Original Research Article

CLINICAL TRENDS OF INTRAOCULAR INFLAMMATION IN TERTIARY HEALTH CENTRE

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Abstract

Background: Clinical trends of intraocular inflammation in tertiary health centre. **Materials and Methods:** A comprehensive analysis was conducted on a cohort of 120 individuals diagnosed with intraocular inflammation. A thorough evaluation of the eye was conducted, including assessments such as the determination of the greatest possible visual acuity, inspection of the anterior segment of the eye using a slit lamp, and a detailed examination of the posterior segment of the eye after pupil dilation, using a 90 D lens and indirect ophthalmoscopy. All patients were subjected to a standardised set of examinations, which included the assessment of total and differential blood cell count, random blood sugar levels, haemoglobin levels, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) levels, and RA factor. **Results:** Upon classifying the patients according to the anatomical classification of uveitis, it was noted that the predominant form was anterior uveitis, which was detected in 97 patients (80.83%). Subsequently, posterior uveitis was identified in 15 patients (12.5%). A total of 5 patients (4.17%) had panuveitis, while 3 individuals (2.5%) displayed intermediate uveitis. In the present research, the majority of patients diagnosed with anterior uveitis were classified as idiopathic, accounting for 62 cases (63.92%). This was followed by patients with uveitis resulting from traumatic causes, with 16 cases (16.49%), and post-operative uveitis, with 8 cases (8.25%). Additional aetiologies within this cohort included HLA-B27 ankylosing spondylitis (3 cases, accounting for 3.09% of the total), viral and tubercular aetiologies (3 cases each, also representing 3.09% each), as well as Fuch's uveitis and Juvenile idiopathic arthritis (1 case each, contributing to 1.03% each). Out of the cohort of 15 individuals diagnosed with posterior uveitis, a causative factor was identified in 8 instances, accounting for 53.33% of the total. **Conclusion:** The incidence and characteristics of uveitis exhibit significant variability based on geographical and environmental variables. The findings of this research indicate that uveitis mostly affects young individuals, with acute presentation being the most common. The prevailing anatomical presentation seen was anterior uveitis, whereas the predominant pathological manifestation was non-granulomatous in nature.

INTRODUCTION

Uveitis is a pathological condition characterised by inflammation inside the eye, which may lead to significant impairment of vision. This condition can be attributed to a range of underlying factors. If not treated promptly and effectively, this condition has the potential to result in permanent vision impairment. Uveitis is responsible for between 5% to 20% of instances of legal blindness in wealthy nations, and accounts for 25% of blindness cases in poor regions.[1] Therefore, the significance of early identification and prompt treatment cannot be overstated.[2] The incidence of uveitis exhibits variability among different autoimmune diseases. As an example, the occurrence rate reaches up to 33% in individuals with seronegative spondyloarthropathy, in contrast to a prevalence of 2.3% in those diagnosed with psoriatic arthritis.[3] Furthermore, the occurrence of autoimmune illnesses and their manifestations exhibit geographical variations. As an example, the incidence rate of Behcet's illness in southern Sweden is reported to be 4.9 per 100,000

individuals,[4] but in rural western Turkey, it is estimated to be 20 per 100,000 individuals.[5] The accurate identification of uveitis may be a complex task due to the wide range of ocular and systemic manifestations seen by these individuals. Despite advancements in our knowledge of the etiopathogenesis and the use of modern diagnostic tools, the cause of uveitis remains unknown in a considerable proportion of patients. The diverse patterns and distributions of uveitis seen throughout different regions of the globe may be attributed to variances in geography, genetic, or dietary variables. Epidemiological studies have a crucial role in identifying the aetiology and incidence of uveitis. The establishment of the aetiology and pattern of uveitis will greatly benefit from collaborative investigations across several disciplines.[6] This helps in formulating suitable strategies for the prevention and management of the issue at hand. The present research aims to focus on the latest epidemiological data on uveitis and juxtapose it with prior understanding. While several studies have examined the epidemiological patterns of uveitis in various regions around the globe, there is a scarcity of research conducted in India. To the best of our knowledge, this study represents the first documented prospective series on the pattern of uveitis in central India.[7]

MATERIALS AND METHODS

The present research was a cross-sectional observational investigation carried out inside the ophthalmology department of a tertiary care health facility. A comprehensive analysis was conducted on a cohort of 120 individuals diagnosed with intraocular inflammation. A comprehensive medical history including major complaints and specific facts of the presenting condition was obtained. The relevant historical information on the user's past, personal, and medical background, as well as their previous treatment for eye conditions, was duly recorded. A thorough evaluation of the eye was conducted, including assessments such as the determination of the greatest possible visual acuity, inspection of the anterior segment of the eye using a slit lamp, and a detailed examination of the posterior segment of the eye after pupil dilation, using a 90 D lens and indirect ophthalmoscopy. Fundus fluorescein angiography, OCT, and B-scan were conducted as necessary in certain patients. The classification of disease in accordance with the Standardisation of Uveitis Nomenclature (SUN) is primarily based on anatomical involvement, course, and pathological type. Anatomical involvement is categorised into anterior, intermediate, posterior, and panuveitis. Course is classified as acute, chronic, or recurrent. Pathological type is divided into granulomatous and non-granulomatous.

All patients were subjected to a standardised set of examinations, which included the assessment of total and differential blood cell count, random blood sugar levels, haemoglobin levels, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) levels, and RA factor. Based on the patient's medical history, systemic symptoms, and comprehensive ocular examination, healthcare professionals recommended specific laboratory investigations, such as HLA B27, Mantoux test, HIV, VDRL, ELISA, urine analysis, and radiological examinations including x-ray of the sacroiliac joint, chest x-ray, and x-ray of the lumbosacral spine. Consultations were sought from experts in the fields of rheumatology, neurology, and infectious illnesses, if necessary. When some examinations were not available, the diagnosis was established by relying on distinctive characteristics and the recommended diagnostic criteria.

RESULTS

During study period, 120 patients with intraocular inflammation were examined. The age of the patients ranged from 12 to 78 years with a mean age of 40.85±4.96 years. Patients between the ages of 25-25 years were maximally involved 45(37.5%). A slight female preponderance was observed in our study with the male: female ratio being 1:1.26.

Upon classifying the patients according to the anatomical classification of uveitis, it was noted that the predominant form was anterior uveitis, which was detected in 97 patients (80.83%). Subsequently, posterior uveitis was identified in 15 patients (12.5%). A total of 5 patients (4.17%) had panuveitis, while 3 individuals (2.5%) displayed intermediate uveitis. In the current investigation, a significant proportion of the cases (85%) exhibited unilateral involvement, whereas a smaller percentage of patients (10%) had bilateral presentation. Among the various anatomical categories, unilateral disease was shown to be more prevalent, except in the panuveitis group where 60% of cases exhibited unilateral disease and 40% exhibited bilateral illness. A few 6 instances, accounting for a mere 5% of the total, exhibited the phenomenon of alternating presentation of illness. It is worth noting that all of these cases were characterised by anterior uveitis. The majority of patients (80%) included in our research had an acute manifestation of the illness, while 17.5% presented with a chronic condition. Recurrent uveitis was identified in a mere 2.5% of instances. Following a comprehensive eye examination and customised laboratory procedures, a definitive diagnosis was able to be determined in only 46 patients, or 38.33% of the total cases. Out of the total, 35 cases (29.17%) were attributed to a non-infectious aetiology. The incidence of infectious aetiology was found to be 33.33% in instances of posterior uveitis, while non-infectious aetiology was more prevalent in the anterior (31.96%) and panuveitis (40%) groups. The aetiology of intermediate uveitis in patients remains

uncertain and cannot be definitively assigned [Table 1].

In the present research, the majority of patients diagnosed with anterior uveitis were classified as idiopathic, accounting for 62 cases (63.92%). This was followed by patients with uveitis resulting from traumatic causes, with 16 cases (16.49%), and post-operative uveitis, with 8 cases (8.25%). Additional aetiologies within this cohort included HLA-B27 ankylosing spondylitis (3 cases, accounting for 3.09% of the total), viral and tubercular aetiologies (3 cases each, also representing 3.09% each), as well as Fuch's uveitis and Juvenile idiopathic arthritis (1 case each, contributing to 1.03% each) [Table 3].

The aetiology of intermediate uveitis remained elusive in all patients, leading to its classification as idiopathic [Table 4].

Out of the cohort of 15 individuals diagnosed with posterior uveitis, a causative factor was identified in 8 instances, accounting for 53.33% of the total. The prevailing aetiologies were TB, seen in 3 cases (20%), and Toxoplasma, observed in 2 cases (13.33%). In our dataset, a solitary instance (6.67%) of frosted branch angitis was also observed. Nevertheless, in a total of seven individuals, accounting for 46.67% of the sample, the underlying aetiology of uveitis remained undetermined [Table 5].

In the population of individuals diagnosed with panuveitis, a significant proportion of patients, over 50%, were able to ascertain an underlying reason for their condition. Among these cases, the most prevalent etiological factor was the presence of Vogt Koyanagi Harada (VKH) syndrome, seen in 20% of patients. The study identified tuberculosis as the aetiology for panuveitis in 1 instance (20%), whereas Toxoplasma was shown to be the cause in another case (20%). Two cases, accounting for 40% of the total sample, were classified as idiopathic [Table 6].

Table 1: Gender and age distribution of the participants

Gender	Number	Percentage
Male	53	44.17
Female	67	55.83
Age		
Below 25	20	16.67
25-35	45	37.5
35-45	28	23.33
45-55	16	13.33
55-65	7	5.83
Above 65	4	3.33
Mean Age	40.85±4.96	

Table 2: Distribution of patients according to aetiology

Aetiology	Anterior		Intermediate		Posterior		Panuveitis		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Infectious	5	5.15	0	0	5	33.33	1	20	11	9.17
Non-infectious	31	31.96	0	0	2	13.33	2	40	35	29.17
Idiopathic	61	62.89	3	100	8	53.33	2	40	74	61.66
Total	97	100	3	100	15	100	5	100	120	100

Table 3: Aetiological causes of anterior uveitis

Aetiology	Number	Percentage (%)
Idiopathic	62	63.92
Traumatic	16	16.49
Post-operative	8	8.25
JIA	1	1.03
Ankylosing spondylitis (HLA B27)	3	3.09
Tuberculosis	3	3.09
Viral	3	3.09
Fuch's heterochromatic uveitis	1	1.03
Total	97	100

Table 4: Aetiological causes of intermediate uveitis

Aetiology	Number	Percentage (%)
Idiopathic	3	100

Table 5: Aetiological causes of posterior uveitis

Aetiology	Number	Percentage (%)
Idiopathic	7	46.67
Tuberculosis	3	20
Toxoplasma	2	13.33
Serpiginous choroiditis	1	6.67
Viral	1	6.67
Frosted branch angiitis	1	6.67

Total	15	100

Table 6: Aetiological causes of panuveitis

Etiology	Number	Percentage (%)
Idiopathic	2	40
VKH	1	20
Tuberculosis	1	20
Toxoplasma	1	20
Total	5	100

DISCUSSION

Uveitis is a pathological condition that poses a significant risk to visual health and has substantial consequences for both individuals and the socioeconomic well-being of a community. It accounts for a significant proportion, namely 20%, of cases resulting in legal blindness. Uveitis is recognised as a significant aetiology of avoidable vision impairment. Comparing the statistical data on uveitis across various research presents challenges owing to variations in diagnosis criteria, investigation methods, and treatment approaches. Numerous research have been conducted to examine the pattern and profile of uveitis in various geographical regions throughout different nations, revealing notable variations in its distribution. This research used a cross-sectional design to investigate the clinical characteristics and profile of uveitis, as well as to examine its correlation with several systemic illnesses. The age range of the participants in our research spanned from 12 to 78 years, with a mean age of 40.85±4.96 years. A significant proportion of patients, namely 45 individuals (37.5%), between the age range of 25-25 years, were actively engaged in the study. Numerous studies conducted in various regions of India, as well as internationally, have consistently shown that a majority of uveitis patients fall within the younger age bracket, with the average age of onset ranging from 33.05 years to 44.0 years.[8-13] The prevalence of the condition was found to be somewhat higher in females (55.83%), a finding consistent with previous studies.[14] Nevertheless, several studies that have found a higher prevalence of males have ascribed this disparity to the fact that males generally have more access to medical treatment.[15,16] In the current investigation, it was observed that uveitis mostly manifested in a unilateral manner, affecting the eye on one side in the majority (85%) of patients. This observation aligns with previous research findings.[9,11] In 10% of instances, the illness had bilateral manifestation, although in only 5% of cases, it presented with alternating involvement of both eyes. In contrast to this, a research conducted by Hosseini M et al in Iran found that a majority (63.8%) of the patients they examined had bilateral disease.[14] Several prior investigations have shown a more balanced distribution of illness in relation to laterality, with unilateral disease prevalence ranging from 48.5% to 59.7%.[16,17] In this prospective research including

120 patients, the aetiology of uveitis was determined in a limited proportion of cases, namely 38.33% of patients. The remaining majority, accounting for 61.67% of patients, were classified as having idiopathic uveitis. This finding aligns with previous studies conducted by Camilo ENR et al.[11] (61.5%) and Kurumkattil R et al[13] (62.5%). However, it differs from other research that have revealed a range of idiopathic cases, ranging from 23.0% to 49.5%.[17] The predominant anatomical variety seen in our investigation was anterior uveitis, accounting for 80.83% of cases. This finding aligns with other studies, which have found percentages ranging from 35.1% to 70%.[15-17] The research conducted by Hosseini M et al, however, reported that anterior uveitis was the second most prevalent anatomical type, seen in 37% of cases.[14]

In our analysis, the anatomical variant known as posterior uveitis accounted for the second highest prevalence at a rate of 12.5%. This finding aligns with previous research conducted by Khairallah M et al.[10] and Irengbam S et al.[18] The prevalence of panuveitis and intermediate uveitis among patients included in our research was found to be 4.17% and 2.5% respectively. Hosseini et al.[14] found the highest prevalence of panuveitis to be 46.8%. In a research conducted in China by Zheng et al.[16], a significant prevalence of panuveitis (32.7%) was observed, whereas the prevalence of intermediate uveitis was only 1%. Similarly, Camilo ENR et al.[11] from Brazil reported a prevalence of panuveitis at 3.4%, with no instances of intermediate uveitis. Irengbam and colleagues [18] conducted a study in Manipur, India, where they observed a relatively low prevalence (4.3%) of panuveitis, which aligns with our findings. However, Palsule and colleagues.[12] and Singh and colleagues.[8] reported a greater frequency of intermediate uveitis (16.6% and 16.06%, respectively) compared to our study. The majority of patients (80%) included in our research had an acute presentation of the illness, whereas 17.5% presented with chronic disease. Recurrent uveitis was identified in a mere 2.5% of the cases. Additionally, investigations conducted in southern and western regions of India have also shown a high prevalence of cases with an acute onset.[12] In a research conducted on Chinese participants, it was shown that there was a relatively equal proportion of patients with acute (55.3%) and chronic (44.7%) illness.[16] However, a separate study conducted in Tunisia by Khairallah M et al.[10] reported a higher prevalence of chronic uveitis, accounting for 67.2%

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of the cases. Palsule and colleagues.[12] reported a higher incidence of recurrent uveitis (14.1%), which contradicts the findings of our study. In the current investigation, it was observed that a significant proportion (95%) of patients had non-granulomatous uveitis, a finding that is consistent with previous studies.[14] In the research conducted by Luca C et al.[17] in Italy, it was shown that 55% of the patients had granulomatous uveitis, whereas 45% of the patients presented with non-granulomatous uveitis. In our research, an examination was conducted on patients to determine the underlying cause of uveitis. It was found that a non-infectious aetiology was identified in 29.17% of the patients, while an infectious cause was determined in 9.17% of the patients. The remaining 61.66% of patients were classified as having idiopathic uveitis. Following a comprehensive eye examination and customised laboratory procedures, a definitive diagnosis was able to be determined in only 46 patients, accounting for 38.33% of the total cases. Out of the whole sample, 35 individuals (29.17%) were found to have a non-infectious aetiology. The occurrence of infectious causes was responsible for 33.33% of instances with posterior uveitis, but non-infectious causes were more prevalent in the anterior (31.96%) and panuveitis (40%) groups. The aetiology of intermediate uveitis in patients remains uncertain and cannot be definitively assigned. Additional studies have also shown that a majority of their patients, ranging from 50% to over 50%, have been diagnosed with idiopathic uveitis.[15-18] Nevertheless, many further investigations have shown a lower proportion (ranging from 23.0% to 49.5%) of individuals for whom the aetiology of uveitis could not be determined.[14,17] In the present research, a majority of the patients diagnosed with anterior uveitis were classified as idiopathic, accounting for 62 cases (63.92%). This was followed by patients with traumatic aetiology, including 16 cases (16.49%), and those with post-operative uveitis, accounting for 8 cases (8.25%). Additional aetiologies within this cohort were HLA-B27 ankylosing spondylitis (3 cases, accounting for 3.09% of the total), viral infection (3 cases, also 3.09%), tubercular infection (3 cases, again 3.09%), Fuch's uveitis (1 case, 1.03%), and Juvenile idiopathic arthritis (1 case, 1.03%). Similarly, studies by Zheng Y et al.[16] (7.8%) and Sudha Madhavi KM et al.[19] (20%) also had trauma as the most common cause of anterior uveitis. Uveitis has a very diverse aetiology and the most common causes documented in other studies include herpes,[6,7] seronegative spondyloarthropathy,[13] Fuch's uveitis,[14] collagen disorders,[18] HLA B-27 associated uveitis,[12] and ankylosing spondylitis.[15] In our investigation, a particular diagnosis could not be established for all individuals with intermediate uveitis, leading to the classification of all cases as idiopathic. Several studies have also shown that the majority of cases with intermediate uveitis are of unknown origin (idiopathic).[17,18] However, additional frequently described causes include sarcoidosis, Behcet's disease, seronegative spondyloarthropathy, and suspected ocular tuberculosis. Among the cohort of 15 patients diagnosed with posterior uveitis in the current investigation, a majority of 7 cases (46.67%) were classified as idiopathic, which aligns with the findings of many earlier studies.[16]

CONCLUSION

The incidence and characteristics of uveitis exhibit significant variability based on geographical and environmental variables. The findings of this research indicate that uveitis mostly affects young individuals, with acute presentation being the most common. The prevailing anatomical presentation seen was anterior uveitis, whereas the predominant pathological manifestation was non-granulomatous in nature.

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