



## Study of Clinical and Etiological Pattern of Anterior Uveitis in Western Odisha

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### Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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### ABSTRACT

**Background and Objectives:** Uveitis is a potentially sight-threatening disease affecting people from all over the world. It attributes to 5-20% of legal blindness in developed countries and 25% of blindness in the developing world. Uveitis includes a varied group of intraocular inflammatory conditions that may occur at any age but affect mostly working-age people. The average annual incidence of uveitis has been reported as approximately 14- 17/1,00,000. Aim is to study the clinical and etiological pattern of anterior uveitis. Objectives are to evaluate the clinical pattern of anterior uveitis, to study the etiological pattern of anterior uveitis, to identify the complications of anterior uveitis, to assess the treatment outcome. **Methods:** A prospective clinical study was done in the Department of Ophthalmology, Rourkela, Odisha during September 2019 - March 2021 (18 months) between the age group of 20-80 years. Each patient was called for follow up on 1st day, 2nd day, 1 week, 3 weeks, 6 weeks from the day of presentation. The complications like posterior synechiae, complicated cataract, raised IOP, macular edema were noted and the response to treatment was recorded and evaluated in each patient. **Results and conclusion:** Despite all efforts to identify the cause, the most common cause of anterior uveitis remained idiopathic (48.6% ) followed by immune related cause (20.3%). Visual acuity was 6/12 or worse in majority of the patients at presentation and following medical line of treatment most patients regained visual acuity of 6/9 or better after 6 weeks, which was statistically significant ( $p < 0.0001$ ).

**Keywords:** Aetiology; anterior; pattern; uveitis.

## 1. INTRODUCTION

“Uveitis is a potentially sight-threatening disease affecting people from all over the world. It attributes to 5-20% of legal blindness in developed countries and 25% of blindness in the developing world” [1].

“Uveitis includes a varied group of intraocular inflammatory conditions that may occur at any age but affect mostly working-age people” [2]. The average annual incidence of uveitis has been reported as approximately 14-17/1,00,000.

“Uveitis is defined as the inflammation of the entire uveal tract affecting any of its three constituents: Iris, Ciliary body and Choroid. The uveitis can be classified in different ways. It can be divided into Anterior, Intermediate, Posterior, and Pan uveitis based on the primary anatomical location of the inflammation Anterior uveitis often causes a painful red eye with mild to moderate vision loss, but its long-term sequelae contribute significantly to the total burden. The treatment for uveitis itself can result in both ocular and systemic complications. The morbidity associated with the disease is moderately high” [3].

The differential diagnosis of anterior uveitis can be accomplished by a thorough eye examination and physical assessment. The correct diagnosis of uveitis is often challenging as these patients present with a plethora of ocular as well as systemic signs and symptoms. In most cases, uveitis is idiopathic and clinical spectrum of disease overlap with varied etiology. Despite improved understanding of the etiopathogenesis and evolution of advanced diagnostic techniques, the etiology of uveitis still remains elusive in a significant number of cases.

## 2. MATERIALS AND METHODS

A prospective clinical study was done in the Department of Ophthalmology, Rourkela, Odisha during September 2019 - March 2021 (18 months) between the age group of 20-80 years. Data was collected from the patients after informed consent. Patients fulfilling the inclusion and exclusion criteria were taken. A standard clinical proforma was filled in all cases which included salient feature in history, visual acuity using Snellen's visual acuity chart, clinical findings, laboratory investigations and the final

etiology. All patients were examined under slit lamp.

Details on disease severity, laterality, chronicity, ocular signs and associated systemic conditions were noted. Presentation was considered as unilateral if active inflammation was present in only one eye and bilateral if both eyes presented with active inflammation. In bilateral cases only one eye was taken for the study. A short differential diagnosis was made in each case. Subsequently, a tailored laboratory investigation was carried out. “Final etiological diagnosis was made based on history, clinical features, laboratory investigations and systemic evaluation by other medical specialities. The anterior uveitis was considered to have idiopathic etiology when it was not associated with HLA-B27 haplotype and neither with defined clinical syndromes nor with definitive etiology” [4].

All patients were treated medically with topical steroids (prednisolone acetate 1%) and topical cycloplegic mydriatics (atropine, cyclopentolate or homatropine). Steroid's frequency was titrated according to severity of uveitis. Appropriate treatment was given whenever etiology was known.

Each patient was called for follow up on 1<sup>st</sup> day, 2<sup>nd</sup> day, 1 week, 3 weeks, 6 weeks from the day of presentation. BCVA and IOP was noted at each follow up. During each visit the patients were checked under slit lamp biomicroscopy for keratic precipitates, cells, aqueous flare, posterior synechiae. The complications like posterior synechiae, complicated cataract, raised IOP, macular edema were noted and the response to treatment was recorded and evaluated in each patient.

## 3. RESULTS

Total 74 patients were studied. It included patients from 20 to 80 years of age, both males and females. Study was conducted for the period of 18 months (Table 1).

Out of 74 patients studied 15(20%) of patients showed immune related cause and 9(12.2%) showed infective cause. In 5(6.7%) patients the cause of anterior uveitis was blunt trauma. Other causes like fuchs heterochromic iridocyclitis, phacolytic, inflammatory bowel disease, were found in 9 (12.2%) patients. Remaining 36 (48.6%) were found to be idiopathic (Table 2).

**Table 1. Sociodemographic and clinical characteristics of the patients**

Characters	Number(n=74)	Percentage (%)
<b>Age (Years)</b>		
20-30	17	23
31-40	24	32
41-60	19	25
61-80	14	20
<b>Gender</b>		
Male	43	58
Female	31	42
<b>Laterality</b>		
Unilateral	70	94.5
Bilateral	4	5.5
<b>Clinical Presentation</b>		
Acute	63	85
Chronic	7	10
Recurrent	4	5
<b>Type of inflammation</b>		
Granulomatous	10	13.5
Non granulomatous	64	86.5

**Table 2. Distribution according to etiology of anterior uveitis**

Etiology	Number of cases	Percentage
Idiopathic	36	48.6
Immune related	15	20.3
Infective	9	12.2
others	9	12.2
Traumatic	5	6.7
Total	74	100.0

Out of 74 patients studied 14(18.9%) showed persistent posterior synechiae. 1(1.4%) had cystoid macular edema and 1(1.4%) had secondary glaucoma. Secondary cataract developed in 1(1.4%) patient. Rest 57(77%) showed no complications (Table 3).

Of the 74 studied population, 6\12VA was found to be present for 26 patients at the day of presentation ,20 patients at 1 week , 19 patients at 3 weeks and 6 patients at the end of 6 weeks. 6\18VA was found to present for 20 patients at

presentation, 15 at 1 week and 9 at 3 weeks, 1 at 6 weeks. 6\24VA was found to present for 15 patients at presentation, 9 at 1 week, 3 at 3 weeks. 6\36VA was found to be present for 9 patients at presentation, 3 at 1 week, 1 at 3 weeks. 6\60 VA was found to be present for 3 patients at presentation, 1 at 1 week. PI+PR+ and CF 5 m was found to be present for 1 patient at the day of presentation ad 1 day respectively. At the end of 6 weeks 46 patients gained 6\6 VA and 21 patients gained 6\9 VA (Table 4).

**Table 3. Distribution of cases according to complications**

Complications	Number	Percentage
Cataract	1	1.4
Secondary glaucoma	1	1.4
Cystoid macular edema	1	1.4
No complications	57	77.0
Posterior synechiae	14	18.9
Total	74	100.0

**Table 4. Visual acuity at presentation and during follow up**

VA	Presentation	1st Day	2nd Day	1 Week	3 Weeks	6 Weeks
6\6	0	0	0	0	6	46
6\9	0	0	0	26	36	21
6\12	26	26	26	20	19	6
6\18	20	20	20	15	9	1
6\24	15	15	15	9	3	0
6\36	9	9	9	3	1	0
6\60	3	3	3	1	0	0
PL+PR+	1	1	0	0	0	0
CF 5M	0	0	1	0	0	0

#### 4. DISCUSSION

In our study out of 74 patients 43 were males (58%) and 31(42%) were females.

In our study, the maximum number of cases reported were around the age group of 31-40 years. In older age group, uveitis was phacolytic in origin. This is similar to other studies like Singh et al. [7] and Rathinam et al. [5] which showed same age predilection. Children(1%) and elderly

(14%) were less commonly affected similar to the study by Ben Ezra et al. [8] and Favre et al. [9].

“In our study, anterior uveitis was found to be associated with diabetes mellitus in 10 patients (13.5%) and hypertension in 9(12.2%) patients. All those who had diabetes mellitus were above 50 years of age. In a study of uveitis presenting in elderly, it was noted that diabetes should probably be considered a risk factor for uveitis development” [15].

**Table 5. Gender comparison**

Gender	Current study	Rathinam et al. [5]	Al ezandro Rodriguez et al. [6]
Males	58%	61.3%	38.9%
Females	42%	38.7%	61.1%

**Table 6. Laterality comparison**

	Current study	Rathinam et al. [5]
Unilateral	94.5%	85.3%
Bilateral	5.5%	14.7%

**Table 7. Comparison of etiological patterns of anterior uveitis**

Studies	Idiopathic anterior uveitis (%)
Current study	48.6
Japan based [10]	42.3
USA based [10]	34.9
Turkey based [10]	43.2
Dipankar et al. [11]	45.51
Yellambkar ST et al. [12]	46.6
Sudha Madhavi et al, [13]	42.0
Biswas et al. [14]	58.6
Singh et al. [7]	24.7

**Table 8. Chronicity comparison**

	Current study	Rathinam et al. [5]
Acute	63%	71.9%
Chronic	7%	24.3%
Recurrent	4%	3.8%

**Table 9. Comparison of type of inflammation**

	Present	Rathinam et al. [5]	Alejandro Rodriguez et al. [6]	Sudha Madhavi et al. [13]
Granulomatous	13.5%	18.8%	12.4%	10%
Non-granulomatous	86.5%	81.2%	87.6%	90%

**Table 10. Comparison of etiological factors of present study with other studies**

Sl. No.	Etiology	Current Study	Rathinam et al. [5] (n=5028)	Singh et al. [7] (n=607)	Henderly et al. [17] (n=167)
1	Idiopathic	36	44.6	61.3	43.52
2	Blunt trauma	5	7.7	-	2.52
3	Phacolytic	2	3.5	-	-
4	Herpes zoster	6	8.6	1.8	8.99
5	Tuberculosis	3	4	7.9	-
6	Septic focus	-	-	-	-
7	Immune related	15	7.1	-	-
	Fuchs' heterochromic				
8	iridocyclitis	5	8.4	5.1	6.47
9	Leprosy	-	2.1	0.8	-
10	IBD	2	-	-	1.08

In our study Visual acuity was 6/12 or worse in the majority (71.8%) of eyes at presentation. Following treatment most eyes regained visual acuity of 6/9 or better (74.3%). In few eyes with complicated cataract or macular edema, visual acuity improved only marginally.

In our study no complications were seen in 57 patients (77%). Complications were commonly noted in chronic and recurrent cases. Most common complication observed was persistent posterior synechiae in 14 patients (18.9%), cataract in 1 patient (1.4%). Secondary glaucoma was seen in 1 patient (1.4%), macular edema was seen in 1 patient (1.4%). Rothova et al. [16] reported cataract in 19% of cases and glaucoma in 11%.

## 5. CONCLUSION

This study reflects the clinical and etiological pattern of anterior uveitis at our centre. Despite all efforts to identify the cause, the most common cause of anterior uveitis remained idiopathic (48.6%) followed by immune related cause (20.3%). Infective causes like Herpes Zoster and Tuberculosis accounted for 12.2% cases. Fuch's heterochromic iridocyclitis, Phacolytic uveitis and Inflammatory Bowel disease associated anterior uveitis formed 12.2% of the cases. 6% of cases were due to traumatic causes. Anterior uveitis was found to be more common in 31-40 years age group (32%). Males (58%) were more

commonly affected than females (42%). The presentation was more unilateral (94.5%) than bilateral. The incidence of non-granulomatous type of inflammation (86.5%) was more than granulomatous (13.5%). The onset of anterior uveitis was mostly acute (85%) as compared to chronic (10%) and recurrent (5%). In this study, anterior uveitis was found to be associated with diabetes mellitus in 13.5% and hypertension in 12.2% patients. In 77% of cases no complication was seen. Visual acuity was 6/12 or worse in majority of the patients at presentation and following medical line of treatment most patients regained visual acuity of 6/9 or better after 6 weeks, which was statistically significant ( $p < 0.0001$ ).

## CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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