vernal Keratoconjunctivitis in Asia: Recommendations From the Management of Vernal Keratoconjunctivitis in Asia Expert Working Group.
6. Saboo US, Jain M, Reddy JC, Sangwan VS. Demographic and clinical profile of vernal keratoconjunctivitis at a tertiary eye care center in India. Indian J Ophthalmol. 2013 Sep;61(9):486-9. doi: 10.4103/0301-4738.119431. PMID: 24104706; PMCID: PMC3831763.
7. Alemayehu AM, Yibekal BT, Fekadu SA. Prevalence of vernal keratoconjunctivitis and its associated factors among children in Gambella town, southwest Ethiopia, June 2018. PLoS One. 2019;14(4):e0215528. [PMC free article] [PubMed]
8. Mukta Prasad , Abhisekh ranjan Demographic study of vernal keratoconjunctivitis in tertiary eye centre in Eastern India IPInternational journal of ocular oncology and oculoplasty 24/8/2021 https://doi.org/10.18231/j.ijooo.2021.057
9. Kaur K, Gurnani B. Vernal Keratoconjunctivitis. [Updated 2023 Jun 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK576433/
10. Kansakar I. Profile of vernal keratoconjunctivitis in Nepal: a hospital based study. Nepal Med Coll J. 2011 Jun;13(2):92-5. PMID: 22364089.
11. Sen P, Jain S, Mohan A, Shah C, Sen A, Jain E. Pattern of steroid misuse in vernal keratoconjunctivitis resulting in steroid induced glaucoma and visual disability in Indian rural population: An important public health problem in pediatric age group. Indian J Ophthalmol. 2019 Oct;67(10):1650-1655. doi: 10.4103/ijo.IJO_2143_18. PMID: 31546501; PMCID: PMC6786207.