**Journal of Cardiovascular Disease Research**

ISSN:0975 -3583,0976-2833 VOL 14, ISSUE 08, 2023

**Original Research Article**

# CLINICAL PROFILE AND ASSOCIATED RISK FACTORS OF PATIENTS WITHUVEITIS: A PROSPECTIVE STUDY

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## ABSTRACT

**Introduction:** Uveitis is a term used to describe inflammatory processes of the portion of the eye known as the uvea, which is composed of the iris, ciliary body and the choroid; however, any area of the eye can be inflamed. Uveitis is most often idiopathic but has been associated with traumatic, inflammatory, and infectious processes. Patients may present with concurrent systemic symptoms or infectious diseases to suggest an etiology affecting more than just the eye. Idiopathic cases of uveitis account for 48 to 70% of uveitis cases.

**Materials and methods:** This prospective and observational study was undertaken with all new uveitis cases attending the Department of Ophthalmology, Tertiary care Teaching hospital over a period of 1 year. A standard clinical protocol and detailed investigations were to find out the specific cause of uveitis. All patients above 18 years of age either gender having uveitis. Patients who could not be worked up completely as per protocol or did not give consent for the study were excluded.

**Results:** Anterior uveitis presented in 42 (60) cases, 12 (17.1%) patients were idiopathic followed by Tuberculosis in 5 (7.2%) and HLA B27 in 6 (8.7%) patients. Intermediate uveitis was idiopathic while specific diagnosis made in 2 patients; i.e. sarcoidosis in 9 (12.9%) patient and ulcerative colitis in 1 (1.4%) patient. Posterior uveitis comprised of tuberculosis associated

ISSN:0975 -3583,0976-2833 VOL 14, ISSUE 08, 2023

posterior uveitis was most common etiology seen in 1 (1.4%) patients. Out of 1 patients of tuberculosis related posterior uveitis; 2 patients had multifocal choroiditis and 1 patient had tuberculoma with serous retinal detachment. Panuveitis recorded in (n=2) patients, 1 (5.7%) patient was suffering from Vogt-Koyanagi-Harada's (VKH) disease and other was idiopathic.

**Conclusion**: Our study recommends that patients with uveitis should undergo comprehensive ocular and systemic investigations to find the underlying etiology. All the patients must be managed according to the type of uveitis, they are suffering from and a watch should be kept on all the possible likely complications which will help a lot in preventing blindness from uveitis

**Key words:** Uveitis, Visual improvement, Idiopathic, Tuberculosis.

## INTRODUCTION

Uveitis is a term used to describe inflammatory processes of the portion of the eye known as the uvea, which is composed of the iris, ciliary body, and the choroid; however, any area of the eye can be inflamed. [1] Uveitis can be further subdivided into anterior, intermediate, posterior, and panuveitis based on the primary anatomical location of the inflammation in the eye. Symptoms and consequences can range from pain and conjunctival injection to complete vision loss.
[2] Anterior uveitis is epitomized by the anterior segment being the predominate site of inflammation. Intermediate uveitis is defined by inflammation of the vitreous cavity and pars plana, while posterior uveitis involves the retina and choroid. Inflammation in panuveitis includes all layers. [3]

Uveitis is most often idiopathic but has been associated with traumatic, inflammatory, and infectious processes. Patients may present with concurrent systemic symptoms or infectious diseases to suggest an etiology affecting more than just the eye. Idiopathic cases of uveitis account for 48 to 70% of uveitis cases. [4] Systemic inflammatory disorders commonly associated with anterior uveitis include: HLA-B27-associated entities, juvenile idiopathic arthritis, inflammatory bowel disease, sarcoidosis, Behcet's disease (BD) or tubulo-interstitial nephritis (TINU). Multiple sclerosis, sarcoidosis, and TINU are causes of intermediate uveitis with systemic manifestations, while Vogt-Koyanagi-Harada syndrome, leukemia, lupus, BD, and multiple sclerosis can cause a posterior uveitis with systemic manifestations. BD is a systemic vasculitis that can also present with pan-uveitis. [5] Infectious processes are thought to account for approximately 20% of all uveitis cases but underlying causes can vary geographically.
[6] Infectious causes include viruses (HSV, VZV, CMV), bacteria (endophthalmitis, syphilis, tuberculosis, etc), or parasites/worms (toxoplasmosis, Lyme Disease, toxocara, Bartonella sp. or other atypical infections). [7]

There was no difference in the incidence rate between men and women, but women had a higher prevalence [8]. Anterior uveitis is the most prevalent form, accounting for approximately 50% of

ISSN:0975 -3583,0976-2833 VOL 14, ISSUE 08, 2023

uveitis cases, while posterior uveitis is the least common. Ongoing inflammation seen in untreated uveitis and complications related to this uncontrolled inflammation are estimated to be responsible for approximately 10% of the blindness in the United States. [9,10]

The primary objective of this study is to identify the pattern of uveitis at a major tertiary care center in the South India and to compare it with other reported studies. Uveitis accounted for around 1% of our hospital-based daily ophthalmological outpatient visits, which is around two to three per day. Hence, this study provides new insights into the magnitude, risk factors, and causes of uveitis across all age groups and is the pioneer documentation of uveitis to analyze the epidemiology and etiology presenting to a tertiary care center in South India.

## MATERIALS AND METHODS

This prospective and observational study was undertaken with all new uveitis cases attending the Department of Ophthalmology, Tertiary care Teaching hospital over a period of 1 year. A standard clinical protocol and detailed investigations were to find out the specific cause of uveitis.

### Inclusion criteria

All patients above 18 years of age either gender having uveitis.

### Exclusion criteria:

Patients who could not be worked up completely as per protocol or did not give consent for the study were excluded.

A total of 70 patients of uveitis were registered during this time period. A detailed history was taken. Demographic information including age, sex, and laterality were noted for all patients. Complete ophthalmic examination was done which included visual acuity, slit-lamp examination, tonometry, and indirect ophthalmoscopy. Tailored investigations were carried out in each case based on their clinical presentation including optical coherence tomography and fundus fluorescein angiography wherever required.

The investigations were ordered keeping in mind probable differential diagnosis in each case and included complete blood count, erythrocyte sedimentation rate, C-reactive protein, urine analysis, rheumatoid factor, antinuclear antibody, HLA B27 by qualitative polymerase chain reaction, ELISA for HIV, Mantoux test, anti-toxoplasma antibody, serum viral antibody, chest X-ray, chest computed tomography (CT), and X-rays of the sacroiliac joint and lumbosacral spine.

Consultation with concerned medical specialist was done whenever needed. The final etiological diagnosis was made based on clinical features, laboratory investigations, and systemic evaluation. In cases where the specific etiology could not be identified, the term “idiopathic uveitis” was used.

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Anatomic location of the inflammation and classification was assigned based on the Standardization of Uveitis Nomenclature (SUN) Criteria. Patients in whom the posterior segment was not visible due to media opacity were evaluated with B-scan ultrasonography. In cases with infectious uveitis, specific treatment was initiated when indicated, supplemented by anti-inflammatory therapy as appropriate.

**Statistical analysis**

The data obtained were subjected to statistical analysis after systematic compilation. A master table was prepared with total data subdivided, distributed meaningfully, and presented as individual tables along with graphs. Statistical procedures were carried out in two steps: data compilation and presentation. Statistical analysis was done using Statistical Package of Social Science (SPSS Version 20). Significance level was fixed at $P \leq 0.05$.

**RESULTS**

Total 70 patients of uveitis were recorded. In present study, Most cases of uveitis recorded in 25-44 years Age group i.e. 34 patients (51.51%). Among study population male: female ratio is 1.86:1.

**Table 1: Gender wise distribution among study group**

| | Present study (n=70) |
|---|---|
| Male | 45 (64.3) |
| Female | 25 (35.7) |

**Table 2: Laterality as per presentation of uveitis**

| | Present study (n=70) |
|---|---|
| Unilateral | 40 (57.1) |
| Bilateral | 30 (42.9) |

**Table 3: Comparison of course of uveitis cases in the present study**

| | Present study (n=70) |
|---|---|
| Acute | 31 (44.3) |
| Chronic | 28 (40) |
| Recurrent | 8 (11.4) |
| Quiescent | 3 (4.3) |

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**Table 4: Comparison of the most common causes of anterior uveitis and posterior uveitis**

| Anatomical classification | Various etiologies | Present study (n=70) |
|---|---|---|
| Anterior uveitis | | |
| | Idiopathic | 12 (17.1) |
| | Tuberculosis | 5 (7.2) |
| | HLA-B27 anterior uveitis | 6 (8.7) |
| | Leprosy | 9 (12.9) |
| | **HSV** | 6 (8.7) |
| | RA associated | 4 (5.7) |
| Intermediate uveitis | | |
| | Idiopathic | 3 (4.3) |
| | Sarcoidosis | 9 (12.9) |
| | Ulcerative colitis | 1 (1.4) |
| Posterior uveitis | | |
| | Tuberculosis | 1 (1.4) |
| | Toxoplasmosis | 2 (2.8) |
| | APMPPE | 1 (1.4) |
| | ARN | 1 (1.4) |
| | Idiopathic | 1 (1.4) |
| | CMV retinitis | 1 (1.4) |
| Panuveitis | | |
| | Idiopathic | 2 (2.8) |
| | VKH | 4 (5.7) |
| | Behcet's disease | 2 (2.8) |

Anterior uveitis presented in 42 (60) cases, 12 (17.1%) patients were idiopathic followed by Tuberculosis in 5 (7.2%) and HLA B27 in 6 (8.7%) patients. Intermediate uveitis were idiopathic while specific diagnosis made in 2 patients; i.e. sarcoidosis in 9 (12.9%) patient and ulcerative colitis in 1 (1.4%) patient.

Posterior uveitis comprised of tuberculosis associated posterior uveitis was most common etiology seen in 1 (1.4%) patients. Out of 1 patients of tuberculosis related posterior uveitis; 2 patients had multifocal choroiditis and 1 patient had tuberculoma with serous retinal detachment.

Panuveitis recorded in (n=2) patients, 1 (5.7%) patient was suffering from Vogt-Koyanagi-Harada's (VKH) disease and other was idiopathic.

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## DISCUSSION

Uveal tract is composed of iris, ciliary body, and choroid and is highly predisposed to inflammation on account of its vascularity. The prevalence of uveitis varies worldwide and requires numerous investigations to reach the etiological diagnosis

We found that uveitis was more predominantly seen in male patient 45 (64.3%) as compared to 25 (35.7%) female patients. This result of our study proves the fact that there is a significant male predisposition for uveitis. This result is comparable to Ayanru et al. in which they found that male to female ratio was 2:1. Furthermore, Venkatesh et al. in their study of 161 patients found 114 patients to be male as compared to 47 females suffering from uveitis. This clearly suggests about male preponderance for uveitis. [11] Uveitis can occur in any individual irrespective of the type of occupation.

In our study, 39 patients (55.7%) had anterior uveitis, 21 patients (30%) had posterior uveitis, and 8 patients (11.4%) had intermediate uveitis. Only 2 patients (2.9%) had panuveitis according to the SUN classification. Similarly, Ebrahim et al. in their study show anterior uveitis (49.6%) as the most common form of uveitis followed by posterior uveitis (15.5%). They also quoted in their study that idiopathic uveitis was the most common form of anterior uveitis. [12] Furthermore, Singh et al. studied 1233 patients and found anterior uveitis as the most common type of uveitis. [13]

In our study, 42 patients (60%) had anterior uveitis, 7 patients (10%) had posterior uveitis, and 13 patients (18.5%) had intermediate uveitis. Similarly, Ebrahim et al. in their study show anterior uveitis (49.6%) as the most common form of uveitis followed by posterior uveitis (15.5%). They also quoted in their study that idiopathic uveitis was the most common form of anterior uveitis. [12] Furthermore, Singh et al. studied 1233 patients and found anterior uveitis as the most common type of uveitis. [13]

Uveitis is the most complicated disease which has got a very varied etiology and in many cases it is impossible to find an etiology associated with development of uveitis. These etiological agents may be infective or non-infective in nature. Anesi and Foster in their study of anterior uveitis quoted that a large number cases are idiopathic and many cases are attributed to herpes simplex virus or trauma to eye. [14] Furthermore, Khairallah et al. in their study found that frequency of idiopathic uveitis was 37.9%. The result of above mentioned study correlates with our study where we found out of 39 patients of anterior uveitis 28 (71.79%) were idiopathic, 5 out of 8 patients (62.5%) patients of intermediate uveitis were idiopathic and 8 (38.09%) out of 21 patients with posterior uveitis had toxoplasmosis as underlying etiology. [15]

Thirty-nine patients suffering from anterior uveitis were managed with topical steroids and cycloplegic, whereas all 7 patients suffering from posterior uveitis required systemic steroids as well as topical steroids for the management. This result of our study suggests that steroids play a

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very strong role in the management of uveitis and this result of our study commensurate with the study of Bartlett and Jaanus. [16] We recommend that steroids should be used properly in the management of uveitis but special precaution taken regarding rise of intraocular pressure.

The pathophysiology of uveitis in general is not well understood. Groups have hypothesized that trauma to the eye can cause cell injury or death which leads to the release of inflammatory cytokines leading to a post-traumatic uveitis. Uveitis caused by inflammatory diseases is thought to be due to molecular mimicry, where an infectious agent cross-reacts with ocular-specific antigens. [17] Vision-threatening inflammation is mediated by CD4 Th1 cells. Normally, only activated lymphocytes are allowed past the blood-retina barrier, thus decreasing sensitization of naïve T cells to ocular proteins. Researchers have proposed there is molecular mimicry between retinal S-Ag peptides and a peptide from disease associated HLA-B antigens, which leads to targeting of ocular proteins and inflammatory response. [18]

Acute anterior uveitis can be unilateral or bilateral (an autoimmune disease) with symptoms including pain, blurred vision, photophobia, and circumlimbal injection (ciliary flush). In anterior uveitis, the affected pupil maybe constricted or irregular in shape when compared to the unaffected eye due to posterior synechia (iris adhesions to the anterior lens capsule, red arrows) formation. Intermediate uveitis is not usually associated with pain but can cause blurred vision and floaters, while posterior uveitis more often presents with vision loss and/or dysphotopsias. Panuveitis is usually a combination of all of these symptoms due to multiple areas of the eye being affected simultaneously. [19]

## CONCLUSION

Our study was a hospital-based study, in which, 70 patients suffering from uveitis were included in the study. We found that uveitis was more predominantly seen in male patient 45 (64.3%). Our study recommends that patients with uveitis should undergo comprehensive ocular and systemic investigations to find the underlying etiology. All the patients must be managed according to the type of uveitis, they are suffering from and a watch should be kept on all the possible likely complications which will help a lot in preventing blindness from uveitis

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