A Clinical Study of Anterior Uveitis at Regional Eye Hospital

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Abstract
To study clinical presentation, complications, cause, accurate diagnosis and response to treatment and prognosis in terms of visual outcome in cases of anterior uveitis. It is clinical prospective study of 50 patients clinically presenting with anterior uveitis was done. All patients underwent a thorough systemic and ocular examination. Tailored laboratory investigations were done in each case to facilitate diagnosis. Patients were put on treatment and were followed up at regular intervals over a period of 6 months. Aetiology remained undetermined in most cases. Most common cause in present study was blunt trauma followed by phacolytic anterior uveitis. Most common complications were persistent posterior synechiae and complicated cataract. Majority of the patients had acute presentation. 90% of the patients presented with unilateral ocular involvement, among them right eye involvement was slightly more than the left eye involvement in the ratio of 5:4. Both eye involvement was seen in 10% of the patients, all of them had either chronic or recurrent disease and four of them had identifiable aetiology. Nongranulomatous inflammation was the commonest form accounting for 90% of the cases. Granulomatous inflammation was seen only in chronic cases excepting one patient who had recurrent anterior uveitis. Majority of patients responded well to treatment. 70.91% of the patients regained visual acuity of 6/9 or better. Early diagnosis and treatment of patients results in good visual prognosis and is the key in management of anterior uveitis.

INTRODUCTION

Uveitis is one of the most common forms of intraocular inflammation 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. 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 nongranulomatous 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%) compared to females (38.6%)[1,2].

The precise cause of anterior uveitis is often obscure and the correct diagnosis often challenging. The cause of inflammation might be infections agent or trauma, but in most cases the underlying mechanism appears to be autoimmune in nature[3]. In order to enhance understanding and management of ocular inflammation, International ocular Inflammation Society (IOIS) has been founded. Anterior uveitis is most common form of uveitis and accounts for an annual incidence rate of about 17 cases per 1,00,000 populations[4,5]. The anterior uveitis can be categorized as iritis, anterior cyclitis and iridocyclitis. It often causes a painful red eye. Patients with anterior uveitis complain of redness, photophobia, tearing and blurred 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 for uveitis itself can result in both ocular and systemic complications[6]. The morbidity associated with the disease is moderately high. We studied clinical presentation, complications, cause, accurate diagnosis and response to treatment and prognosis in terms of visual outcome in cases of anterior uveitis.

MATERIALS AND METHODS

A prospective clinical study was conducted. The material for this study included, 50 patients of all age groups, attending outpatient department, Department of Ophthalmology at Regional Eye Hospital, Warangal, between 2021 to 2022 with signs and symptoms of anterior uveitis.

The anterior uveitis following penetrating ocular injuries, corneal ulcer, intraocular surgeries and if associated with intermediate, posterior or panuveitis were excluded from this study. Masquerade syndromes presenting as anterior uveitis has also been excluded.

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 aetiology. 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. 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 granulomatous if large keratic precipitates, nodules at pupillary margin (Koeppe nodules) or nodules on or within the anterior iris stroma (Busacca nodules) were present.

A short differential diagnosis was made in each 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 tests for, syphilis, HIV, rheumatoid factor was done in all cases. Radiological investigations included x-ray of chest, lumbosacral and knee joints. Other special investigations were considered whenever necessary. Consultation was done with other medical specialities, whenever needed.

Final aetiological 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 aetiology when it was not associated with HLA-B27 haplotype and neither with defined clinical syndromes nor with definitive aetiology.

All patients were treated medically with topical steroids (prednisolone acetate 1%) and topical cycloplegic mydriatics (atropine or homatropine). Steroids frequency was titrated according to severity of uveitis. Systemic steroids were used when inflammation was severe, not responding to treatment and patients with macularoedema.

Patients with lens induced inflammation where treated surgically. In patients with uveitis associated with visually significant cataract, cataract surgery was done 3 months after active inflammation had subsided. These patients were given with high doses

of topical and systemic steroids 1 week prior to surgery and then gradually tapered.

Cases of anterior uveitis with secondary glaucoma were treated with T. Acetazolamide 250mg BD/TID and/or Timolol 0.5 % eye/drops BD along with topical steroids. Each patient was followed up for 6 months. The complications were noted and the response to treatment was recorded and evaluated in each patient. Appropriate treatment was given whenever etiology was known. Systemic antimicrobials were administered when infectious agent was found to be the cause. Systemic steroids were used when inflammation was severe, not responding to treatment and patients with macularoedema.

Patients with lens induced inflammation where treated surgically. In patients with uveitis associated with visually significant cataract, cataract surgery was done 3 months after active inflammation had subsided. These patients were given with high doses of topical and systemic steroids 1 week prior to surgery and then gradually tapered.

RESULTS AND DISCUSSIONS

The present study was conducted in the Department of Ophthalmology, Regional Eye Hospital, Warangal during 2021 to May 2022, 50 patients of all age group were studied and during the study following observations were made.

In present study anterior uveitis accounted to 40% in 20-30 years age group, 24% in 31-40 years age, 16% in 41-50 years age, 10% in 51-60 years age, 6% in 61-70 years age and 4% in 71-80 years age group. It was seen most commonly in 20-40 year age group, accounting for 64%. It was less common in patients over 60 years (10%). Males accounted 56% and females accounted 44%. Hence males were affected more than females. Incidence of anterior uveitis was highest amongst the labourer (48%), followed by officials (22%), then housewives (20%) and less common among businessman (6%) and students (4%).

In the present study unilateral involvement was seen in 90% of cases and bilateral involvement in 10% of cases. Unilateral involvement was more than bilateral involvement. It was observed that most common presentation was acute anterior uveitis, accounting for 76%, then chronic 18% and only 6% of the patients had recurrent anterior uveitis. 45 (90%) patients had non granulomatous inflammation and in 5 (10%) patients it was granulomatous inflammation. Thus nongranulomatous inflammation was more common than granulomatous inflammation.

In this study etiology remain undetermined in 21 (42%) cases and specific diagnosis was reached in 29 (58%) cases. Anterior uveitis following blunt trauma was seen in 10 cases (20%) and phacolytic uveitis was detected in 6 cases (12%). Herpes zoster was responsible in 5 (10%) cases and tuberculosis in 3 (6%) cases. Iridocyclitis associated with arthritis, Septic focus, Fuchs' heterochromic iridocyclitis, leprosy and inflammatory bowel disease was observed in 1 case (2%) each.

The above table shows the visual acuity observed in 55 eyes before and after treatment. Before treatment 4 eyes had visual acuity PL+PR+(7.27%), 6 eyes had less than 6/60(10.91%),9 eyes 6/60(16.36%),5 eyes 6/36(9.09%),6 eyes 6/24(10.91%), 7eyes 6/18(12.73%),11 eyes 6/12(20%),6 eyes 6/9(10.91%) and 1 eye 6/6(1.82%). Following treatment 70.91% of patients regained visual acuity of 6/9 or better. In a few patients visual acuity improved only marginally because of associated complications, such as complicated cataract and secondary glaucoma commonly seen in chronic and recurrent cases.

In the present study all the 50 patients (100%) were treated with topical steroids and cycloplegics-mydriatics. Periocular steroid was given in 9 patients (18%) of which one had bilateral chronic anterior uveitis and received injections to both the eyes. Systemic steroids were used in 18 patients (36%), which included 6 patients of phacolytic uveitis, 5 herpetic uveitis patients, 3 patients of TB, 2 idiopathic and one each in leprosy and psoriatic patient. 13 patients (26%) received antiglaucoma therapy. 3 patients (6%) received anti TB drugs, antivirals were considered in 5 cases (10%) and all of them had herpetic anterior uveitis. One patient who had already been started on antileprosy therapy was continued. Systemic antibiotics were given in 13 patients (26%) (7 underwent cataract extraction, 4 chronic idiopathic cases, one each in inflammatory bowel disease and septic arthritis). Majority of patients responded well to medical line of treatment. A case of visually significant complicated cataract underwent synechiaeotomy and extracapsular cataract extraction with posterior chamber intraocular lens implantation. In the present study complications were observed in 18 eyes (32.72%). Most common complication was persistent posterior synechiae seen in 13 eyes (23.64%), cataract in 8 eyes (14.54%), secondary glaucoma in 7 eyes (12.73%) followed by iris atrophy in 3 eyes (5.45%) and macular oedema in 1 eye (1.82%). Most of the eyes which had complications had more than one complication.

The present study was conducted in the Department of Ophthalmology, Regional Eye Hospital, Warangal during the 2021 to 2022 and fifty cases of anterior uveitis were studied. The incidence was found to be high between 20-40 years of age (64%) and less common over sixty years (10%). Idiopathic

Table 1: Demographic details in present study

Age (yrs)	Number	Percentage
20-30	20	40
31-40	12	24
41-50	8	16
51-60	5	10
61-70	3	6
71-80	2	4
Gender		
Male	28	56
Female	22	44
Occupation		
Labourer	24	48
Officials	11	22
Housewives	10	20
Business	3	6
Student	2	4

Table 2: Presentation of visual acuity

Laterality	Number	Percentage
Unilateral	45	90
Bilateral	5	10
Clinical presentation		
Acute	38	76
Chronic	9	18
Recurrent	3	6
Type of inflammation		
Nongranulomatous	45	90
Granulomatous	5	10

Table 3: Aetiological distribution

Aetiology	Number	Percentage
Idiopathic	21	42
Blunt trauma	10	20
Phacolytic	6	12
Herpes zoster	5	10
Tuberculosis	3	6
Septic focus	1	2
Iridocyclitis associated with arthritis	1	2
Fuchs' heterochromic iridocyclitis	1	2
Leprosy	1	2
Inflammatory bowel disease	1	2

Table 4: Visual acuity before and after treatment

Visual acuity	Before treatment		After treatment	
	No. of eyes	Percentage	No. of eyes	Percentage
PL + PR +	4	7.27	-	-
< 6/60	6	10.91	-	-
6/60	9	16.36	1	1.82
6/36	5	9.0 9	3	5.45
6/24	6	10.91	2	3.64
6/18	7	12.73	4	7.27
6/12	11	20	6	10.91
6/9	6	10.91	14	25.46
6/6	1	1.8 2	25	45.45

Table 5:Treatment given in present study

Type of treatment given	Number of cases	Percentage
Topical steroids and cycloplegics-mydriatics	50	100
Periocular steroids	9	18
Systemic steroids	18	36
Anti glaucoma	13	26
Anti tubercular	3	6
Anti viral	5	10
Anti leprosy	1	2
Antibiotics	13	26
Cataract surgery	7	14

Table 6: Complications in present study

Complications	No. of eyes	Percentage
No complications	23	41.82
Persistent posterior synechiae	13	23.64
Cataract	8	14.54
Secondary glaucoma	7	12.73
Iris atrophy	3	5.45
Macular oedema	1	1.82

Table 7: Comparison of aetiological factors of present study with other studies

Aetiology	Present study (n=50)	Rathinam et al[1] (n=5028)	Singh et al[7] (n=607)
Idiopathic	42	44.6	61. 3
Blunt trauma	20	7.7	-
Phacolytic	12	3.5	-
Herpes zoster	10	8.6	1.8
Tuberculosis	6	4	7.9
Septic focus	2	-	-
Iridocyclitis with Arthritis	2	7.1	-
Fuchs' heterochromic Iridocyclitis	2	8.4	5.1
Leprosy	2	2.1	0.8
IBD	2	-	-

anterior uveitis was the commonest cause which can be explained by high antigenicity found in this age group. In older age group anterior uveitis was usually of phacolytic origin. in our study, consistent with studies by R Singh[7] and Zheng [8]. In contrast, other studies[9-10-11] found toxoplasmosis as the leading cause.

It was observed that males were affected more (56%) compared to females (44%). This may be because men tend to seek medical attention more often than women and socio-economic habits may put male patients at a greater risk for development of anterior uveitis. In Rathinam[1] .study 61.3% were males and 38.7% were females. Alezandro Rodriguez[12] reported 38.9% male and 61.1% female involvement in their study.

Majority of patients were labourers (46%). Most common cause of anterior uveitis in labourers was blunt trauma. This may be due to occupational exposure. Majority of patients came with unilateral presentation (90%). This finding was comparable with that of Rathinam[1] study (85.3%). However there was no significant predilection for either the right or left eye.

The most common presentation was acute iridocyclitis (76%) than chronic (18%) and recurrent iridocyclitis (6%). Rathinam[1] reported 71.9% acute, 24.3% chronic and 3.8% recurrent. The findings are comparable in both the studies.

In this study 45 patients (90%) had non granulomatous inflammation and in 5 patients (10%) it was granulomatous. Findings are comparable with previous studies. Out of 5 granulomatous inflammation 4 were chronic and 1 patient had recurrent presentation. Granulomatous type of inflammation was observed in three patients of tuberculosis, one patient of herpes and one patient of leprosy.

In the present study blunt trauma (20%) was the most common cause of anterior uveitis followed by phacolytic (12%) aetiology. Although herpes zoster accounted for 10% of the cases, which is comparable with other two studies where it stood first, is not the most common in present study. However it was the most common infectious cause in our study. 6% of the patients had tubercular anterior uveitis which is comparable with Rathinam[1] and Singh[8] study. This

difference may be because all other studies were conducted at referral centers, where cases usually chronic and recurrent ones, are referred from primary and secondary centers. Whereas present study was done in a general ophthalmic clinic and most people were from villages.

In present study, uveitis was found to be associated with diabetes mellitus in five patients (10%) and hypertension in two (4%) patients. All those who had diabetes mellitus were above 50 years of age. Three out of five diabetes mellitus patients had chronic uveitis. In a study of uveitis presenting in elderly it was noted that diabetes should probably be considered a risk factor for uveitis development[13].

Visual acuity was 6/12 or worse in majority (87.3%) of eyes at presentation. Following treatment most eyes regained visual acuity of 6/9 or better (70.91%). In few eyes with complicated cataract or macular edema, visual acuity improved only marginally. No complications were seen in 37 eyes (67.27%). Complications were commonly noted in chronic and recurrent cases. Most common complication observed was persistent posterior synechiae in 13 eyes (23.64%), cataract in 8 eyes (14.54%). Secondary glaucoma was seen in 7 eyes (12.73%), which included 2 herpetic eyes, both the eyes in a psoriatic patient, two idiopathic and one eye in TB anterior uveitis. Iris atrophy was seen in 3 eyes (5.45%), two of them in a leprosy patient and the third was in a herpetic patient and macular edema was seen in 1 eye (1.82%).

A short differential diagnosis was made in each case after complete ocular and systemic examination with tailored approach to the laboratory investigations. All patients were treated medically by topical steroids and cycloplegics-mydriatics. Treatment with antibiotics, antitubercular drugs, antileprosy and antiviral drugs were considered in appropriate cases. Periocular and systemic steroids were used in cases with severe inflammation which was not controlled by topical steroids. A case of visually significant complicated cataract underwent synechiaeotomy and extracapsular cataract extraction with posterior chamber intraocular lens implantation. Cataract extraction with posterior chamber intraocular lens implantation was done in all

cases of phacolytic anterior uveitis. In all cases surgery was done under the cover of systemic steroids. Majority of the patients responded well to the medical line of treatment.

CONCLUSION

The challenge in anterior uveitis is to develop tailored laboratory investigations that will facilitate a diagnosis. This can be done by first considering the probable diagnosis based on the patent profile and then performing tailored laboratory evaluation. A thorough systemic examination should be done to rule out any systemic disease, as it may be an early manifestation of systemic disease. Majority of anterior uveitis patients respond to medical line of treatment. Chronicity increases the risk of complications as does delay in receiving appropriate therapy, but early recognition and treatment of patients who are prone to recurrences can improve their outcome. Early diagnosis and treatment of patients results in good visual prognosis and is the key in management of anterior uveitis.

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