

A CLINICAL STUDY ON NATURAL HISTORY OF VIRAL KERATITIS

V. Satya Srinivas¹, A. P. R. Naidu²

¹Assistant Professor, Department of Ophthalmology, Rangaraya Medical College, Government General Hospital, Kakinada.

²Associate Professor, Department of Ophthalmology, Rangaraya Medical College, Government General Hospital, Kakinada.

ABSTRACT: We conducted a prospective case study in patients attending outpatient department of ophthalmology, in Kakinada govt. general Hospital during the period of September 2013 to August 2015. The study was done in 54 eyes of 50 patients in order to evaluate the natural history of Viral keratitis. We came to the conclusion that most of the clinical features are in accordance with the previous studies, and oral acyclovir has some curative and prophylactic properties in few selected cases.

KEYWORDS: Keratitis, Herpetic keratitis, Corneal ulcer, Dendritic keratitis.

HOW TO CITE THIS ARTICLE: V. Satya Srinivas, A. P. R. Naidu. "A Clinical Study on Natural History of Viral Keratitis". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 47, November 12, 2015; Page: 8314-8316, DOI: 10.18410/jebmh/2015/1125

INTRODUCTION: The incidence of monocular blindness owing to corneal scarring and corneal opacities is estimated to be 1.5 - 2 million new cases every year.

The epidemiology of ocular involvement with virus has not been well defined in developing countries despite the observations that in developed nations, this is the most frequent cause of corneal opacity and second common cause for blindness after cataract.¹

The incidence of viral keratitis in our country has shown a steep rise due to improved socioeconomic changes and following wide spread use of antibiotics and corticosteroids indiscriminately.² However, there is paucity of data showing the incidence, age and sex distribution, the recurrences, precipitating causes, seasonal variation, type of lesion and degree of morbidity caused by this ailment in our conditions. In the present study an attempt was made in this direction.

AIMS AND OBJECTIVES OF STUDY: This is a hospital based prospective non randomized case study conducted in 82 eyes of 78 patients attending ophthalmology OPD, Govt Gen Hospital, Kakinada from September 2013 - August 2015. Of them 54 eyes of 50 patients were included in this study.

Cases presenting with corneal epithelial and/or stromal lesions associated with decreased corneal sensations and other characteristic features of viral ulcer were included. All the possible cases were subjected to appropriate microbiological and pathological examination to confirm the diagnosis of viral keratitis. Patients of all age groups and both sexes were included.

Cases with atypical features and with no conclusive laboratory back up were excluded from the study. Patients

who had a previous cocktail therapy for the corneal condition were also excluded.

PEOPLE AND METHODS: HSV keratitis remains primarily a clinical diagnosis based on characteristic features of corneal lesion.

Detailed history of each case was recorded to know the precipitating factors, seasonal variation, co morbid conditions and recurrences, if any. Thorough ocular examination, including fluorescein staining and slit-lamp examination was done. The visual acuity was recorded by Snellen's method. Each case was followed to note recurrences and visual morbidity. Epithelial scrapings taken both from the base and progressing edge were subjected to Giemsa staining. And those cases that showed multinuclear giant cells (resulting from coalescence of infected corneal epithelial cells), intranuclear viral inclusions and other cytopathic effects were included in the study. Polymerase chain reaction was done in 9 recurrent cases using corneal epithelium. Of them 4 cases showed a positive result for HSV DNA.

Disappearance of symptoms and absence of fluorescein staining were noted each time during follow up. Any complications caused by treatment and final visual acuity were recorded.

For SPK lubricating eye drops were prescribed for 2 weeks and patients were instructed to use dark glasses when exposed to sun. All cases responded well with vision improving to 6/6 or 6/9.

For dendritic ulcer, Acyclovir 3% eye ointment five times a day for 2 weeks, Homide 2% eye drops two times a day was prescribed for 2 weeks and patients were instructed to use dark goggles when outdoors. All cases responded well to treatment with vision 6/9 to 6/18. This defective vision was due to small corneal opacities left after epithelial healing.

For geographic ulcer, Gentle debridement of the ulcer was done Acyclovir 3% eye ointment 5 times a day for 2 weeks; Ciprofloxacin e/d four times a day for 1 week; Homide 2% e/d were prescribed. Oral acyclovir 400mg five times was given in all cases but for a variable duration tailored as per response in each case. Visual outcome was

Submission 02-11-2015, Peer Review 03-11-2015,

Acceptance 05-11-2015, Published 11-11-2015.

Corresponding Author:

V. Satya Srinivas, Assistant Professor,

Department of Ophthalmology,

Government General Hospital, Kakinada-533001.

E-mail: valivetiss@gmail.com

DOI: 10.18410/jebmh/2015/1125

6/36 to CF 4mts, the defective vision was due to the formation of opacity and scarring of cornea.

For keratouveitis, Acyclovir 3% eye ointment five times a day 1week, Prednisolone 1% e/d 4 times a day for 6 weeks tapering, Homide 2% were prescribed. Oral acyclovir 400mg five times was given in all cases but for a variable duration tailored as per response in each case. Most of the cases improved to 6/36 vision, the defective vision was due to corneal and lenticular opacities.

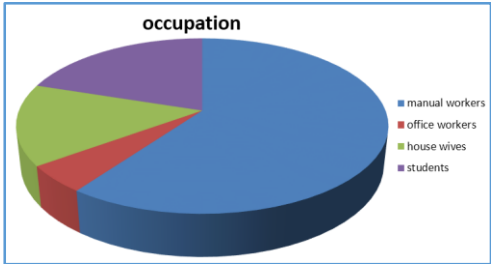
OBSERVATIONS AND RESULTS: Out of 50 cases in this study, males were 36 (72%) and females were 14 (28%). Majority of these cases belong to 20-40 years of age group (54%). No cases were, however, recorded below ten years of age. The youngest one was 15 years old.

Total Cases	Males	Females	u/l Cases	b/l Cases
50	36	14	46	4

Table 1

Out of 50 cases in this study, 46 (92%) were unilateral and 4 (8%) cases were bilateral. And all the bilateral cases presented with epithelial lesions were due to Epedemic viral keratoconjunctivitis.

Majority of patients of this study belonged to professions like manual workers (72%), office workers (16%), house wives (14%) and students (14%). Majority of these were from rural areas and were of low socioeconomic status.



Most common presenting form was dendritic ulcer (33%), followed by SPK (28%), followed by geographic ulcer (18%), next was disciform keratitis (11%), and followed by keratouveitis (6%) and nummular keratitis (4%).

In this study, out of 54 eyes, 29 eyes (53.7%) presented with visual acuity between 6/9 and 6/18; 19 eyes (35.2%) presented with visual acuity between 6/24 and 6/60; and 6 cases (11.1%) presented with visual acuity <6/60.

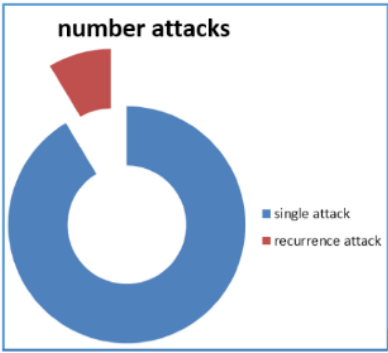
After treatment final visual acuity was as follows: 11 eyes out of 54 eyes (20.4%) had 6/6 vision, 30 eyes (55.6%) had vision between 6/9 and 6/18, 11 eyes (20.4%) had vision between 6/24-6/60 and remaining 2 eyes (3.7%) had vision <6/60.

Visual acuity	At presentation	After 6 weeks
6/6	-0	11
6/9-6/18	29	30
6/24-6/60	19	11
<6/60	6	2

Table 2

Out of 50 cases, 32 cases(64%) gave history of some precipitating cause before the onset of keratitis, like: fever, minor trauma, menstruation, common cold and foreign body. Out of 32, 17 cases (53.12%) occurred following fever, 6 cases (18.7%) after some form of minor trauma, 4 cases (12.5%) followed menstruation, 3 cases (9.3%) after common cold and 2 cases (6.3%) followed fall of foreign body. However, 18 cases (36%) gave no such history.

Out of 50 cases, 16 patients (68%) gave a history of recurrences in past, while 34 patients (32%) had only one attack.



DISCUSSION: The viruses able to affect the eye are taxonomically diverse, ranging from double-stranded DNA viruses, to single stranded RNA viruses, to retroviruses. Any part of the eye may be affected, frequently producing blepharitis, conjunctivitis, keratitis, uveitis, cataract and retinitis. The more common ocular viral infections include the Herpes viruses such as HSV-1, VZV and CMV.³

This study is an effort to understand the natural history of viral disease in cornea.

The guidelines provided by Herpetic Eye Disease Study Group were used in this study. The treatment regimens were also based on their guidelines though they were modified slightly to provide a tailored approach to each case.

According to the Herpetic Eye Disease Study Group, of plausible risk factors for ocular HSV recurrence, stress, systemic infection, sunlight exposure, menstruation, contact lens wear, and eye injury were not deemed significant. Even in our study we were not able to establish any particular pattern.

The HEDS studies have provided us with valuable insight in dealing with treatment and prognostic dilemmas in patients with herpetic keratitis.⁴

In brief:

- Oral antiviral prophylaxis reduces recurrences of epithelial and of stromal keratitis.
- Use of topical corticosteroids is of benefit in stromal keratitis.
- Use of oral acyclovir may be of help in iridocyclitis.
- Prophylactic oral acyclovir helps prevent recurrences of herpetic keratitis, particularly stromal with a history of recurrence.
- Stromal disease is a risk factor for recurrence but not epithelia disease.

Even in our study we had a similar experience of the 16 patients who experienced a recurrence 14 had a previous stromal disease.

Though a fair proportion of our case has HSV, 12% of cases were of adenoviral origin (Epidemic keratoconjunctivitis) and another 14% were of HZV origin.

Those infections showed some common characteristics like loss of corneal sensations and good response to anti viral treatment.

Epidemiological data on EKC is scarce and a large study is needed to know about its natural history.⁵

Another significant concern in herpes simplex corneal infection is, at present the genital infections are increasing in epidemic proportions. This is reflected as a rise in the incidence of neonatal herpes. Herpes simplex virus type 1 (HSV-1) infection is also being acquired for the first time in older age group.⁶

Acute HZO was seen more commonly than ocular HSV infection. Patients with HZO were significantly older than those with ocular HSV infection. Available prevention modalities, such as the vaccine against herpes zoster and long-term oral antiviral therapy to reduce ocular HSV infection recurrence, were underused.⁷

It's equally important to do a comprehensive examination of eye and all other systems to rule out their afflictions.^{8,9,10,11}

Our findings were in harmony with the findings of previous authors.^{3,7,2}

We suggest that a larger study be conducted to get a more statistically and clinically sound outcome.

CONCLUSION: This study was conducted on 54 eyes of 50 patients of Viral Keratitis. The following observations were made. **Age:** Out of 50 cases most common age group was 21-40 years ie: the period of life exposed to more stress, strain and trauma. **Sex:** Out of 50 cases men were affected more than females. Low incidence observed in the females may be due to that females are less exposed to trauma and are less particular about their diseases due to social repression of females in this part of country. **Locality:** Majority of affected patients were from rural population. **Occupation:** Majority of patients were agricultural laborers or doing some other manual work. **Clinical form of disease:** Most common presenting form was Dendritic ulcer, followed by SPK, Geographic ulcer, Disciform keratitis, Keratouveitis and Nummular keratitis. **Laterality:** Majority are unilateral in presentation, only 4 cases presented with bilateral condition. **Precipitating factors:** Out of 50 cases, 32 gave history of some precipitating factors cause before the onset of keratitis; most common being fever. **Seasonal variation:** Most of the cases presented during summer months of May-August.) **Presenting complaints:** Majority of cases presented with pain, redness, foreign body sensation, watering and defective vision. **Vision at presentation:** Out of 50, 25 cases presented with visual acuity between 6/9 and 6/18; 19 case presented with visual acuity between 6/24 and 6/60; and 6 cases presented with visual acuity <6/60. **Final visual outcome:** Most common visual

outcome was between 6/9 and 6/18 (30 eyes). Only 11 eyes out of 54 eyes had 6/6 vision. 1) Final visual outcome depends on type of lesion (better in SPK), location of lesion (better in peripheral lesion), time of intervention, immunological status of the patient and compliance to the treatment. 2) Blindness owing to viral keratitis is mainly due to its recurrent nature which leads to corneal scar.

Recurrences: Out of 50 cases, 34 Patients gave history of recurrences in the past; while 16 patients had only one attack.

REFERENCES:

1. Jacek Rolinski and Iwona Hus Immunological Aspects of Acute and Recurrent Herpes Simplex Keratitis J Immunol Res. 2014; 2014: 513560. Published online 2014 Sep 7. doi: 10.1155/2014/513560 PMID: PMC4170747.
2. AK Khurana, HR Gutain, IPS Parmar Regional hospital prevalence of viral keratitis Year: 1984 | Volume: 32 | Issue: 4 | Page: 205-208.
3. Newman H, Gooding C Viral ocular manifestations: a broad overview. Rev Med Virol. 2013 Sep; 23(5): 281-94. doi: 10.1002/rmv.1749. Epub 2013 Jun 25.
4. Kirk R. Wilhelmus, MD Lauren Gee, MPH Walter W. Hauck, PhD Natalie Kurinij, PhD Chandler R Dawson, MD Dan B. Jones, MD Bruce A. Barron, MD Herbert E. Kaufman, MD Joel Sugar, MD Robert A. Hyndiuk, MD Peter R. Laibson, MD R. Doyle Stulting, MD, PhD Penny A. Asbell, MD Herpetic Eye Disease Study A Controlled Trial of Topical Corticosteroids for Herpes Simplex Stromal Keratitis. Cornea. 2001 Mar; 20(2): 123-8.
5. B. Ghebremedhin Human adenovirus: Viral pathogen with increasing importance Eur J Microbiol Immunol (Bp). 2014 Mar; 4(1): 26-33. Published online 2014 Mar 14. doi: 10.1556/EuJMI.4.2014.1.2 PMID: PMC3955829.
6. Liesegang TJ. Herpes simplex virus epidemiology and ocular importance. Cornea. 2001 Jan; 20(1): 1-13.
7. Edell AR, Cohen EJ. Herpes simplex and herpes zoster eye disease: presentation and management at a city hospital for the underserved in the United States Eye Contact Lens. 2013 Jul; 39(4): 311-4. doi: 10.1097/ICL.0b013e31829a3b47.
8. S. Sharma Ocular infections: Research in India Year: 2010 | Volume: 28 | Issue: 2 | Page: 91-94.
9. Keerti Munday, Ishfaq Ahmad Sofi, and Priya Unexplained Anterior Uveitis: Viral Causes J Clin Diagn Res. 2015 Aug; 9(8): NL01. Published online 2015 Aug 1. doi: 10.7860/JCDR/2015/13571.6270 PMID: PMC4576572.
10. Ting-Ting Lin, Rui-Hua Wei, Rui-Bo Yang, Yue Huang, Chen Zhang, Yu-Xian Ning, Shao-Zhen Zhao Fungal Keratitis Associated with Viral Keratitis Year: 2015 | Volume: 128 | Issue: 20 | Page: 2823-2825.
11. M. Burcea, A. Gheorghe, and M. Pop Incidence of Herpes Simplex Virus Keratitis in HIV/AIDS patients compared with the general population J Med Life. 2015 Jan-Mar; 8(1): 62-63 PMID: PMC4397522.