

Pattern of Uveitis Presenting at a Private Eye Hospital in Nepal: A Hospital-Based Observational Study

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Abstract

Background: Uveitis encompasses a heterogeneous group of intraocular inflammatory disorders that may involve the anterior chamber, vitreous, retina, choroid, or multiple anatomical compartments. The clinical pattern and etiological spectrum of uveitis vary according to geographic region, referral patterns, and available diagnostic facilities. Data from private eye-care facilities in Nepal remain limited.

Objective: To describe the anatomical classification, laterality, selected etiological associations, and complications of uveitis among patients presenting to a private eye hospital in Nepal.

Methods: This hospital-based observational study included patients diagnosed with uveitis during the study period at a private eye hospital in eastern Nepal. Uveitis was classified anatomically as anterior, intermediate, posterior, or panuveitis according to the Standardization of Uveitis Nomenclature (SUN) classification. Demographic characteristics, laterality, anatomical involvement, selected etiological associations, and ocular complications were recorded. Descriptive statistics were used to summarize the findings.

Results: A total of 42 patients involving 50 eyes were included. There were 26 females (61.9%) and 16 males (38.1%). Anterior uveitis was the predominant anatomical category, involving 32 eyes (64.0%) and 29 patients. Three patients with anterior uveitis had bilateral disease. Intermediate uveitis involved four eyes in four patients, all with unilateral disease. Intermediate and posterior uveitis together involved four eyes in two patients, both of whom had bilateral disease. Panuveitis involved 10 eyes in seven patients; three patients had bilateral disease. Overall, 34 patients had unilateral disease and eight had bilateral involvement.

Posterior synechiae were the most frequently observed finding, occurring in approximately 25 patients (50%). Among patients with anterior uveitis, approximately 20 (about 70%) had posterior synechiae, while all seven patients with panuveitis had posterior synechiae. Cystoid macular edema was observed in approximately three patients (6%). Six patients with anterior uveitis were HLA-B27 positive. Among the panuveitis cases, two were associated with Vogt-Koyanagi-Harada disease, two with tuberculosis, and one patient tested positive for syphilis.

Conclusions: Anterior uveitis was the most common anatomical presentation in this private eye hospital, followed by panuveitis and intermediate disease. Posterior synechiae represented the most frequent ocular complication. The presence of HLA-B27-associated anterior uveitis and infectious and systemic inflammatory associations among panuveitis cases highlights the importance of a structured clinical and etiological evaluation of patients presenting with uveitis in Nepal.

Keywords: uveitis; anterior uveitis; panuveitis; intermediate uveitis; HLA-B27; posterior synechiae; Nepal; ocular inflammation

Introduction

Uveitis refers to inflammation involving the uveal tract and adjacent ocular structures and represents an important cause of visual morbidity. The clinical spectrum is broad, ranging from isolated anterior chamber inflammation to extensive inflammation involving the vitreous, retina, and choroid. The underlying causes may be infectious, immune-mediated, traumatic, masquerade-related, or idiopathic.

The Standardization of Uveitis Nomenclature (SUN) Working Group recommends anatomical classification into anterior uveitis, intermediate uveitis, posterior uveitis, and panuveitis based on the predominant site of inflammation [1]. This standardized approach facilitates communication between clinicians and allows comparison of epidemiological studies across different populations.

The epidemiology of uveitis varies substantially between geographical regions. Differences in infectious diseases, genetic susceptibility, environmental exposure, healthcare access, and referral patterns may influence the relative frequency of different anatomical and etiological categories.

Data from Nepal have demonstrated a predominance of anterior uveitis among patients presenting to tertiary eye-care centers. Manandhar reported anterior uveitis in approximately 53% of cases in a large tertiary referral center study, while panuveitis accounted for approximately 20% [2]. In another large Nepalese study involving more than 4,000 patients with uveitis, anterior uveitis was again the most frequent anatomical category, accounting for approximately 61.8% of cases, followed by intermediate uveitis, posterior uveitis, and panuveitis [3]. More recent data from central Nepal have also demonstrated substantial variation in anatomical patterns and etiological associations [4].

Although tertiary referral centers provide important epidemiological data, the clinical profile of uveitis seen in private eye hospitals may differ because of differences in patient demographics, referral pathways, diagnostic resources, and treatment-seeking behavior. There is limited published information describing the pattern of uveitis in private eye-care settings in eastern Nepal.

The present study was therefore undertaken to describe the anatomical distribution, laterality, selected etiological associations, and ocular complications of uveitis among patients presenting to a private eye hospital in Nepal.

Materials and Methods

Study Design and Setting

This was a hospital-based observational study conducted among patients presenting with uveitis to a private eye hospital in eastern Nepal.

Study Population

Patients diagnosed clinically with uveitis during the study period were included. Patients were categorized

according to the anatomical site of inflammation.

Classification of Uveitis

Uveitis was classified according to the SUN anatomical classification system [1]:

- **Anterior uveitis:** inflammation predominantly involving the anterior chamber.
- **Intermediate uveitis:** inflammation predominantly involving the vitreous.
- **Posterior uveitis:** inflammation predominantly involving the retina and/or choroid.
- **Panuveitis:** inflammation involving the anterior chamber, vitreous, and retina/choroid.

Patients with involvement of more than one anatomical compartment were categorized according to the observed clinical pattern.

Data Collection

The following variables were recorded:

- Age and sex
- Laterality of ocular involvement
- Anatomical type of uveitis
- Selected etiological associations
- HLA-B27 status where testing was performed
- Relevant systemic associations
- Ocular complications
- Posterior synechiae
- Cystoid macular edema
- Other clinically relevant findings

The diagnosis and classification were based on clinical examination and appropriate ancillary investigations when indicated.

Statistical Analysis

Data were summarized using descriptive statistics. Categorical variables were expressed as frequencies and percentages. Continuous variables, where available, were summarized using appropriate measures of central tendency and dispersion. Because the primary objective was to describe the clinical pattern of uveitis, no inferential statistical testing was performed.

Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki. Patient confidentiality was maintained throughout the study. Ethical approval and/or institutional permission should be reported according to the actual approval obtained from the participating institution.

Results

Demographic Characteristics

A total of **42 patients involving 50 affected eyes** were included in the study. There were **26 females (61.9%)** and **16 males (38.1%)**.

The distribution of patients according to anatomical category and laterality is presented in Table 1.

Table 1. Anatomical distribution and laterality of uveitis

Anatomical category	Affected eyes, n (%)	Unilateral patients, n	Bilateral patients, n	Total patients, n
Anterior uveitis	32 (64.0%)	26	3	29
Intermediate uveitis	4 (8.0%)	4	0	4
Intermediate + posterior uveitis	4 (8.0%)	0	2	2
Panuveitis	10 (20.0%)	4	3	7
Total	50 (100%)	34	8	42

Anterior uveitis was the most common anatomical presentation, accounting for **32 of 50 affected eyes (64.0%)** and **29 of 42 patients**. Most patients with anterior uveitis had unilateral disease; only three patients had bilateral anterior uveitis.

Intermediate uveitis was identified in four patients, all with unilateral involvement. Two patients had combined intermediate and posterior involvement, and both had bilateral disease.

Panuveitis was present in seven patients involving 10 eyes. Three patients had bilateral panuveitis, whereas four had unilateral disease.

Overall, **34 patients had unilateral uveitis and eight patients had bilateral disease**.

Selected Etiological Associations

Among patients with anterior uveitis, approximately **20% were HLA-B27 positive**, corresponding to approximately six patients.

Among the seven patients with panuveitis, two cases were clinically associated with Vogt-Koyanagi-Harada disease, two were considered tuberculosis-associated, and one patient tested positive for syphilis. The remaining two panuveitis cases did not have a specific etiological association recorded in the available dataset.

Table 2. Selected etiological associations

Clinical category	Etiological association	Number of patients
Anterior uveitis	HLA-B27 positive	Approximately 6
Panuveitis	Vogt-Koyanagi-Harada disease	2
Panuveitis	Tuberculosis-associated	2
Panuveitis	Syphilis-positive	1
Panuveitis	No specific association recorded	2

Ocular Complications

Posterior synechiae were the most frequently observed finding. **25 of the 50 eyes (50 %)** had posterior synechiae.

Among the 29 patients with anterior uveitis, approximately 20 patients (68.9 %) had posterior synechiae. All seven patients with panuveitis had posterior synechiae.

Cystoid macular edema was the second most frequently documented complication, occurring in approximately three patients (about 6%).

Table 3. Major ocular complications

Complication	Approximate number of patients	Approximate frequency
Posterior synechiae	25	50 %
Cystoid macular edema	3	6 %

Percentages are calculated using 50 eyes as the denominator

Discussion

The present study describes the clinical pattern of uveitis among patients presenting to a private eye hospital in eastern Nepal. The principal finding was a clear predominance of anterior uveitis, which accounted for 64% of affected eyes and 29 of the 42 patients. Panuveitis was the second most frequent anatomical category.

The predominance of anterior uveitis in the present study is broadly consistent with previously published Nepalese data. Manandhar reported anterior uveitis as the most common anatomical form in a tertiary referral population in Nepal, accounting for approximately 53% of cases [2]. Similarly, Kharel Sitaula et al. reported anterior uveitis in 61.8% of cases in a large Nepalese cohort [3]. The 64% eye-level proportion observed in the present study therefore falls within the range reported from Nepalese tertiary centers.

Differences between individual studies may be explained by differences in study population, referral patterns, study duration, diagnostic facilities, and whether cases are reported according to patients or affected eyes. The current study was performed in a private eye hospital, where patients may present at different stages of disease compared with a national tertiary referral center.

The laterality pattern was also notable. Of the 42 patients, 34 had unilateral disease and eight had bilateral involvement. The predominance of unilateral disease was particularly evident among anterior and intermediate uveitis. In contrast, bilateral disease was more prominent among patients with combined intermediate-posterior involvement and panuveitis. Bilateral inflammation in panuveitis may reflect systemic or immune-mediated inflammatory disorders and emphasizes the importance of a detailed systemic history and appropriate laboratory evaluation in these patients.

Posterior synechiae represented the most common ocular complication in this series. Approximately 68.9% of patients with anterior uveitis had posterior synechiae, and all patients with panuveitis were reported to have this complication. Posterior synechiae are a clinically important consequence of intraocular inflammation because they may contribute to irregular pupil formation, seclusio pupillae, secondary glaucoma, and other vision-threatening complications. Their relatively high frequency in the present study may reflect the severity or duration of inflammation at presentation.

Cystoid macular edema was the second most frequently documented complication, occurring in 6% of patients. CME is a well-recognized complication of intraocular inflammation and may occur particularly in patients with intermediate, posterior, and panuveitis. Although the number of cases in the present series was small, its presence reinforces the importance of macular assessment in patients with significant intraocular inflammation.

HLA-B27 positivity was identified in approximately 20% of patients with anterior uveitis. HLA-B27-associated anterior uveitis is typically characterized by acute episodes, often with unilateral or alternating-

eye involvement, and may be associated with systemic spondyloarthritis. The finding in this study supports the value of targeted systemic history-taking and HLA-B27 testing in appropriately selected patients rather than indiscriminate laboratory testing.

The etiological profile of panuveitis was diverse. Two cases were associated with Vogt-Koyanagi-Harada disease, two with tuberculosis, and one patient was syphilis-positive. These findings highlight the importance of considering both infectious and noninfectious causes when evaluating extensive intraocular inflammation in Nepal.

Tuberculosis remains an important diagnostic consideration in South Asian patients with uveitis because of the regional burden of tuberculosis. However, a positive tuberculosis test alone does not establish ocular tuberculosis, and the diagnosis should be interpreted in the context of clinical findings and other investigations. Similarly, syphilis is an important infectious cause of uveitis because of its ability to mimic almost any anatomical pattern of ocular inflammation.

The identification of VKH in two patients is also clinically relevant. VKH is a systemic inflammatory disorder characterized by ocular inflammation with varying degrees of neurologic, auditory, and integumentary involvement. Its recognition requires appropriate clinical assessment beyond the ocular examination.

The present study contributes data from a private eye-care setting, an area that remains relatively underrepresented in the Nepalese ophthalmic literature. The findings may provide a useful baseline for future multicenter studies involving private and public eye hospitals across different regions of Nepal.

Limitations

This study has several limitations. First, the sample size was relatively small, with only 42 patients. Therefore, the findings may not represent the overall epidemiology of uveitis in Nepal.

Second, the study was conducted at a single private eye hospital, and referral and treatment-seeking patterns may differ from those at government or tertiary referral centers.

Third, etiological investigations were not necessarily uniform across all patients. Some patients underwent targeted investigations based on clinical suspicion, which may have resulted in under-recognition of certain systemic or infectious associations.

Fourth, some complication frequencies in the current dataset were available as approximate percentages rather than exact patient-level counts. These figures should be verified against the original clinical records before final journal submission.

Finally, because this study primarily describes the clinical pattern of uveitis, long-term treatment response and visual outcomes were not analyzed. Future prospective studies with standardized investigations, treatment protocols, and longitudinal visual outcomes would provide more comprehensive information.

Conclusions

Anterior uveitis was the predominant form of uveitis among patients presenting to this private eye hospital in eastern Nepal, accounting for 64% of affected eyes. Most cases were unilateral, although bilateral involvement was more frequent among patients with panuveitis and combined intermediate-posterior disease.

Posterior synechiae were the most common ocular complication, while CME was less frequently observed. HLA-B27-associated anterior uveitis constituted an important subgroup, while tuberculosis, syphilis, and VKH were identified among patients with panuveitis.

These findings emphasize the heterogeneous nature of uveitis and the importance of anatomical classification followed by targeted investigation for infectious and systemic inflammatory causes. Larger multicenter studies involving both private and public eye-care facilities are warranted to establish a more representative epidemiological profile of uveitis in Nepal.

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