



INCIDENCE, ETIOLOGY AND MANAGEMENT OF ACUTE ANTERIOR UVEITIS: A HOSPITAL BASED STUDY

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ABSTRACT

Introduction: Anterior uveitis is a sight-threatening eye condition that must be diagnosed and treated early by ophthalmologists. Due to its association with potentially serious systemic disease and when undetected can cause loss of vision, the importance of awareness about this entity to primary eye care physician is a public health concern. So with the limitation of a hospital based study the present study was done to find out the incidence, etiology, and management protocol of cases of acute anterior uveitis based on the investigations and clinical features. **Materials and Methodology:** A prospective clinical study was conducted in Department of Ophthalmology, District Headquarter Hospital, Balangir, Odisha. Based on set inclusion and exclusion criteria 113 patients with anterior uveitis were recruited into the study. Detail clinical history, visual acuity, clinical findings, laboratory investigation findings, serological, biochemical and radiographic findings were noted on a pre-designed proforma. Based on etiologic diagnosis relevant treatment was given and patients were followed up for 6 months for treatment outcomes and complications. **Results:** A total of 113 subjects (56.64 % male and 43.36% female) were enrolled. Most commonly affected age group was 31-40 (38.05%). Most of the cases were unilateral (86.73%), acute (74.34%) and non-granulomatous (90.27%). A highly significant ($p=0.000$) effect of the treatment was recorded after 2 and 6 weeks. **Conclusion:** Acute anterior uveitis is mostly involved in middle aged persons and in majority of cases (56.25%) it responded well to good visual outcome (6/9 or better) after adequate treatment.

KEYWORDS: Anterior uveitis, ophthalmologists.

INTRODUCTION

Uveitis is one of the most common forms of intraocular inflammation involving the uveal tract and affects mainly children and young adults. It includes a large group of intraocular inflammatory diseases of diverse etiology. On several occasions, it reflects diseases that are developing elsewhere in the body and uveitis may be the first evidence of such systemic diseases.^[1] Variation in the spectrum of disease is largely due to complex geographic, ecological, racial, nutritional, and socioeconomic differences. The anterior uveitis is the most common type of all uveitic entities (57.4%). On the basis of overall clinical presentation, acute unilateral, non-infectious and non-granulomatous forms occur more frequently. Idiopathic anterior uveitis is more common in all age groups. Mean age at presentation is 38.3 years and commonly affects middle aged (17-59 years). It is more common in males (61.3%) as compared to females (38.6%).^[2]

The precise cause of anterior uveitis is often obscure and the correct diagnosis is often challenging. The cause of inflammation might be infections agents or trauma, but in most cases underlying mechanism appear to be autoimmune in nature.^[3] In order to enhance the understanding and management of ocular inflammation International Ocular Inflammation Society (IOIS) has been founded.^[4]

Anterior uveitis is the most common form of uveitis and accounts for an annual incidence of about 17 cases per 1, 00,000 population.^[5]

Anterior uveitis can be categorized as iritis (inflammation of iris), anterior cyclitis (inflammation of anterior portion of ciliary body) and iridocyclitis (inflammation of iris and ciliary body). It often causes painful red eye, photophobia, tearing and blurring of vision. Acute anterior uveitis causes mild vision loss but still contributes significantly to the total burden. It causes

vision loss both directly through inflammation and via complications such as macular edema, glaucoma, cataract and others. The treatment of uveitis underwent a tremendous paradigm shift with the introduction of corticosteroids in to the ophthalmic therapeutic armamentarium.^[6] The recent use of intra-ocularly placed steroids is still being investigated, but has limitations due to local adverse effects, in treatment of bilateral cases and sustained long-term therapy in chronic/recurrent cases. The need for less toxic, effective anti-inflammatory treatment inspired the use of immunosuppressive drugs for ocular inflammatory disease. The treatment for uveitis itself can result in both ocular and systemic complications.^[7] The morbidity associated with the disease is moderately high.

Therefore taking into consideration the vital functions of uveal tract, the hazardous effect it has when inflamed, its puzzling etiopathogenesis and refractoriness in the treatment make a detailed study of incidence, etiology and management; very much necessary and important. With this as the background the present study was done to find out the incidence, etiology, and management protocol of cases of acute anterior uveitis based on the investigations and clinical features.

MATERIALS AND METHODOLOGY

A prospective clinical study was conducted in Department of Ophthalmology, District Headquarter Hospital, Balangir, Odisha between January 2016 to December 2017. Study subjects included all the patients who presented with Anterior Uveitis during the study period in the age group of 10 to 70 years. Cases of anterior uveitis associated with pertaining ocular injuries, corneal ulcer, intraocular surgeries, intermediate, posterior or panuveitis and masquerade syndrome presenting as anterior uveitis were excluded from the present study.

A standard clinical proforma was filled in all cases, which included salient feature in history, visual acuity using Snellens 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 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. Intraocular inflammation was assigned anterior uveitis based on International Uveitis Study Group Criteria. The inflammation was defined as acute if symptoms were present for less than three months, chronic if symptoms were present for three months or more and recurrent if two or more episodes of inflammation separated by a disease free period. Anterior uveitis was defined as granulomatous if large keratotic precipitate nodules at pupillary margin (Koeppe nodules) or nodules on or

within the anterior iris stroma (Bausacca nodules) were present.

A short differential diagnosis was made in case. Subsequently, a tailored laboratory investigation was carried out. Investigations included, total and differential counts, erythrocyte sedimentation rate, urine and stool examination, Mantoux test. Serological test for HIV, syphilis, rheumatoid factor was done in all cases. Radiological investigations included X-ray chest, lumbosacral and knee joints. Other special investigations were considered whenever necessary. Consultation was done with other medical specialties whenever needed.

Final etiological diagnosis was made based on history, clinical features, laboratory investigations and systemic evaluation by other medical specialties. 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.^[8]

All patients were treated medically with topical steroids (prednisolone acetate 1%, difluprednate 0.05%) and topical cycloplegics mydriatics (atropine, cyclopentolate or homatropine). Steroid frequency was titrated according to the severity of uveitis. Appropriate treatment was given when etiology was known. Systemic antimicrobials were administered when infectious agent was found to be the cause. Systemic steroids were used when inflammation was severe and not responding to treatment and patients with macular oedema. Patients with lens induced inflammation were treated surgically. In patients with uveitis associated with visually significant cataract, surgery was done after active inflammation had subsided and IOP reduce. These patients were treated with high doses of topical and systemic steroids if inflammation was not subsiding and then gradually tapered. Cases of anterior uveitis with secondary glaucoma were treated with tablet Acetazolamide 250mg BD/TID and /or Timolol 0.5% eye drops BD along with topical steroids.

The patients were followed up for 6 months (results of upto 6 weeks are presented over here). The complications and response to treatment were recorded.

All data were entered into Microsoft excel sheet and SPSS 20.0 was used for descriptive statistics. ANOVA was used to compare pre and post treatment outcome. Statistical significance was set at $p < 0.05$.

RESULTS

In the present study a total of 113 subjects (56.64 % male and 43.36% female) were enrolled during the study period based on inclusion and exclusion criteria. It was seen that 31-40 age group was most commonly (38.05%) presented with anterior uveitis. Laborers (43.36%) were the most vulnerable population and students were least (4.42%). Most of the cases were unilateral (86.73%),

acute (74.34%) and non-granulomatous (90.27%). In 30.09% cases etiology was idiopathic. Post treatment complications were seen in 39.06% of cases. Many cases presented with multiple complications those were

addressed during the follow up period. A highly significant ($p=0.000$) effect of the treatment was recorded after 2 and 6 weeks.

Table 1: Demographic profile of the anterior uveitis cases.

Criteria		Number of cases	Percentage of cases
Age	11-20	6	5.31
	21-30	23	20.35
	31-40	43	38.05
	41-50	18	15.93
	51-60	12	10.63
	>60	11	9.73
Sex	Male	64	56.64
	Female	49	43.36
Occupation	Laborer	49	43.36
	Officials	24	21.24
	Housewife	23	20.35
	Business man	12	10.63
	Student	5	4.42
Total		113	100

Table 2: Clinical findings and etiology of anterior uveitis cases.

Criteria		Number of cases	Percentage of cases
Laterality distribution	Unilateral	98	86.73
	Bilateral	15	13.27
Clinical presentation	Acute	84	74.34
	Chronic	20	17.70
	Recurrent	9	7.96
Type of inflammation	Non-granulomatous	102	90.27
	Granulomatous	11	9.73
Etiology	Idiopathic	34	30.09
	Phacolytic	22	19.47
	Blunt trauma	15	13.27
	Herpes	18	15.94
	Tuberculosis	7	6.19
	Septic focus	4	3.54
	Iridocyclitis with arthritis	8	7.08
	Leprosy	3	2.65
	Inflammatory bowel disease	2	1.77

Table 3: Treatment regimen used and complications faced in the anterior uveitis cases.

Type of Treatment Given	Number of cases	Percentage of cases
Topical steroids and cycloplegics mydiatics	113	100
Periocular steroids	10	8.45
Systemic steroids	16	14.16
Anti- glaucoma	44	12.39
Anti-tubercular	7	6.19
Anti-viral	18	15.93
Anti-leprosy	3	2.66
Antibiotics	23	20.35
Cataract surgery	22	19.47
Complications Faced in Relation to the Eyes Given Treatment	Number of eyes involved	Percentage of eyes involved
No complications	78	60.94
Persistent posterior synechiae	35	30.97
cataract	22	17.19
Secondary glaucoma	18	14.06
Iris atrophy	8	6.25

Table 4: Visual acuity before and after treatment.

Sl No.	Visual Acuity	Before treatment		2 weeks after treatment		6 weeks after treatment		Significance (ANOVA)
		No. of eyes	Percentage	No. of eyes	Percentage	No. of eyes	Percentage	
1	PL+PR+	12	9.4	7	5.5	6	4.7	F=33.408 (p=0.000) Tukey's HSD: highly significant (p=0.000) for before treatment V/S both 2 & 6 weeks after treatment and also between 2 weeks after treatment V/S 6 weeks after treatment
2	<6/60	16	12.5	10	7.8	4	3.1	
3	6/60	11	8.6	8	6.2	3	2.3	
4	6/36	28	21.9	13	10.2	11	8.6	
5	6/24	14	10.9	17	13.3	6	4.7	
6	6/18	18	14.1	17	13.3	12	9.4	
7	6/12	16	12.5	23	18	14	10.9	
8	6/9	13	10.2	20	15.6	37	28.9	
9	6/6	0	0	13	10.2	35	27.3	

DISCUSSION

In the present study done in the Department of Ophthalmology, District Headquarter Hospital, Balangir, Odisha between January 2016 to December 2017; it was observed that anterior uveitis was high in the age group 21-30 (20.35) and 31-40 (38.05) and least above the age of 60 years. This finding is in accordance with study by Rathinam et al.^[2]; who have reported 83.3% in the age group of 17-59 years. Idiopathic anterior uveitis was the commonest cause which can be explained by highly antigenicity found in this group of population. Alejandro Rodriguez et al.^[9] reported 35% incidence in the age group of 31-40 years is in accordance to our study but in their study it second most vulnerable group was 61-70 years which is contradictory to our study. It was observed in the present study that males were more affected than females. This may be because men tend to seek medical attention more than women (limitation of a hospital based study). Socio-economic habits may also put male patients at greater risk of development of anterior uveitis. This trend is in accordance with previous studies by Rathinam et al.^[2] (61.3% male & 38.7% female) and very much contradicting to results of Alejandro Rodriguez et al.^[9] (38.9% male and 61.1% female). Majority of patients were laborers and most common cause among them was blunt trauma. This may be due to their occupational exposure to vulnerable situations.

The most common clinical presentation was acute type followed by chronic and recurrent. This comparable to study by Rathinam et al.^[2] who reported acute type in 71.9% followed by chronic type in 24.3% and recurrent type in 3.8%. Results of the present study were comparable to Rathinam et al.^[2] and Alejandro Rodriguez et al.^[9] for type of inflammation also.

In the present study idiopathic was the most common cause of anterior uveitis followed by phacolytic etiology. Although herpes accounted for 15.94% of the cases, but is not the most common cause but is the most common infectious cause. Tubercular anterior uveitis was seen in 6.19% of patients which is comparable to Rathinam et al.^[2] (4%) and Singh et al.^[10] (7.9%), whereas there is no data in Henderly et al.^[11] study. This may be because

other study was conducted in referral centre where usually chronic and recurrent ones were referred from primary and secondary centres; whereas present study was done in a general ophthalmic clinic and most people were from nearby villages.

In the present study uveitis was found to be associated with diabetes mellitus in 20 patients (17.7%) and hypertension in 9 (7.96%) patients. All those who had diabetes mellitus were above 50 years of age. Out of 20 patients 12 had developed chronic uveitis. In a study of uveitis presenting in elderly it was noted that diabetes should be considered as a risk factor for development of uveitis.

Visual acuity was 6/12 or worse in majority (89.8%) of the eyes at presentation. Following treatment most eyes regained visual acuity of 6/9 or better (56.25%). In few eyes with complicated cataract or posterior synechiae visual acuity improved only marginally. There was a statistically significant response to treatment (p=0.000). In most of the cases no complications was seen (60.94% of eyes).

Appropriate line of treatment was given to all the patients as deemed necessary according to their conditions and follow up improvement or complications. Cataract extraction with posterior chamber intraocular lens implantation was done in all cases of phacolytic anterior uveitis. Majority of patients responded well to the medical line of treatment. The above pattern changes because of a multitude of factors including ethnic, geographic and environmental factors in addition to changing factors to changing pattern of uveitis over the years.

To conclude it can be made that acute anterior uveitis is mostly involved in middle aged persons and in majority of cases it responded well to good visual outcome after adequate treatment. India presents unique problems because of varying socio-economic, demographic and morbidity patterns. The prevalence and severity of diseases in economically deprived population vary from those in the rest of the world because of lack of good primary health care, poor affordability and poor

compliance. Hence further research is required with sufficient number of cases to reveal definite etiology, management and to decrease the morbidity of conditions associated with it.

REFERENCES

1. Rathiman SR. CME Series. All india ophthalmological society. Uveitis made simple work up and management, 20: 1-42.
2. Rathiman SR, Namperumalsamy P. global variation and pattern changes in epidemiology of Uveitis. *Indian J Ophthalmology*, 2007; 55(3): 173-83.
3. Yanoff M, Duker JS, Augsburger JJ, Azar DT, Diamond GR, Dutton JJ et al. *Ophthalmology*. 2nd Ed. Vol 2. Missouri (MO): Mosby, 2004; 1105-12.
4. Alio J, Ben Ezra D. priority features of intraocular inflammation. *Highlights of Ophthalmology*, 2002; 30(3):1-2.
5. Martin TM, Smith JR, Rosenbaum JT. Anterior uveitis: Current concepts of pathogenesis and interactions with the spondyloarthropathies. *Current opinion Rheumatology*, 2002; 14(4): 0337-41.
6. Sangwan VS. Treatment of Uveitis: Beyond steroids. *Indian J Ophthalmol*, 2010; 58: 1-2.
7. Venkatraman A, Rathiman SR. A pre and post treatment evaluation of vision related quality of life in uveitis. *Indian J Ophthalmol*, 2008; 56: 307-12.
8. Nussenblatt RB, Whitcup SM. *Uveitis fundamentals and clinical practice*. 3rd Ed. Pennsylvania (PA): Mosby, 2004; 273-86.
9. Rodriguez A, Calonge M, Pedroza-Seres M, Akova YA, Messemer EM, D'Amico DJ et al. Referral patterns of uveitis in a tertiary care centre. *Arch Ophthalmology*, 1996; 114: 593-99.
10. Singh R, Gupta V, Gupta A. Pattern of Uveitis in a referral eye clinic in North India. *Indian J Ophthalmol*, 2004; 52: 121-25.
11. Henderley DE, Genstler AJ, Smith RE, Rao N. Changing patterns of Uveitis. *Am J Ophthalmol*, 1987; 103(2): 131-36.