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RESEARCH ARTICLE

A STUDY OF OCULAR MANIFESTATIONS IN HIV POSITIVE PATIENTS AT TERTIARY CARE RURAL HOSPITAL

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Abstract

Study Design-Hospital-based Descriptive Cross-Sectional PURPOSE-To study different ocular manifestations in patients who are HIV positive having ocular symptoms and their CD4 count status with respect to ocular manifestations.

Methods-A total of 50 HIV positive patients having ocular symptoms were evaluated on basis of detailed history and examination including CD4 count, anterior segment and fundus evaluation.

Results-Out of 50 patients in the study, most common presentation was diminution of vision -70%,anterior segment finding was keratouveitis-18% and posterior segment finding was HIV retinopathy-30%.A significant positive correlation was found between the CD4 counts and severity of ocular manifestations which increased with decrease in CD4 counts.

Conclusion-A comprehensive ophthalmic examination is essential for all patients having HIV to prevent and manage vision threatening complications.

Clinical Implication- Advances in HIV treatment have improved patient outcomes, however many still develop ocular complications. As ophthalmologists we play a vital role in their care by collaborating with other healthcare professionals to address these issues and develop management strategies to prevent vision loss.

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Introduction:-

HIV/AIDS is one of 21th century's biggest global challenge to mankind affecting more than 30 million people worldwide and 2.4 million people in India(as of 2021)

AIDS (Acquired Immunodeficiency Syndrome)is a chronic immune system disease caused by the retrovirus-Human immunodeficiency virus (HIV) by infecting the helper T cells of the immune system.[1]

As the infection progressively weakens the immune system, patients develop signs and symptoms, such as swollen lymph nodes, weight loss, fever, diarrhoea and cough. Without treatment, they could also develop severe illnesses such as tuberculosis (TB), cryptococcal meningitis, severe bacterial infections, and cancers such as lymphomas and Kaposi's sarcoma.[2]

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HIV can be transmitted via the exchange of a variety of body fluids from infected people, such as blood, breast milk, semen and vaginal secretions. HIV can also be transmitted from a mother to her child during pregnancy and delivery. Individuals cannot become infected through ordinary day-to-day contact such as hugging, shaking hands, or sharing personal objects, food or water.[3]

The eye is affected in 50-75% of adult patients with HIV positive status. These observations indicate that regular screening of HIV positive patients is required to allow early identification of ophthalmic changes which can lead to vision loss.[4]

Among HIV individuals, the lifetime cumulative risk for developing at least one abnormal ocular lesion ranges from 52% to 100% in various studies. Such lesions are varied and affect almost any structure in the eye.[5]

Ocular lesions usually occur in the late phases of HIV infection but can also be the presenting manifestation of the disease including-Cytomegalovirus(CMV) retinitis, Toxoplasma retino-choroiditis, ocular tuberculosis(considered to be AIDS defining conditions).

Although there are no confirmed reports of transmission of infection through ocular fluids like tears, but transmission can occur through corneal transplantation or contact with intra-ocular fluids like aqueous or vitreous fluids.[[6,7]

Peculiarities of ocular lesions in HIV-
Varied manifestations in different CD4 count status and opportunistic infections
Resistant to treatment
Rare malignancies
Atypical presentations

We can divide ocular manifestations into Anterior and posterior segment lesions

Anterior segment ocular lesions-
1) Viral diseases
   Herpes zoster ophthalmicus
   Viral keratitis
   CMV keratitis
2) Bacterial diseases
   Bacterial keratitis
   Tuberculous conjunctivitis
3) Fungal inections
4) Soirochaetal infections
5) Keratoconjuctivitis sicca
6) Conjunctival microangiopathy
7) Anterior uveitis
8) Atopic dermatitis and blepharitis

Posterior segment ocular lesions
1) HIV-related microangiopathy of the retina
2) CMV retinitis
3) Acute retinal necrosis (ARN) and Progressive Outer Retinal Necrosis (PORN)
4) Pneumocystis cariniichoroidopathy
5) Ocular syphilis
6) Fungal endophthalmitis
7) Toxoplasmicretino-choroiditis

Neuro-ophthalmic lesions
1) Papilledema and optic atrophy
2) Cranial nerve palsies

Ocular malignancies

1) Squamous cell carcinoma
2) Kaposi sarcoma
3) Cutaneous and conjunctival lymphoma

Iatrogenic and post treatment ocular manifestation

1) Immune recovery uveitis
2) Drug induced uveitis

Aim:-

To study different ocular manifestations in patients who are HIV positive having ocular symptoms and their CD4 count status with respect to ocular manifestations.

Objectives:-

- To study different ocular manifestations in HIV positive patients visiting tertiary care rural hospital.
- To study CD-4 count status of HIV positive patients with respect to ocular manifestations.

Materials and Methods:-

A hospital-based Descriptive Cross-Sectional Study was done. A total of 50 HIV positive patients having ocular symptoms were evaluated on basis of detailed history and examination including CD4 count, anterior segment and fundus evaluation.

Inclusion Criteria

All HIV positive adult patients coming to ophthalmology OPD at tertiary care rural hospital.

Exclusion Criteria

- Patients who refuse consent
- Patients below the age of 18

Sample size –

From records, 40 patients are likely to come to the OPD in stipulated study period.

We will therefore take a non-probability sample where in complete enumeration of all patients who fulfil the inclusion criteria and consent to be the part of study within the study period will be included

- **Period of study –**March 2023-Feb 2025
- **Sampling method -**Purposive Sampling
- **Duration of study** - 2 years

Results:-

-Out of the 50 patients in the study, 19 were male and 31 were female.Out of 19 male patients 8 had ocular manifestation due to HIV and out of 31 female 21 had ocular manifestation due to HIV as seen in table -1 and figure-1.

-Maximum number of patients belonged to 61-70 year age group -13 out of which out of which 8 had ocular manifestations due to HIV as seen in table-2 and figure 2

-The most common ocular complaints of the HIV positive patients were Diminition of vision seen in 35 patients followed by ocular pain(5 patients),sticky discharge(3 patients),foreign body sensation(3 patients),redness(2 patients),watering(2 patients), and photophobia (1 patient) as seen in table-3 and figure-3

-The most common Anterior segment manifestation seen in the study was anterior uveitis which was present in 9 patients followed by blepharitis(5 patients),viral keratitis(4 patients),fungal keratitis(3 patients),dry eye(2 patients) and herpes zoster ophthalmicus(2 patients) as seen in figure-4

-The most common Posterior segment manifestation seen in the study was HIV retinopathy which was present in 15 patients followed by tubercular choroiditis(2 patients),Toxoplasma retino-choroditis(1 patient) and acute retinal necrosis(1 patient) as seen in figure-5

-On correlating CD4 counts in the study ,we saw the lowest average CD4 count-347 was associated with pateints having blepharitis in anterior segment and CD4 count of 63 associated with Acute retinal necrosis which can be seen in table 4 and 5.

Table 1:- Distribution of patients according to gender and ocular manifestation due to HIV.

TOTAL PATIENTS	TOTAL PATEINTS WITH HIV	PATIENTS WITH OCULAR MANIFESTATIONS DUE TO HIV
MALES	19	8
FEMALES	31	21
TOTAL	50	29

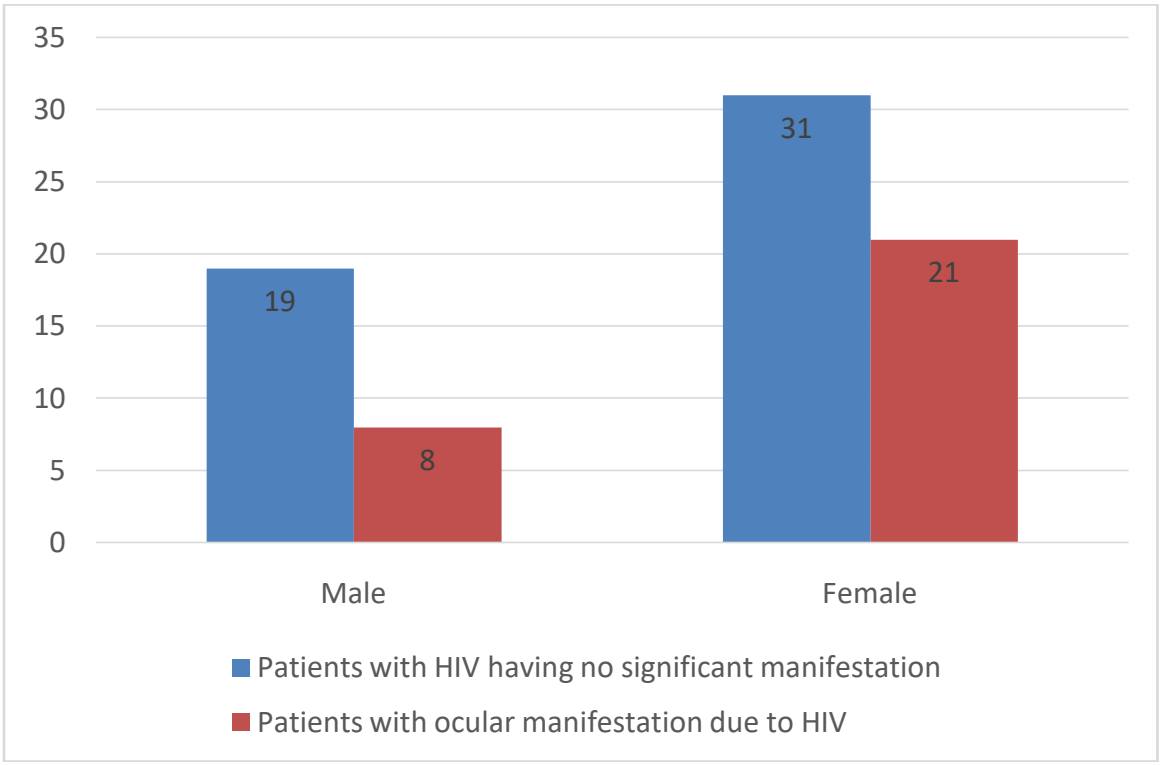

Figure 1:- Distribution of patients according to gender ocular manifestation due to HIV.

AGE (IN YEARS)	NO OF HIV POSITIVE PATIENTS	NO OF PATIENTS HAVING OCULAR MANIFESTATION DUE TO HIV
18-30	2	1
31-40	7	4
41-50	11	6
51-60	10	5
61-70	13	8
71-80	7	5

TOTAL	50	29

Table 2:- Distribution of patients according to age and ocular manifestation due to HIV.

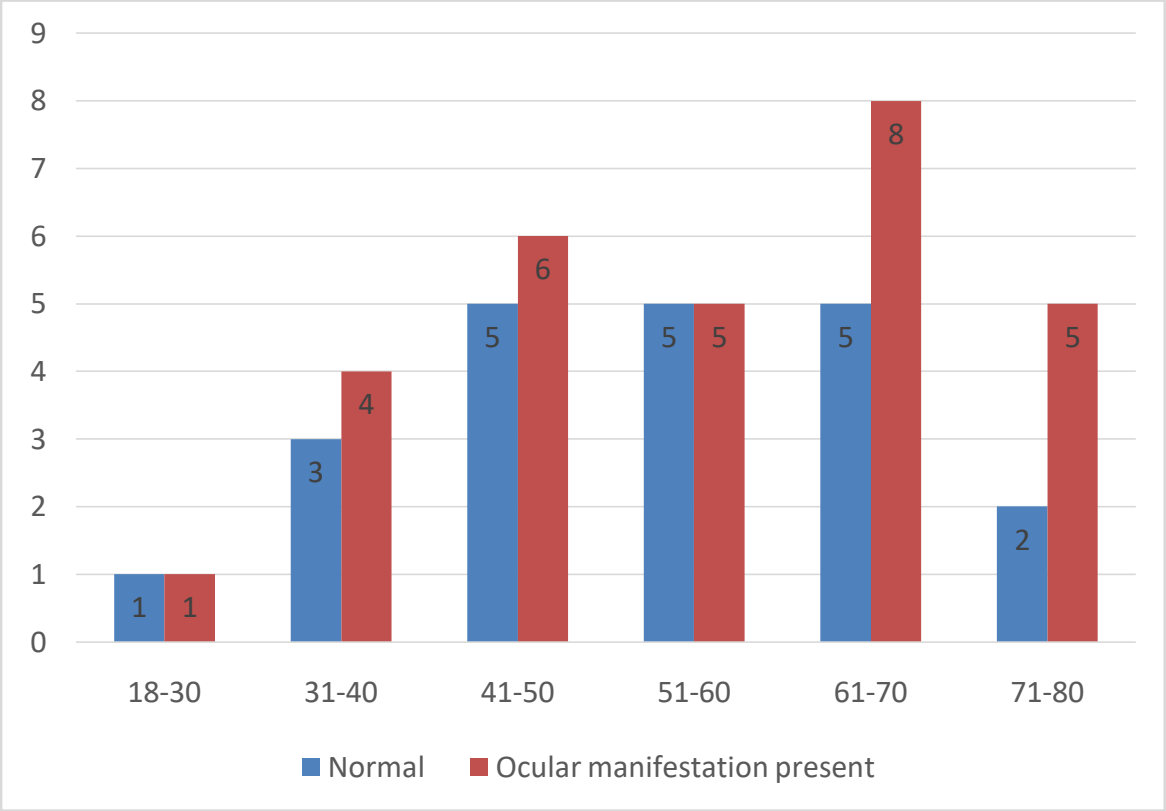

Figure 2:-Distribution of patients according to age and ocular manifestation due to HIV.

OCULAR COMPLAINTS	NO OF PATIENTS(n=50)	PERCENTAGE OF OCULAR COMPLAINTS(%)
Diminution of vision	35	70
Redness	2	4
Watering	2	4
Pain	5	10
Foreign body sensation	3	6
Photophobia	1	2
Sticky discharge	3	6

Table3:- Distribution of patients according to presenting complaints.

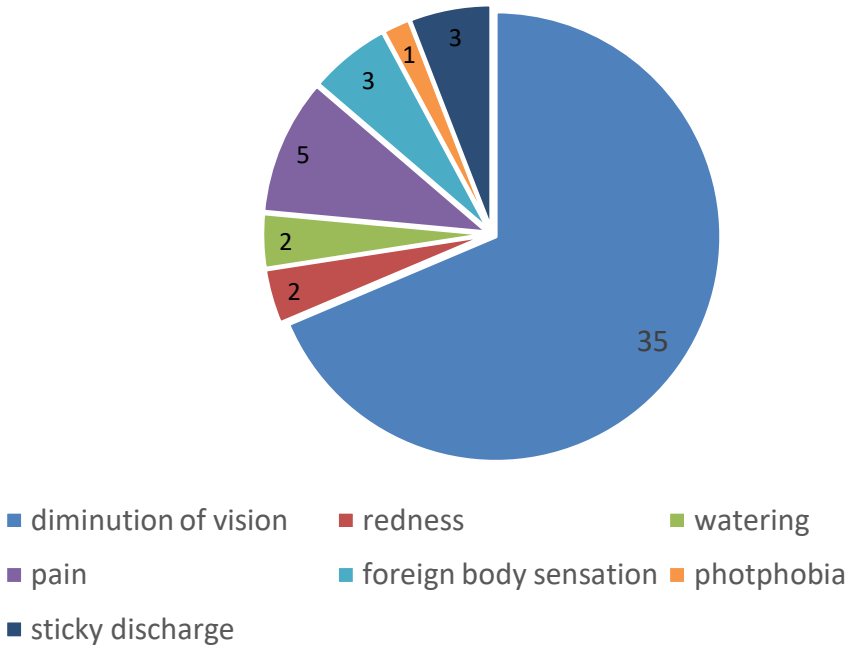

Figure 3:- Distribution of patients according to presenting complaints.

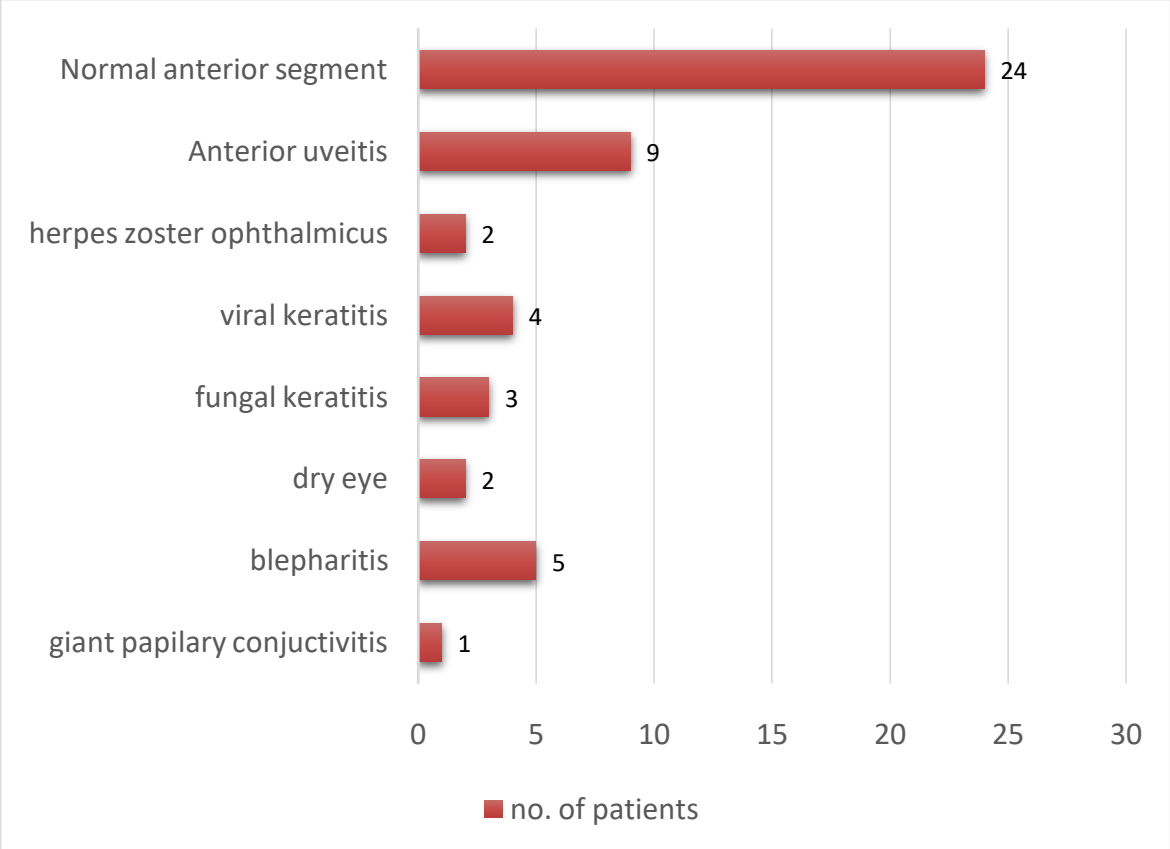

Figure4:- Distribution of Anterior segment Manifestations due to HIV.

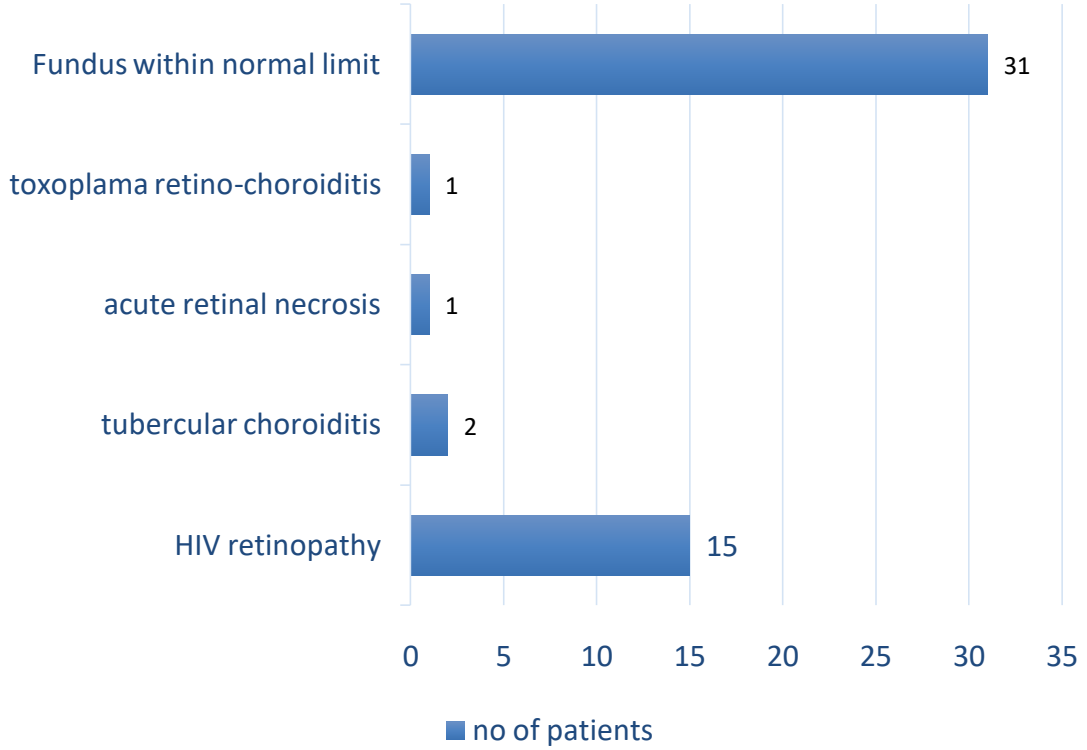

Figure 5:- Distribution of Posterior segment Manifestations due to HIV.

Anterior Ocular manifestations	Average CD4 counts	Average duration of HIV(years)
Anterior Uveitis	457	25.3
Viral keratitis	421	12
Fungal keratitis	363	9
Dry eye	677	14.3
Blepharitis	347.25	12
Giant papillary conjunctivitis	481	6.8
Herpes zoster ophthalmicus	431	15

Table 4:- Correlation of average CD4 counts and duration of HIV with Anterior segment manifestation.

Posterior Ocular manifestations	Average CD4 counts	Average duration of HIV(years)
HIV retinopathy	332.8	18
Tubercular choroiditis	206.5	25
Acute retinal necrosis	63	28
Toxoplasma retino-choroiditis	102	15

Table 5:- Correlation of average CD4 counts and duration of HIV with Posterior segment manifestation.

Discussion:-

-The introduction of highly active antiretroviral therapy (HAART) has greatly changed the pattern and natural history of HIV-infected patients, resulting from the immune recovery and reduction of opportunistic infections. [8]

-However, ophthalmic complications continue to be of concern in HIV/AIDS even in the HAART era, especially in rural areas, where absolute majority of HIV-positive patients live. Ocular complications commonly involve the eyes in HIV-infected persons.[9]

-Autopsy revealed that up to 95% of AIDS patients have some form of ocular abnormalities.Lack of test facilities and experience, poor conditions of hygiene, different microbiological environment, absence of effective treatment etc., characterize the ophthalmic manifestations of HIV-infected patients in developing countries from that in developed regions and thus pose a great challenge to the ophthalmic treatment in developing areas.[10]

-A total of 50 HIV positive patients were taken for the study,male to female ratio was 0.61:1 as opposed to 1:1 seen in Gogri et al.[11]

-Out of the 50 patients ,**29(58%)** had some form of **ocular manifestation** due to HIV as compared to study conducted by Sahu et al where ocular manifestation was seen in 25% of the patients.[12]

-Out of the 50 patients, the most common presentation was **diminution of vision** seen in **35(70%)**patients.

-The **anterior segment** manifestations were seen in **26 (52%)**patients and the most common finding was **Anterior uveitis** seen in **9(18%)** patients.

-The **posterior segment** manifestations were seen in **19(38%)** patients with the most common manifestation being **HIV retinopathy** seen in 15 **(30%)**of patients.

-This is similar to the findings of a study conducted by Swain et al where the most common presentation was diminution of vision(68%).anterior segment finding was uveitis(33%)and posterior segment finding was HIV retinopathy(33%).[13]

-The severity of ocular manifestations in HIV/AIDS was higher in patients with low CD4 counts.

-Hence the patients with serological diagnosis of HIV should be examined for ocular involvement and co-related to CD4 counts for treatment and better visual prognosis.

Conclusion:-

1. In my study a total of 29(58%) of patients had ocular manifestations due to HIV.
2. The most common manifestation was HIV retinopathy seen in 15(30%) patients.
3. As ophthalmologists we play a vital role in identifying these lesions at early stage and by collaborating with other healthcare professionals to address these issues and develop management strategies to prevent vision loss.

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