Original Research Paper

Ophthalmology

EVALUATION OF PATTERN OF UVEITIS IN PATIENTS ATTENDING A TERTIARY EYE CARE CENTRE; A PROSPECTIVE & INTERVENTIONAL STUDY

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ABSTRACT **Purpose:** Uveitis comprises a daunting number of cases of 'painful red eye'. Evaluation of prevalent anatomical subtypes, visual loss associated and sequelae makes management steadfast, aids prevention of devastating complications. **Method:** 75 patients aged between 18-60 years underwent a detailed clinical history taking and ocular examination, with careful recording of Patient age, sex, presenting and past history, visual acuity testing, slit lamp examination, intraocular pressure measurement, posterior pole biomicroscopy and indirect ophthalmoscopy. The Standardised Uveitis Nomenclature (SUN) was used to classify patients into anterior, intermediate, posterior uveitis and panuveitis. Patient were also grouped on the basis of disease chronicity (acute, subacute, chronic) and pathology (granulomatous and non granulomatous uveitis). After timely initiation of standard treatment accordingly (topical steroids, PST and Oral steroids), patients were followed up weekly under above mentioned criteria and results were documented. **Results:** A predominance of male gender (57%), unilaterality (81%) and second-third decade age group was observed among the cases. Anterior uveitis (77%) was the most prevalent anatomical subtype. Almost 100% patients of posterior and panuveitis suffered visual loss which was directly corelated with cases of chronic uveitis (51%). Complicated Cataract (63%) and cystoid macular oedema (9%) were the commonest complications observed. **Conclusion:** Majority (32%) patients fell in the 20-30 year age group thus necessitating early diagnosis, rapid initiation of treatment and complication prevention in the youth population. 51% patients of chronic uveitis patients suffered visual loss. Chronicity being directly proportional to vision loss points towards the need for fastidious control of disease activity. Chronic and granulomatous uveitis may be the silent carrier of systemic illnesses of which the patient remains unaware unless investigated due to Uveitis. Thorough investigations are thus important in granulomatous and chronic cases.

KEYWORDS :

INTRODUCTION

Uveitis is described as a group of intraocular inflammatory condition involving parts of Uvea.It is a complex and multifactorial disease which is one of the most prominent causes of painful blind eye. It is often underdiagnosed or misdiagnosed as other infective or glaucomatous causes such as infective conjunctivitis, allergic conjunctivitis, acute congestive glaucoma etc. The prevalence of uveitis is estimated to be 730 per 100 000 [1] in India which is significantly higher than other countries. Uveitis predominantly affecting patients in the working age group and is the third largest cause of blindness in India.[21] With such high prevalence in India, it becomes essential to have a profound insight about the course of disease, the parameters affecting it and plausible plan of action of treatment. Uveitis being an ophthalmic emergency requires a thorough examination by an ophthalmologist and urgent treatment to control the inflammation.

A variable degree of visual impairment is associated with uveitis and complications range from complicated cataracts to retinal detachment, macular scars etc. Understanding of these patterns helps in providing expeditious interventions and appropriate management of the complications, thus, minimising visual deterioration.

Corticosteroids (systemic, topical, periocular etc) are the mainstay of treatment and as newer diagnostic techniques are being innovated, a number of other agents like immunomodulators, hormone analogues have come into trend. Paucity of studies on uveitis in central india makes this study furthermore crucial. Similar studies have been conducted all over India except for regions of Madhya Pradesh. This study can fill up the lacunae in our knowledge of uveitic patterns. The aims of this prospective, interventional study are to investigate the degree, duration, and causes of visual loss in uveitis patients,. The duration of uveitis associated visual loss has not previously been investigated. We aim to fill up this lacunae in our knowledge of uveitis through this study which shall be highly beneficial by not only identifying those patients with permanent visual loss but also providing an understanding about how early identification and management of the disease can prevent visual impairment and associated complications. The purpose of this study is to understand the patterns in the clinical presentation of uveitis, a disease with acknowledgeable prevalence, dire complications but idiopathy as the major aetiology.

AIM:
To evaluate the pattern of Uveitis, Degree of associated visual impairment and complications observed in patients with uveitis
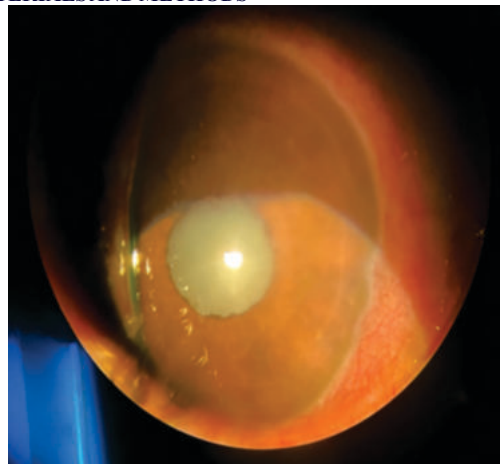
MATERIALS AND METHODS

Figure 1. Ciliary Injection In Anterior Uveitis
Figure 1. Depicting Severe Ciliary Injection In A Case Of Anterior Uveitis In A Patient Visiting Eye OPD Of GRMC Gwalior In May 2020.

This study utilised the International Uveitis Study Group (IUSG) and Standard Uveitis Nomenclature (SUN) classification as the primary tool of classifications and Grading.The case study Included 75 patients aged between 18 and 60 years, visiting the department of ophthalmology, G.R.M.C from Januart 2020 to June 2021 Informed

consent was taken from all the patients. Pre designed proforma was used to record demographic data and relevant examination including a detailed history, distant vision , examination of anterior and posterior segment of eye. Inclusion criteria were Age group 18- 60 years and systemic association with Diabetes , Hypertension, , HIV positivity, Sarcoidosis, Cytomegalovirus (CMV) Infection. However, those who Refused to participate, were under 18 or over 60 years of age and had co existing ocular disorders like senile cataract were excluded from study. All 75 patients underwent a detailed clinical history and ocular examination including Patient details, age/ sex, Clinical history**,** Visual acuity**,** Slit lamp examination**,** Intraocular pressure (IOP) measurement**,** Posterior pole biomicroscopy, and indirect ophthalmoscopy. The anatomical site of inflammation was used to classify the uveitis according to the Standard Uveitis nomenclature. For the purpose of this study, visual loss was defined as best corrected vision of worse than 6/18. Follow Up visits was held as per the disease severity.For severe disease, follow up visits were held weekly**.** Complete clinical assessment was done on each visit
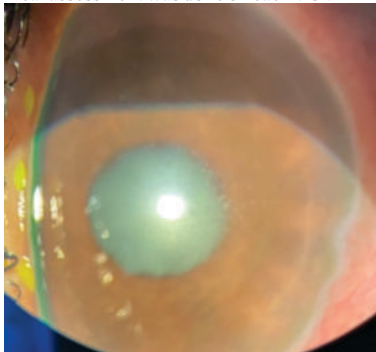

Figure 2. Fine Keratic Precipitates
Figure 2. Depicting Fine, Non Pigmented Keratic Precipitates In A Case Of Acute Anterior Uveitis In A Patient Visiting Eye OPD Of GRMC Gwalior In September 2020.

Figure 3. Slit Lamp Biomicroscopy
Figure 3 shows a uveitis patient undergoing slit lamp examination at madhav dispensary GRMC Gwalior in November 2020
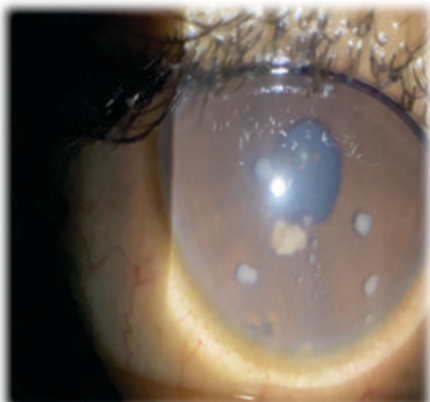

Figure 4. Multiple Mutton Fat Keratic Precipitates In Granulomatous Uveitis As Seen On Slit Lamp Examination Of A Chronic Uveitis Patient In GRMC Gwalior In January 2022

OBSERVATIONS AND RESULTS

Seventy five patients who visited the eye department of Gajra Raja medical college between January 2020 and June 2021 were recruited into our study. The patients presented to us from different parts of Madhya Pradesh, majority of them coming from Gwalior and surrounding smaller villages.

Table 1: Demographics : Age Distribution

AGE GROUP IN YEARS	NUMBER	PERCENTAGE
20 or less	6	8%
21-30	18	24%
31-40	18	24%
41-50	17	22.67%
51-60	16	21.33%
TOTAL	75	100%

Evaluation of age distribution revealed 6 patients in the age group of 20 years or less. 18 (24%) patients each belonged to the age group between 21-30 years and 31-40 years. 17 patients (22.67%) fell under 41-50 yrs age group and 16 patients (21.33%) in 41-50 years age group. This suggests an almost equal age distribution among the all the age groups with a slight preponderance in the young age group in the study population. Mean age of presentation was calculated as 39.64 years (S.D=12.28)

Table 2: Demographics: Gender Distribution

GENDER	NUMBER	PERCENTAGE
MALE	43	57 %
FEMALE	32	43%
TOTAL	75	100%

There were 43 males (57%) and 32 females (43%) in the study forming a Male : Female Predisposition ratio as **1.3:1.**

Table 3 : Laterality

LATERALITY	NUMBER	PERCENTAGE
UNILATERAL	61	81%
BILATERAL	14	19%
TOTAL	75	100%

At the time of presentation, 61 patients (81%) had clinical findings in a single eye while 14 patients (19%) presented with bilateral uveitis.

Table 4 : Course Of Disease

COURSE	NUMBER	PERCENTAGE
ACUTE	37	49%
CHRONIC	31	41%
RECURRENT	7	10%
TOTAL	75	100%

37 patients (49%) suffered from acute uveitis, 31 patients (41%) had chronic uveitis while 7 (10%) had recurrent uveitis. This established the known preponderance of acute uveitis over chronic and recurrent forms.

Table 5: Patterns Of Granulomatous Vs Non Granulomatous Uveitis

SUBTYPE	NUMBER	PERCENTAGE
GRANULOMATOUS	16	21%
NON GRANULOMATOUS	59	79%
TOTAL	75	100%

A Total of 16 patients (21%) presented with mutton fat KPs, broad based synechiae and other features of granulomatous uveitis. The Predominant subtype in our study, thus, was non granulomatous uveitis with 59 patients (79%).

Table 6 : Anatomic Location Of Uveitis

LOCATION	NUMBER	PERCENTAGE
ANTERIOR	58	77%
INTERMEDIATE	9	12%
POSTERIOR	5	7%
PANUVEITIS	3	4%
TOTAL	75	100%

Out of 75 patients under study, anterior uveitis was diagnosed in 58 patients (77%), followed by Intermediate uveitis found in 9 patients (12%), posterior uveitis found in 5 patients (7%) and panuveitis found in 3 (4%) patients
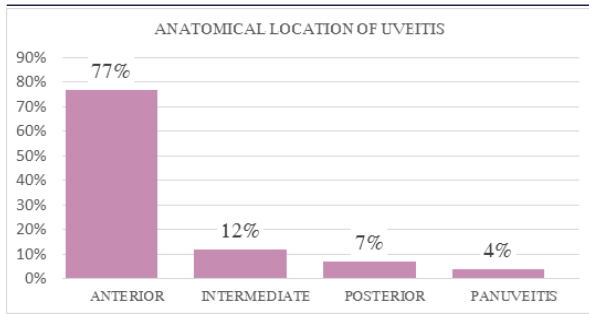
Table 7: Course Vs Anatomic Location Of Uveitis

	ACUTE	CHRONIC	RECURRENT	TOTAL
ANTERIOR	34	17	7	58
INTERMEDIATE	1	8		9
POSTERIOR	1	4		5
PANUVEITIS	1	2		3
TOTAL	37	31	7	75

Out of the 58 patients with anterior uveitis, 34 patients (59%) suffered an acute course of disease while a chronic course of disease was seen in 17 patients (29%) and recurrent course in 7 patients(12%).

Intermediate uveitis displayed a more chronic course with 8 (89%) patients and only 1(11%) patient with acute course.

Out of 5 posterior uveitis patients, 4 (80%) suffered a chronic course and 1 (20%) had acute posterior uveitis 2(66.66%) of the 3 Panuveitis patients had a chronic course while one (33.33%) recovered after an acute attack.

ASSOCIATION OF UVEITIS AND TUBERCULOSIS
Table 8.1. Montoux Test Results

TOTAL PATIENTS	75	100%
MONTAUX POSITIVE	17	22.67%
MONTAUX NEGATIVE	58	77.33%

Table 8.2 Radiology Results

TOTAL PATIENTS	75	100%
RADIOLOGICAL FINDINGS S/O TUBERCULOSIS	7	9.33%
NORMAL	68	90.67%

Table 8.3 Non Granulomatous Vs Granulomatous Uveitis In Radiologically Positive Patients

NON GRANULOMATOUS	2	28.57%
GRANULOMATOUS UVEITIS	5	71.43 %
TOTAL	7	100%

Routine investigations were done for all the patients in the study as indicated in material and methodology. When results of montaux test and radiological findings were isolated, it was found that 17 (22.67%) out of 75 patients were Montaux test positive. When patients with radiological findings suggestive of tuberculosis were evaluated, we discovered that all of them tested positive for montaux test and formed 9.33% (7 in number) of the total patients.

Among the radiologically suggestive cases, 5 (71.43%) of them showed granulomatous anterior uveitis while 2 of them (28.57%) suffered from acute non granulomatous anterior uveitis.

Table 9: Complications Of Uveitis

COMPLICATION	NUMBER	PERCENTAGE
COMPLICATED CATARACT	20	63%
CYSTOID MACULAR OEDEMA	3	9%
CME + CATARACT	2	6%
MACULAR SCAR	1	3%
MACULAR DEGENERATION/PATHOLOGY	1	3%
GLAUCOMA	2	6.5%
RETINAL DETACHMENT	0	-
VITRITIS	0	-
OPTIC NEUROPATHY	1	3%

OPTIC DISC OEDEMA	0	-
CHOROIDAL DETACHMENT	0	-
HYPOTONY	2	6.5%
TOTAL	32	100%

In our study, 32 (47%) out of 75 patients developed complications of uveitis, complicated cataract being the commonest one noted in 20 patients(63% of 32).and it lead to severe visual impairment in 1 case (14.3%) with moderate visual impairment in rest of 6 cases (85.7%). Complicated cataract was seconded by 3 cases (9%) of Cystoid macular oedema(CME) and 2 cases (6%)of combined CME and Complicated cataract. Two cases of each Glaucoma(2) and ocular hypotony(2) were noted and isolated cases of macular scar (1), macular degeneration (1) and optic neuropathy were seen (1)
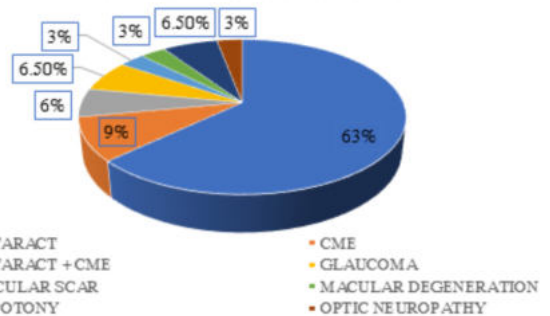

Table 10 : Causes Vs Degree Of Visual Impairment (Final Visual Acuity In Affected Eye) As Per The ICD 10 Criteria

| CAUSES	<3/60 (BLINDNESS)	3/60- 6/60 (SEVERE VISUAL IMPAIRMENT)	MORE THAN OR EQUAL TO 6/60 - 6/18 (MODERATE VISUAL IMPAIRMENT)	TOTAL NUMBER OF COMPLICATED CASES WITH VISUAL IMPAIRMENT
COMPLICATED CATARACT	1		12	13
CYSTOID MACULAR OEDEMA	1	1	1	3
CATARACT + CMO			2	2
GLAUCOMA			2	2
HYPOTONY		2		2
OPTIC NEUROPATHY	1			1
MACULAR SCAR	1			1
MACULAR DEGENERATION	1			1

As per our study, Mostly Complicated Cataracts lead to moderate visual impairment (92%). Patients of Cystoid macular oedema experienced entire spectrum of visual impairment. The other causes of moderate visual impairment included combined Complicated cataract and Cystoid macular oedema(2 cases) and glaucoma (1 case) . Patient (1 case) with hypotony suffered severe visual impairment while patient with optic neuropathy (1 case) resulted in blindness.

Table 11 : Causes Of Visual Impairment (BCVA <6/18   IN AFFECTED EYE)

CAUSES	NUMBER	PERCENTAGE
COMPLICATED CATARACT	16	57.14%
CYSTOID MACULAR OEDEMA(CMO)	3	10.71%

CATARACT + CMO	2	7.14%
GLAUCOMA	2	7.14%
HYPOTONY	2	7.14%
OPTIC NEUROPATHY	1	3.57%
MACULAR PATHOLOGY	1	3.57%
MACULAR SCAR	1	3.57%
TOTAL	28	100%

Causes Of Visual Impairment

- Cataract
- Cataract + CMO
- CMO
- Glaucoma
- Hypotony
- Optic neuropathy
- Macular Pathology
- Macular scar
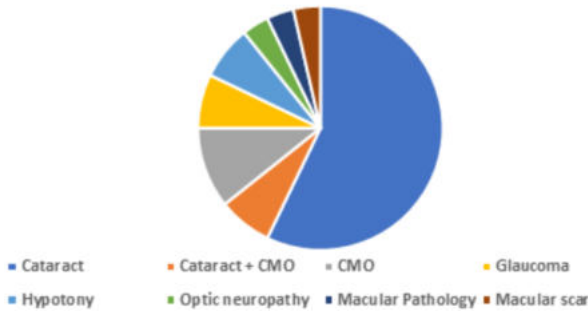
Durrani and Rothava[25] et al studies found CME to be the commonest cause of visual impairment as opposed to complicated cataract in our study.

A total of 28 patients suffered visual impairment (Visual acuity <6/18 in our study) out of which a total of 16 patients(57.14%) had Complicated cataract as the cause of their visual impairment. 3 patients developed cystoid macular oedema forming 10.71% of the patients with visual impairment. Next to this, there were 2 cases each of cataract, glaucoma, hypotony and combined cataract + CMO(7.14% Each). Solitary cases of optic neuropathy, macular pathology, macular scar each (3.57% each)also resulted in visual impairment

Table 12: Visual Impairment Vs Course Of Disease

COURSE	TOTAL PATIENTS	PATIENTS WITH VISUAL IMPAIRMENT (Va <6/18)	PERCENTAGE OF SUBTYPE SUFFERING FROM VISUAL IMPAIRMENT
ACUTE	37	6	16%
CHRONIC	31	16	51%
RECURRENT	7	3	43%
TOTAL	75	25	

A total of 28 patients suffered visual impairment (Visual acuity <6/18 in our study) out of which a total of 16 patients(57.14%) had Complicated cataract as the cause of their visual impairment. 3 patients developed cystoid macular oedema forming 10.71% of the patients with visual impairment. Next to this, there were 2 cases each of cataract, glaucoma, hypotony and combined cataract + CMO(7.14% Each). Solitary cases of optic neuropathy, macular pathology, macular scar each (3.57% each)also resulted in visual impairment.

VISUAL IMPAIRMENT VS ANATOMICAL SUBTYPE OF UVEITIS
Table 13: Visual Impairment Vs Anatomical Subtype Of Uveitis

ANATOMICAL SUBTYPE	TOTAL PATIENTS	VISUAL IMPAIRMENT (VA <6/18)	Percentage Of Subtype Suffering From Visual Impairment
ANTERIOR	58	16	26%
INTERMEDIATE	9	1	11%
POSTERIOR	5	5	100%
PANUVEITIS	3	3	100%
TOTAL	75	25	

100% of Patients suffering from Posterior uveitis(5) and Panuveitis(3) suffered visual impairment while only 26%(16) of anterior uveitis and 11% (1 case) of intermediate uveitis resulted in visual impairment. This ultimately declares that worst prognosis is seen in posterior uveitis and panuveitis, the results being in agreement with the majority of previous studies.

DISCUSSION
The age of patients in our study ranged from 18- 75 years. The majority of the patients in the study ranged in the age group from 21-30 year age group (24%) and on 31-40 year age group (28%) which is similar to multiple published studies. (5,6,41) . The Slight but significant higher patient number in the young age group of 18-30 years makes it essential for physicians to take economical and educational consequences in account. Gender distribution demonstrated a slight preponderance in males, 57% males and 43% in females, Making the male to female ratio as 1.3:1 . The results contrasted studies from developed countries while agreed with studies from developing countries. The Pacific Ocular inflammation study [13] showed equal distribution among the two genders while most of the surveys from developed countries reported equal gender distribution or a slight predominance of women. The root of these differences can be attributed to the privileged status of Male population in developing countries , in context of education, healthcare access etc.

In about 19% patients the presentation of uveitis was bilateral. 81% patients presented unilaterally. This contrasted the equal presentation of unilateral and bilateral cases seen in the OM Durrani et al study [18] The most common anatomical subtype was Anterior uveitis(77%) in our study. The percentage of anterior uveitis cases was significantly higher when compared to other studies done in India (39-49%) and other Asian studies (28-50%).(9,10,29) Acute unilateral non-granulomatous uveitis was the most common presentation. Majority of the cases did not have any known systemic association or infection. These findings are agreeable to the data from studies done by Rathinam et al [17] from south India.

When we analysed the course of disease, 37 patients (49%) suffered from acute uveitis, 31 patients (41%) had chronic uveitis while 7 (10%) had recurrent uveitis. This established the known preponderance of acute uveitis over chronic and recurrent forms. Out of 75 patients under study, anterior uveitis was diagnosed in 58 patients (77%), followed by Intermediate uveitis found in 9 patients (12%), posterior uveitis found in 5 patients (7%) and panuveitis found in 3 (4%) patients.

Out of the 58 patients with anterior uveitis, 34 patients (59%) suffered an acute course of disease while a chronic course of disease was seen in 17 patients (29%) and recurrent course in 7 patients(12%).

Intermediate uveitis displayed a more chronic course with 8 (89%) patients and only 1(11%) patient with acute course. Out of 5 posterior uveitis patients, 4 (80%) suffered a chronic course and 1 (20%) had acute posterior uveitis. 2(66.66%) of the 3 Panuveitis patients had a chronic course while one (33.33%) recovered after an acute attack.

Most literature on hospital based uveitis profile studies which considered the full spectrum of uveitic cases, occurred before standardization of uveitis nomenclature in 2005. Many of them did not state the criteria that were used to classify uveitis. Hence, comparing the results becomes difficult. Multiple etiologies are associated with uveitis. A meticulous history taking, clinical examination, investigation would help in the diagnosis of the type and severity of uveitis. Early initiation of treatment, compliance and regular follow-up is essential to inhibit the progression of disease and relief of symptoms, thereby reducing the morbidity associated with uveitis. The management of uveitis is usually a team work involving ophthalmologists, rheumatologists and infectious disease specialists.

To study the effect of disease duration on degree of visual impairment, a comparison was formed between course of disease and visual impairment. Patients of Chronic uveitis suffered the maximum visual loss at the end of disease activity. 51% of chronic uveitis patients had a visual acuity <6/18 in affected eye at the end of disease activity while visual impairment was seen in 43% patients of recurrent uveitis. However In the case of acute uveitis, visual impairment was seen in only 16% of its patients. This established the direct proportionality between Disease duration and visual impairment. Similarly, In OM Durrani et al study, A strong association was found between duration of visual loss and its severity (p = 0.0005), with an increasing duration of visual morbidity being strongly associated with poorer visual acuity. [19]

The Most common complications observed in our study was Complicated cataract forming 63%of the total complicated cases. It was also the most common cause of visual impairment (57.14%)

among uveitis patients. The other complications included Cystoid macular oedema, combined CMO+ Cataract. The results were in contrast to Durrani et al study(26.8%) and Rothova et al study (26%) where CMO was the most common cause of visual loss. The difference between these studies can be attributed to large number of patients longer duration of follow-up. [2,3,19]

SUMMARY AND CONCLUSIONS

The age group of 21 – 40 years displayed the highest prevalence of uveitis. Thus, Uveitis may have an enormous impact on the Student-population and the socioeconomically productive group. Gender distribution displayed a slight male preponderance our study with a Male: Female Ratio of 1.3:1. Bilateral eye involvement was found in 19% of the cases. Acute Uveitis was the most common course followed by disease . Majority(79%) of the patients suffered non granulomatous type of uveitis. Anterior Uveitis was the most common anatomical subtype of uveitis. History, laboratory investigations or radiological findngs suggestive of tuberculosis was elicited in 9.33% patients. Complicated cataract was the most common complication of uveitis in our study. It was also the frequent cause of visual impairment. It mostly resulted in moderate visual impairment. Chronicity of disease resulted in increased number of patients with visual loss. Posterior uveitis and Panuveitis resulted in visual impairment in maximum number of their patients

Abbreviations

B/L: Bilateral
CMO/CME: Cystoid macular oedema/Edema
CMV: Cytomegalovirus
HIV: Human Immunodeficiency virus
HLA: Human Leucocyte antigen
IOP: Intraocular pressure
IUSG: International Uveitis Study group
KP: Keratic Precipitates
SD: Standard Deviation
SUN: Standard Uveitis Nomenclature
U/L: Unilateral

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